Endless Applications, Unlimited Possibilities

The History & Development of Mechanical Engineering Education at The University of Texas at Austin
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For Betty
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Preface

The history of the Department of Mechanical Engineering at The University of Texas at Austin is the history of a community. Our community is composed of five integral components: students, faculty, staff, alumni and industry. Each component is necessary to the others and each is a servant of another. Faculty teach students and are supported by staff. Staff find excellent employment conditions within the department. They, in turn, support students and alumni. Alumni work in industry and start families. Many times their children become our students. Alumni acting in their capacities as individuals and as part of industry give back to the department and in doing so support the educational and research system which enriched their lives and their livelihoods. Exemplified by diligence, hard work and integrity, the mechanical engineering community at The University of Texas at Austin produces highly skilled professionals who are capable of meeting the needs of a technical society.

The goal of this work is to relate the interesting history of our department while placing it squarely into the historical context of our world. Like it or not, the world is a smaller place these days with nearly every point on the globe accessible by some form of communication or transportation. Communication and transportation are now not even restricted to our planet. Through engineering and scientific discovery, our human species continues to advance its knowledge and capabilities. The reader will gain a broader perspective of how integral mechanical engineers are to our society and how necessary mechanical engineering has become to our world. In keeping with this goal, the reader will find many first hand accounts quoted within these pages. These accounts illustrate the thoughts, experiences and ideas of our community as it has developed over the last century. We would like to thank those who submitted information to this volume. Their personal involvement creates a valuable record for generations to come.

This book commemorates the massive community effort to renovate the second floor area of the Engineering Teaching Center (ETC II). This book also marks several milestones significant to the department. The year 2003 was the 100th year anniversary of mechanical engineering coursework offered at The University of Texas at Austin. It was the 90th year anniversary of mechanical engineering as an organized unit on the UT campus. (The School of Mechanical Engineering was established in 1913.) It was the 84th year since the first Bachelor of Science Degree was awarded, the 81st year since the first Master of Science degree was awarded and the 60th year since the first Doctoral Degree was awarded. The year 2003 marked the 20 - year anniversary of the Department of Mechanical Engineering’s residence in ETC II and marked the 10th anniversary of ME Alum and space shuttle commander, Ken Cockrell’s first space flight.

We hope you enjoy reading the following account of the history and development of the Department of Mechanical Engineering at The University of Texas at Austin. Mechanical Engineering is a discipline that opens doors to a variety of interesting and prestigious careers not limited to engineering but also ranging from statesman to astronaut. The UT Department of Mechanical Engineering offers a world-class education that enables its graduates to improve not only their own lives but the lives of others. Our commitment to excellence continues to be accurately summarized by the words of our first Dean of Engineering, T. U. Taylor:

“A Texas Engineer, as I have tried to train, is a man of inflexible integrity, high conceptions of civic duty, lofty devotions to accuracy and absolute devotion to the truth.”

- T. U. Taylor
ME Timeline

“Old Main” circa 1883

1881 The University of Texas is established by the state legislature. The main university is located at Austin and the medical branch is located at Galveston.

1883 The University of Texas opens its doors with 221 students and 12 faculty.

1884 The University’s first permanent structure “Old Main” is completed. *(Viet questions this date—check it)*

1895 An autonomous Department of Engineering is established.

1903 The first mechanical engineering courses are taught in “Old Main” through the Schools of Civil Engineering and Electrical Engineering. They are "Construction and Operation of Steam Boilers", "Thermodynamics", "Steam Boilers & Engines", "Mechanisms" and "Shop". **CHECK THESE DATES (diff. dates are given in ch.2)**

1904 The Engineering Building is completed. [Now known as the Dorothy Gebauer Building] The Austin Manual Training School is used for shop practice until the Power Plant is remodeled.

1906 T. U. Taylor becomes the first dean of the Department of Engineering.

1908 Engineers discover a statue in Jacoby’s Beer Garden and Alexander Frederick Claire (Alec) is born.

1910 The Engineers’ Loan Fund is created by T. U. Taylor.

1912 The wood shop and machine shop are located on the 2nd floor of the west wing of the old Power Plant Building.

1913 The School of Mechanical Engineering is established and is housed in the Old Power Plant Building where it will remain until 1927.

1914 F. E. Cardullo becomes the 1st Chairman of Mechanical Engineering.

1915 T. U. Taylor becomes the 2nd Chairman of Mechanical Engineering.

1916 H. C. Weaver becomes the 3rd Chairman of Mechanical Engineering.

1917 U. S. enters WWI.

1918 WWI ends.

1918 J. A. Correll becomes the 4th Chairman of Mechanical Engineering.

1919 The first Mechanical Engineering Bachelor of Science degrees are awarded to M. N. Dannenbaum and Julian Dormant (June) and Carol Orr (August).

1919 H. C. Weaver becomes the 5th Chairman of the Mechanical Engineering.

1921 The Department of Engineering becomes the College of Engineering, and The School of Mechanical Engineering becomes the Department of Mechanical Engineering. ASME student section gets its charter at UT ME.
1922 The first Master of Science degree is granted in Mechanical Engineering to Francis P. Gerling (June.)

1927 Taylor Hall opens and the Department of Mechanical Engineering is housed there. It is the first building to be constructed off of the original 40(Forty?) acres on old Clark Field.

1928 The second unit of Taylor Hall is completed and is designated for Mechanical Engineering shops and the EE lab.

1929 A. Vallance becomes the 6th Chairman of Mechanical Engineering.

1930 H. E. Degler becomes the 7th Chairman of Mechanical Engineering.

1933 The east and west wings and central four-story wing of Taylor Hall are completed; the Engineering Building is now complete.

1936 T. U. Taylor retires in compliance with The University of Texas’ new mandatory retirement program.

ME Faculty member, W. R. Woolrich becomes Dean of the UT College of Engineering.

1937 T. U. Taylor becomes the first registered engineer in Texas.

The Rams(space here?)Horn society is established.

1940 The Doctoral program in Mechanical Engineering is approved. The ME Department is given responsibility by the U. S. Civil Aeronautics Administration to administer the “Civilian Pilot Training Program,” providing the nation with a nucleus of pilots for WWII, 40 enrollees, 4 were women.

1941 T. U. Taylor dies.

U. S. enters WWII.

1943 The first doctorate degree in Mechanical Engineering is granted to L. F. Bartlett as a combined major in Mechanical Engineering and Chemical Engineering.

1945 WWII ends.

1947 M. L. Begeman becomes the 9th Chairman of Mechanical Engineering.

1949 V. L. Doughtie becomes the 10th Chairman of Mechanical Engineering.

1952 B. E. Short becomes the 11th Chairman of Mechanical Engineering.

“Operation Gopher” begins as students, faculty and alumni dig out basement of Taylor Hall to create the “Taylor T Room”, a recreation and study lounge for engineering students.

The first female mechanical engineering student graduates with a Bachelor of Science Degree. She is Mary Jo Ross (Knobelsdorf).

1953 M. L. Begeman becomes the 12th Chairman of Mechanical Engineering.
1957 V. L. Doughtie becomes the 13th Chairman of Mechanical Engineering. The T-Room officially opens.

1960s ME along with several other departments begins to develop an Acoustics program.

1962 H. L. Kent, Jr. becomes the 14th Chairman of Mechanical Engineering.

1963 The Atomic Energy Commission (AEC) purchases a TRIGA Mark I fission reactor for the COE and installs it in Taylor Hall marking the firm establishment of a nuclear program.

Jack A. Scanlan is appointed director of the Nuclear Reactor Laboratory which is organized around the reactor.

C. Gatlin becomes the 15th Chairman of Mechanical Engineering. *Operations Research & Industrial Engineering was started as an area within the Department of Mechanical Engineering. (see entry under 1967--which date was it?)*

1964 W. R. Upthegrove becomes the 16th Chairman of Mechanical Engineering.

1967 *Operations Research & Industrial Engineering was organized as an area within the Department of Mechanical Engineering.*

1968 The Department of Drawing merges with the Department of Mechanical Engineering.

When this occurs, Margaret R. Baker becomes the first female faculty in the Department of Mechanical Engineering.

1970 J. P. Lamb becomes the 17th Chairman of Mechanical Engineering.

1971 Energy Storage Group is formed and housed in Taylor Hall (a joint effort between ME and EE, and founded by H. G. Rylander and H. H. Woodson).

The Biomedical Program is organized.

1972 *(check year)* Phil Schmidt and T. Courtney are key faculty in starting the EOE program for minorities.

1976 H. G. Rylander, Jr. becomes the 18th Chairman of Mechanical Engineering.

1977 Energy Storage Group (ESG) becomes the Center for ElectroMechanics. Dorothy Krueger is the first female faculty hired into the Department of Mechanical Engineering. She is hired as a specialist in Graphics. *(per Vliet: see above, M. Baker--**I think Krueger is the first hire, as opposed to Baker who was in the COE already and was merged. correct?)*

1980 The UT Chapter of the Society of Automotive Engineers is established by Dr. Ron Matthews.

1983 ETC II is completed.

The Microelectronics and Computer Technology Corp. (MCC), a research consortium, locates its research center in Austin, Texas spawning a new era in UT engineering programs in microelectronics and computers.

The Center for Materials Science and Engineering (now called Texas Materials Institute) is established.

1985 Electromechanics and Energy Building commissioned at Balcones Research Center. Center for ElectroMechanics and Center for Energy Studies are moved to EME.
1986  J. R. Howell becomes the 19th Chairman of Mechanical Engineering. First black (African-American--ask her) faculty member, Dr. Harovel Wheat, is hired.

1990  K. R. Diller becomes the 20th Chairman of Mechanical Engineering.

1992  Female faculty in mechanical engineering are instrumental in starting the College of Engineering’s Women in Engineering Program (WEP).

The nuclear reactor moves to Balcones Research Center.

1993  Ken Cockrell, BSME 72, is the first UT ME Alumnus to travel into space.


Robotics Research Group relocates to the Microelectronics Research Building at Balcones Research Center.

1996  J. P. Lamb becomes the 21st Chairman of Mechanical Engineering.

1997  Balcones Research Center name changed to Pickle Research Center.

1998  The Texas Materials Institute is established. The faculty are drawn from the COE and from UT Natural Sciences.

2000  ME Department adopts new curriculum initiative, PROCEED (Project Centered Education). *(check this: Vliet says Beaman was chair before PROCEED)*

2001  J. J. Beaman, Jr. becomes the 22nd Chairman of Mechanical Engineering.

Don Evans, BSME 1969, is confirmed as head of the U. S. Commerce Department.

Professor Dale Klein of ME is confirmed as United States Assistant Secretary of Defense.

2002  The Manufacturing & Decision Systems Engineering Program is organized within the Department of Mechanical Engineering.

ME Alum, Jerri Paul BSME ’95, MSME & MBA ’97, becomes the first woman to chair the Department Visiting Committee.

2003  20 year anniversary of ME’s residence in ETC II.

100 year anniversary of Mechanical Engineering coursework offered at The University.

90 year anniversary of Mechanical Engineering taught as an organized unit. (School was est. in 1913)

Grand Opening of Renovated T-Room on the 2nd Floor of ETC.
Chapter 1: “Giant in Its Cradle”

The University of Texas at Austin circa 1883 as seen from Guadalupe and 21st Street. The Chemistry Lab is to the left of the Main Building and B Hall is to the right. Courtesy of Billy Wood, Undergraduate Advisor in Mechanical Engineering.
Chapter 1:

Population Statistics

1880 Census

U.S. ... 50.2 million
Texas ... 1,591,749
Austin ... 11,013
UT Austin...
Engineering...
Mechanical Engineering...

“On the banks of the Brazos on March 2, 1836, the fathers of Texas declared for the first time in the history of the civilized world that the failure of the mother country to provide for an adequate system of public education was, in itself, a sufficient cause of revolution. For this principle they fought; for this principle they died.”

- T. U. Taylor, first Dean of the UT College of Engineering, circa 1923

Cotton and Cowboys – The 1860’s & ‘70’s

In order to address the history of the Department of Mechanical Engineering at The University of Texas at Austin, it is beneficial to examine the forces which demanded its creation. In the forty years preceding the first engineering course offerings at U. T. Austin, The State of Texas experienced revolutionary political, social and economic changes. These changes altered Texas forever. They also led to the establishment of The University of Texas at Austin.

Characterized by Indian raids and cattle drives, Texas in the 1860’s was a land of vast expanses. Sparsely populated, where honor and agility superseded the rule of law, Texas demanded little in the way of public works. “Oceans” of tall grasses swayed across the plains, undulating with the winds. Rattlesnakes, spiders, mosquitos, dust, heat, sweat, insects of innumerable varieties were all companions to this semi-arid climate. The man who survived in Texas knew his environment, could predict the weather, and made opportunities out of challenges. Vast, isolated and lonely, Texas bred the quality of self-reliance. In his book, Lone Star: A History of Texas and the Texans, T. R. Fehrenbach eloquently describes the setting:

“Here, in Texas, that abortive culture, that region of the map and mind that most Americans would call the Old West, began. It germinated as the planter culture of East Texas reached apogee. It was to have small effect on the institutions of the state, and even less effect on its lasting politics. Its impact was to be upon the Texan, and the American, heart and mind . . . something evolved that burned its image like a smoking cattle brand into the consciousness not only of North America but the whole world. A handful of border Texans, adapting to the realities of their time and place, began what was always essentially a small business, but they conducted it with a barbaric magnificence equaled nowhere . . . They stamped a memory into America, and the world, that refused to die.”
Civil War Impacts Texas

Before the Civil War, two economies thrived in Texas: cotton and cattle. After the Civil War, the cotton economy, which had been built on the backs of slaves, crumbled. The cattle economy, however, grew more vigorously than ever before. Northerners hungered for beef and would pay ten times what Southerners could. Owners made fortunes employing cowboys to drive their cattle to market capitalizing on open ranges and free grass all the way. It was common for ten men to drive as many as 2,000 head of cattle. The cattle, tougher in those days, walked to market all the way from Texas to the rail centers in Kansas and Missouri. The legendary Chisholm Trail marked one such route and is approximated today by Interstate 35.

After their defeat in the Civil War as part of the Confederacy, many Texans experienced hard economic times. Slavery had ended and so too ended the once thriving cotton economy. During Texas' nine-year Reconstruction period, Northern occupation and influence increased. Exposure to products from the northern-based Industrial Revolution also increased. Northern laws and ideas emerged in society. Devastation after the Civil War prompted the westward migration of hundreds of thousands of immigrants from the impoverished states of the fallen Confederacy. Many settled in Texas seeking cheap land and a better life. Immigration was supported by the Texas state government in hopes that greater populations would help defend Texans against the Indians. Planters also supported the immigration of Southerners. They needed the immigrants to replace the newly freed slaves. In fact, the population of Texas grew faster than the existing infrastructure in Texas could support. Soon roads, canals, bridges, modern water and sewage systems, as well as reliable sources of power were needed to support the sudden population growth.

Skilled engineers were needed to build and construct these public works. Since Texas had, heretofore, relied so exclusively on ranching and agriculture to fuel its economy, it had not recognized the need to develop a homegrown technical base of expertise among its citizenry. Therefore, it was forced to look elsewhere for its trained technical professionals. According to Fehrenbach in Lone Star: A History of Texas and Texans,

"Texas entered the 20th century with its basic society a full two generations, or about sixty years, behind the development of the American mainstream." 14

This realization, once conceived, was particularly hard to take. Texas' culture of self-reliance was now threatened after its defeat in the Civil War. Animosities increased towards the North, fueled by the Reconstruction era. Texans who became aware of the situation surely struggled with the idea of accepting their State's apparent and growing dependence on the North. It was a bitter pill to swallow.

Death of the Cowboy

By 1890, the cattle culture that had made Texas famous was gone. The industrial revolution with its endless stream of ideas and improvements destroyed the environment which bred the first real cowboys. Cowboys, of course, live on to this day, but they are not the same. They will never be the same. The cowboy of the 1860's and 70's lived a nomadic lifestyle. He traversed hundreds of miles of territory unimpeded by the restrictions of fences. He rode when the range was open. He knew the lay of the land. He fought off Indians and thieves, faced bad weather, slept under the stars, got drunk in saloons, controlled his horses, drove his cows, and protected himself with his gun. That cowboy, the one the whole world still associates with Texas, is gone forever, his usefulness worn out and viability outdated.

Four factors which resulted from increased northern influence after the Civil War led to the death of the cowboy. The first factor was barbed wire. The inexpensive production and distribution of light-weight wire fencing material led to the fencing of the plains and the race to ownership of land in Texas. Barbed-wire fences changed the cattle culture by cutting up the "seas" of grass thereby impeding cattle drives and access to free food (grasses) across the plains. The second factor, another product of the industrial revolution, was the windmill. Windmills gave ranchers the ability to pull water out of the prairies. With the dependable sources of water suddenly available with windmills, ranchers could cease to be nomadic and could reside in one place, on their ranches. Now they had a dependable water supply for themselves and their cattle. The third factor was the economic demand for a better tasting cow. Cattle that walked to market were stringy and tough. More sedentary ranch cows were juicy and delicious and therefore, brought the highest price. The fourth factor was the introduction of railroads in Texas. The trend in the transportation of cattle cross-country changed from driving cattle to shipping them via train. These changes in the production and transportation of cattle to market led to the demise of the traditional romanticized version of the Texas cowboy.
Changes in Land Ownership in Texas

The practice of cattle ranching dictated ownership and/or access to large spreads of land. The native grasses of Texas were found to be particularly sensitive to over-grazing. In order to avoid over-grazing, vast land holdings were necessary and systems of planting and rotation had to be implemented to insure a constant supply of food. Planting on large spreads of acreage was a daunting task. Cheap labor and/or machinery were now needed. Furthermore, Texas’ agricultural methods would change permanently as a result of population growth, new ease in transportation of people and commodities via trains and legislative decisions involving commodity pricing. According to Fehrenbach,

“In 1860 almost all Texas farmers owned their own land...by 1900, 49% of all farm families were sharecroppers.”

The Texas agricultural economy changed from one based on the small family farmer to agriculture based on the large industrial conglomerate. The influence of this revolution in agricultural production, where profitability resides in the usage of heavy equipment and machinery on large land holdings, is still in effect today.

Texas Recognizes Its Need for Engineers

Texas had no university in the 1860’s and ’70’s. With its economy centered on the production of cotton and beef, Texans prospered without an institution of higher learning. The knowledge needed was of a “hands-on” nature, quite literally. By 1865, the war was over, and life in Texas was changing. Texans were forced to face facts. They lagged behind the rest of the country in technical knowledge, skills and abilities. The sudden population growth coupled with the desire to eliminate Texas’ dependence on the North led to a realization. Texas could no longer import educated men from the North. The advent in railroad transportation in Texas, the influx of people from other states, changes in commodity pricing, shifts in agricultural needs and practices and the Texan attitude of self-reliance created an environment in Texas which demanded the in-state education of skilled engineers. The first post-bellum legislature recognized the increasing need for professional engineers and knew it could no longer rely on attracting qualified engineers from the North. Post-bellum anti-Northern sentiment further influenced Texans’ desire to create technical self-reliance. When Texans realized their need to provide educational opportunities to their citizenry, they also realized that many of their potential students had little means to pay. At the newly created University of Texas at Austin, the common man was welcome.
T. U. Taylor, a Common Man

Thomas Ulvan Taylor, fated to become the first Dean of the College of Engineering and the second Chairman of Mechanical Engineering, came from meager beginnings. He was born on January 2, 1858 in Parker County, Texas, to John Henry Taylor and Mrs. Louisa Lambkin.23 His childhood home, built by his father, consisted of a front porch, one large living room and a shed-room which was divided into two parts. His mother took care of all the domestic needs of the family. She sewed their clothes out of “home-spun” cloth which she spun herself on her loom. She made the family’s soap, candles and meals. According to T. U. Taylor, his mother had a great “healing art” and was sought after by the neighbors.24 T. U. Taylor’s father, apart from his skills as a carpenter, would go west when needed to guard the frontier against Indians.25

In 1862, at the age of four, T. U. Taylor watched the men from his town leave for the Civil War. In 1865, when Taylor was seven, his neighbors returned from the Civil War and told “their tales of hardships and parched corn.”26 Taylor grew up during the Reconstruction era. These times were greatly stressed by tensions between U.S. soldiers and the men of his community. In his memoir, Fifty Years on Forty Acres, T. U. Taylor remembers the mistreatment of a helpless old man by U.S. soldiers:

“...one of the older Heffington boys was in Weatherford with some neighbors. The U. S. soldiers had their headquarters on the west side of the South Main Street and would stroll over town at certain hours per day. The Heffington boy and one of the soldiers had a clash and the soldier was shot during the quarrel. The Bear Creek boys hastily mounted their horses and took to the woods along the Clear Fork and reached home late. The soldiers came in a day or two on the track of Tom Heffington. They visited the Heffington home, but Tom had left and was on the dodge and of course was shielded by the neighbors. On the south side of the Bear Creek were high bluffs, heavily timbered, which made an ideal refuge for persons on the dodge.

“Stephen Heffington was down flat on his back with rheumatism and knew nothing about the where-abouts of his son. However the soldiers demanded that he tell, but the old sick man informed them that he knew nothing about the where-abouts of Tom. But the Corporal or commanding officers demanded that he tell. He ordered his men to hang the old man to the rafters above the bed. The sick man was heavy of flesh and helpless in bed. But the Yankees proceeded to hang him up with a rope about his neck. After they had swung him up for a few seconds they let him down and ordered him to tell. In the meantime my father had seen the Yankees ride up from our home across the South Bear Creek. He had seized his double barrel shot gun and strapped on his six-shooter and rushed across the valleys, waded the Bear Creek and rushed on the Heffington home. There he found the soldiers and the helpless rheumatic old man in bed with a rope around his neck. He convinced the soldiers that Stephen Heffington was in no way to blame, that Tom and the boys had been gone two days, and when later my father had to resort to threats, he told the soldiers that Mr. Heffington was not to be strung up another time, that he was innocent and helpless and finally ended with this definite statement: ‘If you try to hang him again, you will have to kill me first.’ The soldiers were finally convinced that the Heffington boys had left the neighborhood and they departed for Weatherford to report to the commanding officer.” 27

Taylor also remembers an incident when he was going home from school one day:

“The Federal soldiers just after the war were quartered at old Buchanan, (the early county seat of Johnson county) and at Weatherford and would often ride horseback between the two towns. Most of them were anxious to see the prairie grass burn, which was the only food our stock had. The grass was dry and burned readily, and if there was the slightest wind, a prairie fire often occurred to cause great damages. On our return from school one afternoon – there were several children, the Pratts, the Heffingtons and Taylors – we were going west towards my first home. The Yankees set fire to the grass and we thought we could make our way through it; but a brisk breeze lashed the fire to a fury. Tennessee Heffington grabbed me, the youngest child, by the hand and we ran for our lives through the fire. Until this day she said that I called out in the midst of it, ‘Don’t get scared, Tennessee, I’ll take care of you.’ Tennessee Heffington died April 14, 1938.” 28
T. U. Taylor’s father, John Henry Taylor, died on March 5, 1867.29 Taylor was only nine years old. His half-brother, Gus Work, was left as head of the family, and in less than a year, also died. At the age of 10, Taylor became the oldest male member of his family.30 Up to that time Taylor’s school experience consisted of about four years spent in a one-room log schoolhouse that the community had constructed at the “forks of the road near Bear Creek”.31 Two years after Taylor’s half-brother died, the family moved to Cleburne, Texas. In Cleburne, Taylor’s mother supported the family, three boys, one daughter and herself, with her needle. Taylor, the oldest at twelve years, had to work to help feed the family.32 He got up every morning at 4 a.m. to the blast of the tin bugle blown by the old stage driver. This was Taylor’s cue to run to the public square where he would carry buckets of water from Old Buffalo Springs to the opening saloons. Taylor soon built up a trade of fifteen cents before breakfast and then rushed home about 6 a.m to eat a hasty breakfast. Then Taylor would hurry to Easterwood’s brickyard, one mile east of Cleburne, where he “trotted” bricks from dawn to dusk for twenty-five cents a day.33 Says Taylor, “The proudest moment of my life was when I went home on the first Saturday night and dropped six shiny silver quarters in my mother’s lap. No honor that has ever come to me approaches in satisfaction and thrills this contribution to the food fund for hungry brothers and a hard-working mother.”34

When T. U. Taylor was 14, he went to live with his uncle in Fannin County. His uncle was a businessman and a school trustee in the southern part of the county and believed strongly that “education and religion were the twin Saviors of the world.”35 During this time, Taylor worked for his uncle herding mules to the counties of Wood, Upshur, Camp and surrounding areas. Taylor did everything on the farm including riding wild horses and mules, plowing corn, hoeing cotton, cradling and sowing oats, stacking wheat, mauling rails, driving a four-horse team, and hauling lumber.37

By the time T. U. Taylor was 19 years old, he had lived on his uncle’s farm for five years. At that time, his uncle made Taylor an offer. If Taylor continued to live with him for the next year, he would furnish Taylor with a span of mules and would feed both the mules and Taylor. Taylor could cultivate all the land that he could manage, and his uncle would give him all that he could make off that land. Or, Taylor had a second choice. His uncle would send him to school in Bonham for one year, to a school which was run by a man named Charlie Carlton. Praise for Charlie Carlton’s training methods had spread, and he was known all over north Texas.38 This was the turning point in Taylor’s life. He decided to go to school. After one year, Taylor wanted to continue on with his education at the recommendation of Charlie Carlton. His uncle agreed and continued to support him. Taylor later described Charlie

Carlton as “one of those radiant characters who used money as axle grease and was ever building character in the minds of the pupils...” Taylor had to enter classes that were 5 years younger than he and was the “biggest and greenest boy in the class.”39 The shame he felt prompted him to study “all the harder.” He would work on Saturday for spending money and to buy books. He could not go to parties due to his lack of clothes.40

In 1879, T. U. Taylor left Carlton Seminary and returned to his uncle’s farm. Taylor’s uncle notified him that the state had established a new school and was giving scholarships that included board, tuition, and books by competitive examination. The school was the Sam Houston Normal Institute at Huntsville, Texas. Taylor passed the examination and was admitted to the Institute.41 Upon the opening of the Sam Houston Normal Institute, Texas Governor O. M. Roberts, who later became an acquaintance and friend to Taylor, addressed the audience. At this time Texas was in the process of establishing a system of public schools. The governor sought to locate and retain good qualified teachers. The objective of the Sam Houston Normal Institute of Huntsville was to create a “supply of competent teachers, who would teach upon the most improved modern plans of teaching.”42 After the success of the establishment of the Normal School, it was suggested to Governor Roberts that a state university be started. He heartily agreed and in 1881 Governor Roberts insisted that the state legislature create the University of Texas. 43
In June of 1880, T. U. Taylor received his diploma from the Sam Houston Normal Institute from Governor O. M. Roberts. Afterwards, he returned to his uncle's farm in Bonham and took a position teaching schoolchildren at a country school. Taylor taught school in Fannin County, in Longview and in Fort Worth. In the fall of 1881, he enrolled in the University of Virginia. During the summer before T. U. Taylor's first term at the University of Virginia, he heard Dudley Wooten give a speech promoting Austin as the location for the University of Texas. In the course of the speech, Mr. Wooten declared: "It is possible that some poor boy in this audience may become a member of the Faculty of our State University." Taylor wrote that it was during this speech that he set a goal to become a faculty member at The University of Texas. Taylor relates that the road to becoming a member of the faculty at the University of Texas was "a long road and a hard road, and it was paved with disappointments, privations, poor clothes, heart-burnings, and often not sufficient food. But the road was straight and had no turns or curves; and it had no shade trees." After T. U. Taylor received his Civil Engineering degree from the University of Virginia, he was appointed as Professor of Physics and Mathematics in the Miller Manual Labor School in Albemarle County, Virginia where he taught from 1883 to 1888. In 1888, T. U. Taylor accepted a position in the University of Texas at Austin.

In his book, *Fifty Years on Forty Acres*, T. U. Taylor tells the story of how he got his first professional position. After Taylor graduated from the University of Virginia and before he went to work as a Professor of Physics and Mathematics at the Miller Manual Labor School, he took a train ride home to Texas to see his family. On the train, he saw Professor J. S. Kendall whom he knew from The University of Virginia. Taylor went up and spoke to Professor Kendall and Kendall introduced Taylor to U. S. Senator Samuel Bell Maxey. Taylor and Maxey struck up a conversation about the University of Virginia and Thomas Jefferson. They began to talk at length about their shared admiration of Thomas Jefferson. Afterwards, Maxey encouraged Taylor to stay in touch with him. In 1888, Taylor wrote to Maxey recalling their meeting on the train and asked Maxey if he could help him gain employment at The University of Texas. Maxey replied back that he knew everyone on the Board of Regents and that Dr. T. D. Wooten and he were boyhood friends in Kentucky. Later that year, T. U. Taylor was elected to be an Adjunct Professor of Applied Mathematics. Later Taylor would receive a M.C.E. degree from Cornell.

**“Young Giant in Its Cradle”**

The struggle of the development of The University of Texas had many twists and turns, the intricacies of which will not be covered here. Summarized briefly here in the eloquent words of the first dean of the College of Engineering, T.U. Taylor, is the struggle which engaged Texans of that day:

"The University fought its greatest battles before a brick was laid in the mortar of a single building on this campus, and before a single student entered its portals. While many fought it as a nonessential, as an unnecessary tax burden on the people, claiming that it was a luxury for the rich – others fought it in the fear that it would become the hotbed of infidelity and the nursery of snobs. Others sought to dissipate its energies and weaken its influence by dividing it into a dozen local institutions scattered over the State. But even in this it repelled all attacks, and the hands that sought its ruin served to widen its sphere of influence in every receding wave. These struggles were but the throes of the young giant in its cradle – a faint index of the vitality, power and potential energy that had now become a dynamic force in our State.

"While we congratulate ourselves that The University came successfully through the formative periods from the day when it first appeared in our constitutions and laws, we must remember that we are now the custodians of the trust made sacred by the devotion and self-sacrifice of the fathers who brought it from the land of bondage, through the wilderness into the promised land." (Speech made in 1916: The Birthright of a Texan)

**Early Engineering Education**

Mechanical Engineering as a professional discipline gained widespread recognition in 1880 when the American Society of Mechanical Engineers (ASME) was formed. However, it was some years until universities began to offer degree programs in mechanical engineering. This was probably due to the immediate infrastructural needs of growing cities and therefore, a greater demand for civil engineers. (cite 2)

When the University of Texas opened its doors in the fall of 1883, it offered a full curriculum leading to a degree in civil engineering. Initially, John W. Mallet, in charge of Chemistry and Physics at The University, set the engineering curriculum. John Mallet held a doctoral degree in applied chemistry from the University of Gottingen in Germany. Previously he had taught at Louisiana State University and at the University of Virginia. Although Mallet primarily taught chemistry, he also lectured on material and plant design and industrial applications of chemical theory. Mallet’s specialization was "in sanitation systems and the treatment and disposal of industrial waste." Mallet, obviously overworked, left The University when it became clear that the legislature was not going to increase his salary.
Two professors and an assistant instructor replaced Mallet. The assistant instructor was Alvin V. Lane. Alvin Lane held a degree in civil engineering from Vanderbilt. Lane taught mathematics, graphics, all technical instruction in engineering, applied mathematics and geometry.\(^56\) Lane established a four-year degree plan leading to a bachelor of science degree in engineering. Lane’s coursework included “instruction in all known methods of surveying, hands-on study of existing engineering structures and machinery, four years of drawing and related artwork, and a healthy dose of mathematics, and two years devoted to the research and writing of a thesis.”\(^57\) After having contributed much to the University of Texas’ engineering program, Lane resigned in 1888.\(^58\)

When T. U. Taylor replaced Lane in 1888, he had twenty-one engineering students.\(^59\) Plagued by a chronic shortage of financial support, Taylor was undaunted and persisted in his efforts to build an autonomous department. Taylor added courses on civil engineering, and included instruction in materials testing, highway and railroad construction, and mechanical drawing.\(^60\) In 1891, Taylor procured an office in the attic of the central section of the Main Building. Here, Taylor had a lecture room, office, drawing room and “testing” room. Taylor continued to build the program and added a course in sanitary engineering and graduate work in bridge, hydraulic and sanitary, and railroad engineering.\(^61\) His hard work paid off, and in 1892 Taylor was promoted to associate professor.\(^62\) Throughout his career, Taylor required each of his students to spend at least one summer working in the field of engineering within the state. This requirement insured that the students would obtain the needed practical experience. Another benefit of this requirement was that it provided public exposure to the high quality of education that The University was providing. Due largely to Taylor’s dedication and efforts, engineering became a department in 1895.\(^63\) The department struggled with budgetary issues until 1899 when UT President George T. Winston departed and was replaced by a UT president more supportive of the department, William L. Prather.\(^64\)
Chapter 2: 1900 – 1920

The Dorothy Gebauer Building, home of Mechanical Engineers from 1904 to 1913
Chapter 2: 1900 – 1920

Population Statistics

1900 Census

U.S. ... 76.2 million
Texas ... 3,048,710
Austin ... 22,258

The purple hills of Austin could be spied from campus in the 1900s, and roaming town cows had to be fenced out of campus grounds. At the same time, technological advances made modern life easier and more exciting. Telephone service had only recently become accessible to Austinites. The vacuum cleaner and the electric typewriter were invented, along with airplanes and automobiles. For the first time in history, people could make their own photographs. Students must have felt the mysteries of the world beginning to unravel. At UT, the decade of the 1900’s saw significant growth in mechanical engineering and the birth of time-honored ME traditions.

Mechanical Engineering at UT:
The Early Years

(Notes here are from Ch. 2)

Prior to 1903, the School of Civil Engineering offered coursework related to mechanical engineering in the form of “Construction and Operation of Steam Boilers.” The new School of Electrical Engineering, formed in 1903, offered the courses “Thermodynamics”, “Steam Boilers and Engines,” and “Mechanisms and Shop.”

In 1903, there were only four buildings on the campus of The University of Texas. The Main Building (also called “Old Main”, completed in 1883, 1889, 1900??). **When was it completed?** stood on top of College Hill, where the tower now stands. B Hall (or University Hall, built in 1890), a dormitory that housed a number of mechanical engineering students, was constructed with $17,000 donated by UT supporter Colonel Brackenridge. T. U. Taylor described the dorm as the most colorful building ever erected on the Forty Acres. (In B Hall, creativity flourished: it was the site of numerous elaborate pranks as well as the birthplace of the University’s anthem, “The Eyes of Texas”, written by John Lang Sinclair.) The Chemistry Building (1891), and the Women’s Building (a dormitory built in 1902) represented the rest of the early physical campus.

In 1904, the new engineering building, built exclusively to house the Department of Engineering, was completed (now known as the Dorothy Gebauer Building, it is the oldest building standing on campus today). Significantly, the new building provided a permanent home for engineering, freeing students from cramped quarters and the nomadic lifestyle of Old Main.
Equipped with classrooms, laboratories and drawing rooms, the new building boasted the best laboratory equipment in the Southwest. It housed a lab for steam engineering, a machine shop, provisions for gas and oil engines, friction brakes, transmission dynamometers, pyrometers, thermometers, calorimeters and engine indicators. At the end of the decade, the lab boasted a custom built Corliss cross compound slow speed engine. At this time, The University’s Steam Boiler Plant was also remodeled allowing experimental tests of the economy of boilers.\(^{16}\)

\[\text{The new Engineering Building, circa 1904.}\]

Mr. Fred Morris worked as a lab mechanic under M. S. Bowen who was Superintendent of Shops from 1903 until his retirement in 1931. Morris assumed the position of superintendent, and was a valuable source of information and advice for students.\(^{11}\) Most experiments in the machine shop and thermodynamics laboratories were installed and maintained by Mr. Morris. He ran laboratories for Professors Begeman and Short until he retired in 1948, repaired all equipment and built the new research facilities. For students, Morris functioned as part of the faculty since it was he who provided the practical experience so necessary to their education during this early period. (Interestingly, from the early years until the 1960’s, the shop’s efforts were much more heavily associated with supporting laboratory coursework than they are at the present.-per G. Vliet)

Morris assisted B. E. Kenyon and A. C. Scott, instructors in electrical engineering from 1904 to 1911. They were the first to teach courses related to mechanical engineering. The Austin Manual Training School (where is this? off campus? part of UT?) provided a location for shop practice until Hal C. Weaver succeeded in having the Power Plant was remodeled in 1913, largely due to the hard work of Hal C. Weaver,(does italicized sentence work? not sure how it was due to Hal Weaver) complete with wood shop (for pattern making), and a machine shop.\(^{12} \ 13\) By 1912, the courses, “Theory and Practice of the Design of Machines” and “Advanced Heat Engines Theory,” were offered.\(^{14}\)

\[\text{Coursework}\]

The UT Catalogue from 1910 describes the course of study in Mechanical Engineering as follows:

“The work in mechanical engineering is designed to instruct the student in the methods of engineering research and the methods commercially employed in designing, and to train him in the habit of applying the resources of science and experience in the attack and solution of engineering problems.

“The courses given by the School of Mechanical Engineering will deal especially with the subjects of shop work, machine design and construction, experimental engineering, refrigeration, industrial administration, etc.”\(^{13}\)

The discipline of mechanical engineering required the understanding and mastery of four basic components: drawing, machine design, thermodynamics and shop.

In 1910, the School of Drawing opened as part of Electrical Engineering, offering further coursework related to mechanical engineering.\(^{4}\) “Drawing” was strictly a two-dimensional method of communicating or illustrating ideas in fixed form to others. Tools of the trade included the T-Square, triangle, and compass, and for the mechanical engineer, drawing was an essential step in the planning process of any mechanism. Engineers had to depict all aspects of a machine, including springs, engines, pistons, cylinders, gears, wheels, etc. Drawings were done in plan view (as if observing the object from above) and in elevation view (as if observing from the side). Because three-dimensional objects were represented in two dimensions, all specifications and tolerances had to be explicitly delineated so that the object could be manufactured. Drawing remains a vital component of the training of mechanical engineers, and the field has made significant advancements over the past one hundred years.

Machine Design coupled the tangible skill of drawing with intangible creativity. In the early days of the development of mechanical engineering as a discipline, mechanical engineers dealt with basic forces which involved the properties of thermodynamics and mechanics. Industries were becoming more and more dependent on efficient and reliable methods of transportation. The steam engine was foremost on most engineering minds. Other machines of interest included wagons, ploughs, harvesting machines, pumps and engines - (steam and diesel) the forerunners of the earliest automobiles. The
first cars had practically no electricals or hydraulics; they were nearly one hundred percent mechanical.

The discipline of thermodynamics was also derived from electrical engineering. Electric motors were big and ran hot. Cooling mechanisms were needed to keep the machines from overheating. Steam drove most engines at that time. An understanding of thermal cycles naturally became part of the curriculum. Mechanical engineers had to understand how to produce energy from expanding steam. A fundamental illustration of thermodynamics is the work of steam on a piston.

The study of mechanical engineering became physical and “hands-on” in Shop. Students fabricated items such as nuts, bolts, and gears. Here students practiced what they had learned in drawing, machine design and thermodynamics.

Development of an Organized Mechanical Engineering Program

The degree requirements for Electrical Engineering at this time were largely the same as what would become the degree requirements for Mechanical Engineering (see Figure 1 on the following page). The fundamentals of English, mathematics, physics, mechanics and drawing were supplemented with shop work, strength of materials, hydraulics, and thermodynamics. Coursework for electrical and mechanical engineers was quite similar; the electrical engineering curriculum simply featured additional electrical engineering courses and a cement lab. The electric motor connected to a mechanical pump illustrates clearly the interdependence of electrical and mechanical engineering. (Eventually electric motors would be connected to compressors; this kind of hybridization between the two disciplines has driven advances in mechanical engineering.)

The Power Plant and Engineering Laboratories, home of Mechanical Engineering from 1913-1927

Hal C. Weaver, Designer of the University’s Power Plant which bears his name.
Figure 1: Curricula & Course Description for Electrical Engineering 1910 – 1911 & School of Drawing Course Descriptions

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The Ram’s Horn and “Mr. Ram:”

Several of the enduring symbols of the Mechanical Engineering department at UT were introduced in these early decades. The Ram’s Horn is one of these, tracing its inception to the T.U. Taylor’s approach to grading papers. At the University of Virginia (in 1881), Taylor had “found bound ‘Corks’ and ‘Curls’ as part of the student vocabulary…” ‘Corks’ meant bustees, and ‘Curls’ meant honor students.” (cite Milton Taylor Fam History) Taylor took this tradition with him to UT in 1888, and used the work “Curl” to indicate papers that were scored 100%. Eventually, a student interpreted the mark as a ram’s horn, and from that point on, the image became a part of the symbology of Mechanical Engineering. (paraphrased from 29 (ref from ch.2; J.M. Taylor Family History)

The Ram’s Horn grew to be close to Dean Taylor’s heart, and in fact took on physical form. Professor Leonard Kreisle remembers the legendary “Mr. Ram”:

“…Dean Taylor later obtained the head of a ram with both of its horns attached. He put red light bulbs in the sockets of each eye of the ram’s head, and attached the wires to an electrical switch beneath the center drawer of his desk in the Old Engineering Building. Upon occasion Dean Taylor would introduce the student to ‘Mr. Ram’, and ask the student questions. If Dean Taylor wanted the answer to be ‘yes’, he would operate the switch beneath his desk drawer once, causing the red eyes to blink once. If Dean Taylor wanted the answer to be ‘no’, he operated the switch twice, making the red eyes blink twice. ‘Mr. Ram’ and Dean Taylor’s desk were transferred to the new Engineering Building (later renamed Taylor Hall) in 1932 when the building was built.(note 30, ch. 2, Kreisle quote)

“In 1936, Dean Willis Raymond Woolrich succeeded Thomas Ulvan Taylor as Dean of Engineering, and former Dean Taylor was moved into a 2nd floor private office in the Architecture Building on the west campus. It was there that I met Dean Taylor when I entered The University of Texas in June, 1939, when I entered the School of Architecture. As a student assistant in Architecture, I had numerous discussions with Dean Taylor. In early 1941, Dean Taylor called me into his office, introduced me to ‘Mr. Ram’, and requested me to take ‘Mr. Ram’ and keep ‘Mr. Ram’ safe until which time I should present ‘Mr. Ram’ to the College of Engineering, provided it would be placed in a secure permanent position near Alexander Frederick Claire.” 30

On March 29, 2002, Dr. Leonard Kreisle presented Dean Taylor’s “Mr. Ram” to the UT College of Engineering. In its hermetically sealed plastic display case along with several other items belonging to Dean Taylor, “Mr. Ram” now resides atop a pedestal in the McKinney Engineering Library on the first floor of Cockrell Hall.

The Rivalry between the Engineering Students and the Law Students

In the 1900’s, a fierce rivalry grew between the engineering students and the law students which was to last for decades. Students of either discipline dared not walk across campus alone at night for fear of being ambushed, and elaborate pranks were commonplace. T. U. Taylor describes the nature if the rivalry at length in his autobiography, Fifty Years on Forty Acres. In Taylor’s book, W. A. Darter, BSEE 1907, details a violent skirmish in the great Engineering versus Law war, in which Freshmen Engineers beat the Junior Law students paddles and hurled them into a ditch, asserting their dominance in no uncertain terms. (cite 31, ch. 4) The engineering students and law students also stage elaborate pranks to fool their rivals. In a particularly lively incident around 1912, the Engineers launched a dummy dressed as a law student out of an upper-story window, causing quite a scene (Taylor, cite 27 ch4). This is only one example of many.
Engineer’s Loan Fund

Dean Taylor is still remembered for a generous spirit and concern for economically challenged students. Dean Taylor used the excess proceeds from the annual engineers’ ball in 1910 to establish the Engineer’s Loan Fund, and thus was able to provide assistance to needy students. (Funding was provided to students from every discipline, though Taylor favored engineers.) In his book, Fifty Years on Forty Acres, he writes of the struggling University student:

“The poor boy has always been here and always will be here. He works at waiting on the table, washing dishes, as janitor, carry paper routes, scrubbing floors, filling stations, and dozens of similar sweat-of-the-brow jobs. The University of Texas is not a rich man’s school. It will be a sad day in Texas when a Texas boy with good health, good character, a high school education, without family obligations, cannot work his way through the University founded by pioneers who tasted poverty to its bitter dregs. There has not been a session during my career that I have not loaned money out of my own pocket to deserving students and at the end of fifty years I can assert that I have not lost a copper cent in trusting to the honor of the engineering students.”

Rules of selecting the recipients of the loan funds varied over the years. Native Texans were given a strong preference for amounts up to the cost of tuition and fees. In general, foreign students were not eligible. Little importance was given to family wealth or political status. This fund was invested wisely and continued to grow with virtually all loans repaid, plus the addition of new gifts. This needs to be reworked. The Engineer’s Loan Fund continued to grow in the ensuing decades.

1913 – School of Mechanical Engineering

The School of Mechanical Engineering became a separate program in 1914 with Forrest E. Cardullo appointed the School’s first Chairman. Mr. Hal C. Weaver was the primary instructor. Until 1913, the School had still been a “work in progress” as indicated by a note regarding the 1913 curriculum stating that the junior, senior and fifth year coursework would have to be announced later.

For the 1915-1916 academic year, the curriculum was updated to include the junior and senior years as shown in Figure 2 on the following page. Note that the first two years remained the same as Electrical Engineering as shown in Figure 3 (also on the following page). In 1915-1916, Professor Cardullo went on leave. T. U. Taylor, while still serving as the Dean of the Department of Engineering, stepped in to serve as Mechanical Engineering’s second Chairman. In 1916-1917, instructor Hal C. Weaver took office as Chair, and a year later, Mr. Weaver was made an adjunct professor and officially named Chairman of the School (he was chair, then officially named one year later?). Weaver directed the School of Mechanical Engineering until his death in 1929. Weaver and Correll are credited with the renovation of the Power Plant which allowed laboratory work in mechanical engineering to be moved back to campus from the Austin Manual Training School. (this was stated earlier, pg 25. CHECK this ref--Correll was hired in 1918, how then could he have been credited with the renovation of the Power Plant, which on page 25 is listed as having occurred in 1913?* per Rylander, the dates are OK, C and W were “not faculty when they worked on the Power Plant”)

The new School of Mechanical Engineering was housed in the “Old” Power Plant Building where it would remain until 1927. The first floor housed the Heat Power Lab and the Refrigeration Lab. Classrooms and offices were located on the second floor. Gradually, drawing rooms and the Fuels and Lubricant Lab, as well as Steam and internal combustion engines were added.

The machine and pattern shops were located in a wooden WWI type structure (?) on the site of the present day Chemistry building (Welch Hall). A small vertical boiler steam engine unit was housed in a temporary structure northwest of the Power Plant building.
Figure 2: Arrangement of Courses Leading to the Degree of Bachelor of Science in Mechanical Engineering in Four Years (1915–1916)

The work of the first two years is the same as that in the Electrical Engineering Group.

### Junior Year

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Figure 3: Arrangement of Courses Leading to the Degree of Bachelor of Science in Electrical Engineering in Four Years (1915–1916)

### Freshman Year

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### Sophomore Year

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<td>Surveying (C.E. 136w)</td>
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<td>Mechanics (C.E. 126s)</td>
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</table>
The early days of Mechanical Engineering could be described as the Heat-Power era, not just in terms of thermal-fluids but for the school overall. (I don’t understand this sentence - Rylander says it’s OK) Teaching rather than research was the focus of the faculty, supplemented by their practical contributions to The University infrastructure. Two faculty members who were instrumental in this effort were Hal C. Weaver and Professor Carl J. Eckhardt. Weaver taught courses in the heat-power area, and, as noted previously, was instrumental in the design and renovation of the University’s power plant. Professor Carl Eckhardt came to The University as a student in 1920 and remained for most of his professional life.26

**Engine spark demo**

**Electric Motor Lab**

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The following courses are described in The University Course Schedule 1913-1914, p. 289-290.22

**201. F. Shop Work.**
Bench and machine work in wood and iron. Laboratory fee, $6.00.

**202. Shop Work.**
Prerequisite: Mechanical Engineering

**201. Molding and advanced pattern work.**
Advanced forge work.
Laboratory fee, $6.00.

**203. Heat Engines.**
A study of the general principles involved in the action of the various forms of heat engines. This is an elementary course dealing with the steam engine and its boiler plant and auxiliaries; the gas engine with its producer; the oil engine; the hot air engine; and the principal types of the steam turbine. The work is made as practical as possible by problems involving applications of the theory. General problems of a modern power plant are considered for the benefit of those who do not devote further time to the subject. Prerequisite: Applied mathematics 3; Physics 422; Civil Engineering 126s.

**204. Heat Engines Laboratory.**
A series of experiments involving the determination of the calorific values of coal, gas, and fuel oils; flue gas analysis; the commercial testing of boilers feed pumps; and the daily tests necessary to a knowledge of the efficiency of operation of power plants. Laboratory fee, $6.00. To be taken with Mechanical Engineering 203. Two afternoons each week, 2-5.

**205. Mechanism and Graphical Statics of Machines.**
A study of the laws of machines, including the effect of friction on machines; the shaping of gears, cams, levers and the proportioning of their parts; the design of portions of power transmission systems; and the transformation of energy by simple machines.
Prerequisite: Applied Mathematics 3.

In addition to the foregoing, courses will be offered in machine design, advanced thermodynamics, advanced heat engines, refrigeration, power plants, etc.
World War I and Mechanical Engineering

The UT College of Engineering’s fifth dean (1970-1986), Earnest F. Gloyne, in his book *Commitment to Excellence*, explains the University’s role in the war:

“The United States declared war against the Central Powers on April 6, 1917. It quickly became apparent that American military strength suffered from a critical lack of technically trained manpower. The national government turned to the universities for aid in rapidly producing the necessary cadre of scientists and engineers for industry, along with aviators, mechanics, and radio operators for combat. The University of Texas, now enjoying a measure of national recognition, joined a handful of institutions chosen as sites for military training. . . Techniques developed in the training facilities of the U.S. Army and Navy became important foundations for curriculum innovation after the war.” 43

The World War I effort received massive support from The University of Texas at Austin campus. About 500 students left The University for officer’s training camp and more than 2500 students enlisted as ordinary soldiers. Thirty-eight faculty resigned or requested leaves of absence to join the armed forces. 41

Below is a portion of a speech made by T. U. Taylor on April 17, 1917 at the Patriotic Rally of the students and faculty on The University Campus, which aptly characterizes the University’s wartime efforts:

“Fellow Americans and Fellow Texans: Not since the days of 1837 has Texas faced a situation so fraught with danger as this very hour. The situation must be met, and the University of Texas must take its stand this very day. The students at the Universities of Cornell, Illinois, Minnesota, Mississippi, Nebraska, and Wisconsin are all drilling for the coming conflict and the call to arms; and we have met today to show our colors and this hour will decide whether the University of Texas is for or against our President and our country’s flag.

“The University of Texas was established to perform a sacred duty; to train young men and women to be better men and better women that they might make and preserve a great state. It was designed by the fathers and founders to be a leader among the educational forces of the State and be a lighthouse on the shores of time. If the University fails to do its duty, what can we expect of the people “out yonder”? 

Early instruction

WWI barracks on UT Campus
Students and faculty who remained in school during the war were also involved. All male students at UT joined the Allied Powers, a massive cadet corps. In autumn of 1918, the Allied Powers cadets became part of the Student Army Training Corps. The campus itself showed the effects of war: rows of barracks were built along Speedway, and as Dean Gloyna recalls, “the campus soon looked more like a military base than a university.”

The leadership and direction of the School of Mechanical Engineering experienced some changes as it was shuffled to meet the needs of the country’s military effort in WWI. During the fall term of 1918-1919, Professor Weaver took a year’s leave in order to serve in the U.S. Army Signal Corps, and Professor Correll became acting chairman for both the Schools of Electrical and Mechanical Engineering. Mr. Walter Eyers, an instructor in the Electrical Engineering School, served as one of the principal teachers in the School of Mechanical Engineering while the other members were on war programs. The catalog (??what?) for 1919-1920 listed only the total courses; it was not divided into semesters and years.

But despite the disruptions of war, UT ME was gaining a sound footing as a program. In 1919, the first Bachelor of Science degrees in Mechanical Engineering were awarded to M. N. Dannenbaum, Julian Dormant and Carol Orr.
Alexander Frederick Claire: 
UT Engineers' Patron Saint

The legend of the patron saint of engineering students, Alexander Frederick Claire, was born in the spring of 1908. A group of engineering students, plotting an April Fool's day prank, found the wooden statue of a “little fat bellied Dutchman with right hand raised, holding aloft a stein of beer” discarded under a porch near a favorite downtown gathering place, Jacoby’s Garden. (cite 34, ch 4) The statue was introduced to the engineering student body with a grand parade, and Joe H. Gill (BSME??) assigned him a mythical ancestry, traceable to the days of the ancient pyramids of Egypt and the Hanging Gardens of Babylon. (cite 34, ch 4, from Taylor).

Professor Leonard Kreisle wrote of the early days of Alec and his involvement with the student body, noting that Dean Taylor “…personally took over the storage, protection, and publicity of ‘Alec.’” (Kreisle quote, cit 35). Though the statue was often secreted away for protection, he made appearances at important engineering events, including the Annual Dinner and Ball of the UT engineers. (Kreisle cite, 35)

Tales of Alec's misadventures on campus and off were rampant, fueling the already heated engineer-law rivalry. From 1910 to 1920, Alec was captured and recaptured numerous times by each opposing department. In 1915, the A.F.C. club was formed to protect and defend the treasured statue.(cite 33, from Taylor)

T. U. Taylor pictured with Alec on the steps of Taylor Hall, circa 1936.
The nature of Alec-related hijinx escalated when the battle entered the courtroom. In order to prove their legal right to him, law students sought out the widow of the original owner of the statue, paid for him and obtained a bill of sale. In 1917, the lawyers reached new heights of creativity when they took Alec to a Justice of the Peace Court, had him declared a vagrant, and he was forced to spend the night in the city jail. In order to clear Alec’s good name, Dean Taylor went to Governor Ferguson and requested that the Governor give Alec a full and unconditional pardon over the seal and signature of the Governor. The text of the Proclamation is found below.

In 1917, Dean Taylor sawed off Alec’s legs and cut them into 3 x 2-inch wooden strips. He branded each one ‘CELA-FOTRAP’ (which is ‘PART OF ALEC’ spelled backwards). (cite Kreisle, n35) He sent the pieces to the UT engineers in the American expeditionary forces overseas, and commissioned a noted Austin woodcarver to recreate Alec’s missing limbs. (Kriesle, n 35)

Today, the illustrious “patron saint of all Engineers” at The University of Texas stands proudly in the McKinney Engineering Library in E.J. Cockrell Hall.

---

**PROCLAMATION**

**BY THE**

Governor of the State of Texas

**TO ALL TO WHOM THESE PRESENTS SHALL COME:**

WHEREAS, It has been made known to me that on the blank day of blankety-blank, in the bone dry year of Texas,

ALEXANDER FREDERICK CLAIRE,
the Patron Saint of all the Engineers, who did design the Solar System; who hung the North Star as a guide for all travelers; who bridged the River Styx; and who, latterly, has encompassed the River of Doubt; who built a complete water system for Hades and installed the latest patented refrigerating plant for his Satanic Majesty; who is the creator of all great and good works, was, in the evening of his life, surreptitiously seized upon by a band of “out-law-yers”, dragged into the Justice Court of Travis County, and contrary to all law, equity, justice and present, falsely accused of insulting and exotic things; and by one not familiar with their nefarious and ulterior purposes, was convicted, fined and forced to spend a night in the custody of an unjust law, in company with pickpockets, cut-throats, murderers, gamblers and vagabonds; and,

WHEREAS, Without investigation, I am led to believe by Dr. T. U. Taylor, Dean of the Engineering Department of the University of Texas, and Julian Montgomery, M. C. Welborn, F. E. Rightor, H. W. Nolen, R. S. Thaxton, W. L. Eyres, Satellites of the aforesaid Grand Luminary Taylor, who have petitioned me on his behalf, that this fellow CLAIRE, after so much ado about nothing, is a sainted personage (or ought to be one) and, therefore, like the King he is, can do no wrong.

Now, therefore, I, James E. Ferguson, Governor of Texas, do hereby grant a full and absolute pardon to the said ALEXANDER FREDERICK CLAIRE, with the admonition that he go out into the world a free man, entitled to all the privileges, rights and benefits of a “non est” citizen of this State; that he sin no more, and better still, that he be sure not to wander alone after sundown lest he fall again into the hands of the Philistines and be “rough-housed” to a King’s taste by the aforesaid band of “out-law-yers”.

In Testimony Whereof, I have hereunto signed my name and caused the Seal of State to be hereon impressed, at the City of Austin, this 13 Hoo-doo day of February, A.D. 1917.

[signed] Judge James E. Ferguson
Governor of Texas
The rivalry between the laws and the engineers thrived into the 1930s, and possession of Alec continued to be the top prize. In one unfortunate incident, Alec was dismembered by law students; a new statue in his exact likeness was commissioned by Dean Taylor in 1927. Students from this period, like James W. Winfrey, BSME ’29, remembered Alec-related folklore fondly. Winfrey recalled that Alec was eventually packed away safely in a “coffin-like” box, which was labeled “Sureveying Instruments” (this is from Gloyna) and shipped to unspecified locales for his protection, always under the supervision of Dean Taylor. (cite 40ch 4) (very long story by Winfrey paraphrased and deleted) Alec was stowed away by a number of ME students and alums during this period. He made a public appearance in 1936, but would not be seen again for sixteen years. (cite ch 5)

Picture of Alec contributed by Russell D. Hicks, BSME ’34. The picture is circa 1925 when he is in possession of the lawyers.
Chapter 3:
1920 – 1941

not sure about this picture--maybe make smaller and incorporate into text?
Chapter 3: 1920–1941

Population Statistics

1920 Census
U.S. ... 106 million
Texas ... 4,663,228
Austin ... 34,876
UT...???
ME...???

Taylor Hall, in 1927 opens, in 1933 is complete.

At the start of the 1920’s the nation enjoyed great economic prosperity. World War I had concluded and the country got back to business. The stock market was booming, the new music was jazz, and notions of morality were changing. Women were cutting their hair, wearing short skirts and dancing the “Charleston”. Americans were reading F. Scott Fitzgerald, Sinclair Lewis and Ernest Hemingway and Babe Ruth was the country’s hero. It was as though a breath of fresh air had washed across the country after the troubled days of the war. Of enormous significance to the nation, 1920 brought the passage of the Nineteenth Amendment, granting women the right to vote.6 Prosperity abounded in Austin as well, and The University of Texas at Austin became the largest university in the Southwest.8

In 1929, the golden days of the roaring twenties came to an abrupt end when the stock market crashed. The Great Depression began and fortunes were lost. By 1932, 13.7 million people were unemployed.5 Breadlines, soup kitchens, Hoovervilles and fireside chats became the norm. Millions of Americans were on the move, traveling across the country in desperation to find work. Although for many, family needs precluded educational opportunities, there was much incentive for young people to go to school in the hope of improving chances for gainful employment.

The stock market collapse in 1929 did not decrease enrollment or delay growth for the College of Engineering.6 With jobs hard to find, many students chose to pursue graduate studies. In 1931, the entire engineering student body was just over 1000. (this seems large, check it)

From a School to a Department

After World War I, Mechanical Engineering underwent significant changes. The schools in the Department of Engineering were reorganized.10 In the 1920-21 academic year, the schools were elevated to department status and the Department of Engineering became a College.

The newly formed department was ready for the changes ahead, poised for significant growth with increased equipment and faculty hires. During the war, U.S. government-owned equipment had been loaned to the School of Mechanical Engineering for use as teaching aids for the war programs. After the war, Mechanical Engineering was able to keep much of this equipment, including aircraft and truck engines, as well as a large quantity of machine tools. Also beneficial to the department were the wartime experiences of its chairman, Hal C. Weaver. As part of the war effort, Weaver had taught courses in the School of Military Aeronautics and Automobile Mechanics. He was highly sought after for his consulting services after the war. Weaver “incorporated the material he developed during the war and in private industry into the curriculum of the School of Mechanical Engineering.” (who is this quoting?)11
Several notable faculty members joined the department during its early years. Alex Vallance was hired as an instructor in 1921. In 1924, instructor Burnett F. Treat was hired followed in 1926 by Carl J. Eckhardt, Jr. and Byron E. Short. Other new instructors included Joe L. Bruns, and M. M. Heller. M.S. Bowen continued on as Superintendent of Shops until 1931, when Fred Morris took on the position. When Chairman Weaver passed away in 1929, Alex Vallance succeeded him as 6th Chairman of Mechanical Engineering.

The Department benefited from continued construction on campus as well. In 1927, the Department of Mechanical Engineering moved from cramped quarters in the “Old Power Plant” to the then partially constructed Taylor Hall, the first building constructed off of the original forty acres. In 1928, the second unit of Taylor Hall was completed and was designated for Mechanical Engineering shops and an Electrical Engineering laboratory. Gloyna describes the equipment boom in his book, Commitment to Excellence: “Equipment added at this time was a small G.E. turbine-D.C. generator set to replace an old DeLaval unit which had been in the Electrical Engineering Laboratory but never successfully used after transfer to the old Power Plant; a Ridgeway engine-D.C. generator set; a G.E. four-cylinder gasoline engine-D.C. generator set; a three-stage Goulds centrifugal pump, complete with testing nozzles; and a Nash-Hytor “wet” vacuum-pump test unit. The machine and pattern shops and the foundry were moved into the new building for the fall semester of 1929-1930.”

I don’t know what the source on all the barograph stuff is— it is not Kreisle quotes, though. The Department acquired another important teaching tool in 1921, a barograph. Initially obtained by UT between 1905 and the early teens, the barograph was moved to the Engineering building (the Old Power Plant) when Austin’s Weather Bureau was moved out of The University. It is now installed in the Engineering Teaching Center.

In 1927, coursework for the sophomore, junior and senior years for ME and EE students changed appreciably. Notably, the Hydraulics Laboratory, Elements of Mechanical Engineering and Elements of Electrical Engineering were eliminated and Pumping Machinery and Industrial Management added. Forgoing the three-term year for the new two-semester schedule required a complete overhaul of course content. This new semester schedule is shown in Figure 5 on the following pages.

A new five-year degree plan for Mechanical Engineering leading to the Bachelor of Science degree in Mechanical and Industrial Engineering was introduced in 1929, reflecting an expansion of the standard four-year, 132 semester-hour program.

The School of Drawing, from 1911-1920 emerged from Electrical Engineering and Architectural Engineering and became an independent department. The Department of Drawing existed from 1921-1968.

As the curriculum became formalized, the range of degrees and courses in the Mechanical Engineering Department grew. The first formal coursework in Aeronautical Engineering was introduced at the University in 1926-1927, under the leadership of Professor Alex Vallance. Courses in each of the areas of aerodynamics, structural analysis, mechanics of flight, and aircraft engines were made available as part of an optional program within the department. This work led to a Bachelor of Science degree in aeronautical engineering. (In 1927, the degree plan was based upon the same first three years of Mechanical Engineering with only the fourth year offering special courses in the science of aeronautics.)

Curriculum

By 1920, the Mechanical Engineering undergraduate degree plan had been formalized into a program. The College of Engineering required the same curricula of all freshman students studying mechanical, architectural, chemical, civil and electrical engineering with a few minor adaptations The degree program, still divided into fall, winter and spring terms, is shown in Figures 4 and 4a. The College of Engineering did not award masters degrees until 1922, when it granted four. Throughout the twenties, the College continued its efforts to develop advanced degree programs.

Francis P. Gerling, MSME ’22, the first student to receive a Masters Degree from UT Mechanical Engineering. Photo courtesy of the 1922 Cactus Yearbook.
Professor Howard E. Degler took over the area (how to say this?) of the program related to aircraft engines in 1930. Only Professors Degler and Vallance taught courses in Aeronautical Engineering until 1938 when Venton Doughtie and Harry Kent joined the department and began to teach in this field. As the field continued to grow, Professor M. J. Thompson was brought to UT in 1941 as a professor of Aeronautical Engineering. In 1944, Aeronautical Engineering was established as a separate department.

Beginning in the mid-1920's and extending through the mid-1960's, ME research and instruction in thermal fluids began to focus on Process Heat Transfer. This transition was largely due to the efforts of Professor Byron E. Short. Much of his life’s work dealt with Process Heat Transfer, and its focus in the 1920's was primarily on power generation problems, namely those involving boiling and condensation. Challenges addressed by the engineers of the 1920's involved work on power generation equipment. These early engineers addressed problems associated with freezing and drying processes and refrigerants. The exceptional work of two faculty members active during this period, Professor Short and College of Engineering Dean W. R. Woolrich who was hired in 1936, greatly advanced the development of Process Heat Transfer training in the Department of Mechanical Engineering.¹⁶

moved B. Short section to “spotlight”
### Figure 4A: ME Curricula 1920–1921; Arrangement of Courses Leading to the Degree of Bachelor of Science in Mechanical Engineering in Four Years

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<th>Hours per Week</th>
<th>Fall Term</th>
<th>Hours per Week</th>
<th>Winter Term</th>
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### Freshman Year (Uniform)

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### Arrangement of Courses Leading to the Degree of Bachelor of Science in Mechanical Engineering in Four Years

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<td>Physics 12</td>
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<td>Electrical Engineering 35</td>
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<td>Electrical Engineering Laboratory (E.E. 436)</td>
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<td>Electrical Engineering 35</td>
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**Figure 6**: ME Curricula 1929–1930; Arrangement of Courses by Years

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### Senior Year

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<td>Pumping Machinery (M.E. 367s)</td>
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<td>Surveying &amp; Laboratory (C.E. 224s)</td>
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Engineering Power Shows

In 1924, the first Engineering Power Show was held in the Engineering laboratories at UT. The annual event would continue each Spring until 1970, and prove to be an exciting development for the ME Department. Initially, only the Mechanical Engineering and the Electrical Engineering Departments participated since they were the only departments represented in the Engineering Shops with sawtooth roofs. (what does this mean?) (and then what other departments became involved?) **Rylander says roof type is OK...

In 1924, the Mechanical Engineering exhibits consisted of the Corliss steam engine with its large flywheel, the Tips hot-plate diesel engine, the four-cylinder steam engine, the foundry with an iron Bessemer converter, and iron, brass, and aluminum casting.

The Electrical Engineering exhibits consisted of a telephone, telegraph, and radio exhibits, DC driven alternators, carbon and tungsten filament electric light bulbs, and carbon arc lights.

At first, only several hundred spectators attended the Engineering Power Shows. Later on, thousands attended when Taylor Hall, the Chemical Engineering Building, and the Petroleum Engineering Building had been added to the Engineering complex, and all Engineering departments participated in the Engineering Power Show. Eventually, the Department of Physics, Chemistry, and Biology participated in the All University Exposition and Power Show (as its name had been revised). Up to approximately 15,000 spectators attended. Prizes were given to those departmental exhibits deemed best by a committee of judges. Usually, the Mechanical Engineering Department or the Electrical Engineering Department won the top prize. 36 (citation for whole page should be L. Kreisle, 2002, I assume written and sent in to the dept.)
UT Traditions

With the mid-twenties came the end of an era. Pig (1914-1923), a tan and white Pit Bull mix, reigned as The University’s illustrious mascot until 1923. He had the run of campus, attended classes with students, and “participated in morning ‘fall outs’ with military aeronautics cadets during World War I.” (cite 39, ch 4)

FIND source (public affairs office online) Tragically, Pig was hit by a Model T in 1923 at the corner of 24th and Guadalupe streets. Pig was honored with an elaborate funeral service with pallbearers carrying his small coffin as Taps was played. He was mourned by hundreds, and buried on campus. (cite 39) “After the funeral, a marker was left to remind the students of their first mascot. His epitaph: ‘Pig’s Dead … Dog Gone.’”

where is this quote from?

Dean Taylor summarized The University’s beloved mascot in a eulogy delivered at Pig’s memorial service:

“...A landmark has passed away. For nine years Pig has been a feature of the University community and a factor in University activities...

“In that haven to which he has gone there is a rainbow spanning the sky reaching almost to zenith, composed not of the prismatic colors but of two colors- Orange and White - and on that rainbow are the words, ‘Always loyal to the team, and win or lose, the team.’ The Orange in that rainbow will recall to him the golden opinions that he has left behind in the hearts of thousands of students and ex-students of the University, and the White in that rainbow will testify to the fact that for nine long years on our campus his record of loyalty was spotless white.”
Population Statistics (for the 1930s)

1930 Census
U.S. ... 123.2 million
Texas ... 5,824,715
Austin ... 53,120

Student ID courtesy of
John M. Scott, BSME '40
Building Boom on Campus

The University of Texas at Austin was buffered from the economic collapse brought on by the Great Depression thanks to the West Texas oil fields. The University owned and the Permanent Fund. The University deposited all oil revenues into the Permanent Fund, which was then used as principal for its conservative investments. By 1928, the rich West Texas oil fields were contributing $250,000 per month to the Permanent Fund. Interest generated was placed in the Available Fund, which Regents were permitted to use to support campus construction, so desperately needed in this phase of the evolution of The University. In the 1930s, classes were still being held in shacks of the World War I era. It was clear that the accrual of investment income from the Permanent Fund would take considerable time to yield sufficient money for the extensive construction that was needed. In 1927, the Permanent Fund totaled only 7 million dollars.

In 1931, the Board of Regents elected to borrow 4 million dollars against the Permanent Fund to construct the needed buildings. The building boom that commenced benefited UT faculty and students, and provided Austinites with much needed jobs. The University was able to capitalize on the depressed economy, making their construction dollars stretch further. Additional dormitories were constructed using loans from the Public Works Administration. By 1940, The University had been physically transformed: nineteen new buildings had been erected in nine years. Rows of unpainted WWI shacks were replaced by professional landscaping and modern buildings built in the Spanish Colonial Revival style. Of particular significance to the ME Department, in 1933, the second and third units of T. U. Taylor Hall were complete. The building housed the mechanical engineering shops and the electrical engineering laboratory. The third unit consisted of the east and west wings and the four-story central section.

Although the building program was thriving, The University’s operating budget, not tied to the Permanent Fund but rather to State budgets, decreased during the Depression. Spending had to be cut. All state employees, including University employees, experienced salary cuts of 25 percent or more. Money came into the state treasury so slowly that salaries were paid with warrants, promises to pay when funds became available. (This was sometimes three or four months later; because most needed the money quickly they had to “cash” their warrants at the bank at about a 5 percent discount.) Ten years passed before salaries began to rise to their pre-Depression levels.
### 1930’s ME Curriculum

#### Figure 7: Arrangement of Courses by Years (1937–38)

#### Freshman Year

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The Department in the 1930’s

With the 1930’s came many changes for the Department of Mechanical Engineering. Six new faculty were hired: Howard E. Degler (1930) in Thermodynamics and as the Department’s Chairman, Myron L. Begeman (1932) in Manufacturing and as Superintendent of Shops, Willis R. Woolrich (1936) in Thermodynamics and as Dean of Engineering, Leonard R. Benson (1937) in Metallurgy, Harry L. Kent (1938) in Thermodynamics, and Rinaldo A. Bacon (1939). Mary Sue Parks was Executive Assistant to Chairman Degler. The Mechanical Engineering curriculum (Figure 7) remained static with only slight changes through 1937. In 1938, the total required hours increased from 132 to 138 and then again to 140 hours in 1940. T. U. Taylor retired as Dean of the College of Engineering in 1936, in adherence with University policy.

In the 1930s, the average mechanical engineering class had about 32 students annually. In the classroom, Professor to student ratio was roughly one to 15 - 20, though in required courses there were sometimes as many as 30 students. Chemistry and Physics courses (Freshman and Sophomore years), were taught in a large auditorium of 150 to 200 students. Taylor Hall was home to most engineering classes in the 1930’s. Alumni name shop classes, forge, foundry, chemistry and physics labs, solid geometry and drawing classes among their favorite courses.

The Career of T. U. Taylor

After an illustrious and lengthy career with The University of Texas, T. U. Taylor retired, in compliance with a the mandatory retirement age in 1936. Among his many accomplishments, Taylor oversaw the increase in engineering enrollment from 19 in 1888 to 1443 in 1936, and the growth of the engineering budget from $2042 in 1889 to $117,830 in 1936. Taylor supervised the establishment of the Chemical, Electrical, Mechanical, Mining, and Architectural Engineering programs. During the course of his career at UT, Taylor awarded more than 1700 diplomas in 19 degree programs. In 1937, T.U. Taylor became the first Registered Engineer in the State of Texas. His reputation of dedication to the Mechanical Engineering Department endured, and endures to this day.

Memories of Dean T. U. Taylor

“Dean Taylor was a charismatic teacher, and a person who loved his job and enjoyed teaching. And the students loved him and his way of teaching. He was bombastic, over-powering, dominant, outspoken and very positive. But there was a certain understanding about him, despite his brashness and hard shell which I feel showed in his final grades which were usually more generous than expected. I believe attitude was extremely important to him. If you showed you were really trying, you made it.”

- R.D. Hicks, BSME ’34

“Dean Taylor was very supportive of ‘His Engineers’. He was proud of the fact he had never lost a dime on loans to engineering students.”

- John M. Scott, BSME ’40

“He was a character! I have one of his ‘keys’ shaped like a ‘P’ for perfect - given when making 100 on a test. He was very open and was well liked by the students.”

- Gerald Gustafson, BSME ’40

“I earned my Ramshorn from him during the summer, I worked for him painting his rent houses and doing maintenance. It was a great experience.

“He was a man of the highest character, his values demanded the best a student could produce, honesty, dedication, no compromise with quality. He was a grand old man.”

- Bill Lueddecke, BSME ’40
Dean Willis R. Woolrich

Willis R. Woolrich succeeded T.U. Taylor as Dean in 1936. Woolrich began his tenure as Dean with a positive outlook for the future of the Department and The University. As the nation recovered from the Depression, Woolrich observed that though nationwide spending was necessarily limited, the impact “...was not felt in the Southwest like it was in the East and although we had to cut corners on many items, it was only for a few years. In many respects, the worst was over.”

One of Woolrich’s directives as dean was to transform the College from purely a teaching entity to an institution that also emphasized research, thus raising the College and The University to a more prestigious level. He was aided in this effort by Byron Short.28

Woolrich researched and taught in the process heat transfer area. In addition to his commitments as Dean, Woolrich fostered an active research program related to food preservation and refrigeration. In his Odyssey of a Professional Engineer, published in 1971, Woolrich observed that with the exception of Dr. Short’s work, most departments were “very short of research programs.”

ME students remembered the Dean for teaching style infused with practical knowledge. John M. Scott, BSME ’40, recalls stringent assignments in Dean Woolrich’s class:

“My 1938-39 ME roommates took Dean Woolrich’s “Refrigeration and Air Conditioning” as an elective course. My roommates recommended I take the course to have a course under the Dean. They said he made the course interesting by interweaving his lectures with his experiences in refrigeration and air-conditioning. They said Dean Woolrich assigned little homework to their class of about 30 students. When I took the course the next year, it was all my roommates had said it would be except there were only 6 students in our class and apparently Dean Woolrich based homework assignments on the time he had to grade the homework. With only 6 students he could assign 5 times as much homework than with 30 students. I returned to Austin the day after Christmas to finish a report assigned by Dean Woolrich.”

Bill Luedcke, BSME ’40, who was a close friend of Woolrich’s son, Ray, states “...I was impressed by his dedication to the development of the College of Engineering.” And James Malone, BSME ’40 recalls, that “Willis R. Woolrich looked like one expected an English Oxbridge Professor to look like. He was tall and stately with a well-controlled mustache. His home was on my morning Austin American paper route in North Austin. When I collected from him one day he said to me, I’m so glad to see one of my good students, because the only ones I see in the Dean’s office are the bad ones.”

1930’s Generator
Class Memories:

"...I remember in a forge and foundry class (in the new building), that our instructor was a short fellow with coveralls, and weighing about 250 pounds. He could grab a white hot piece of iron out of the forge with his tongs, and while standing on one foot and operating a hydraulic hammer, flipping the hot iron from side to side, beat out the most beautiful chisel you ever saw. To me, that was a great feat..." 72

- R. D. Hicks, BSME '34

"In my freshman year I took a Civil Engineering course which included surveying. We surveyed the engineering campus and always found that the elevation of our starting point had moved up or down depending on our errors in reading the instrument."

- Bill Luedecke, BSME '40

The ECPD

The Engineering Council for Professional Development or ECPD was the first organization established with the purpose of reviewing engineering curricula in the United States. It was created in 1933 by the American Society of Civil Engineers, the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, the American Institute of Chemical Engineers, the American Society of Mining and Metallurgical Engineers and the Society for the Promotion of Engineering Education. An ECPD approval was an assurance that an institution was meeting minimum standards of engineering education.40 The College of Engineering first invited the ECPD to review its curricula in 1937. All of the five existing programs including Mechanical Engineering were approved at that time but areas of improvement were indicated. From that point on the Office of the Dean endeavored to follow the guidelines suggested by the ECPD in order to improve engineering education at the University of Texas.41 In the thirties, the suggestion offered by the ECPD was “that curriculum development would be a group effort requiring new faculty and that academic inbreeding would be combated by recruitment from across the United States.” In order to provide the courses needed to meet the standards of the ECPD and stay abreast of the latest engineering developments across the United States, summer school courses had to be added. By 1939 it took four years and a summer to finish each degree program.42

Howard E. Degler

UT Mechanical Engineering Chairman (1930-1945).

Photo courtesy of UT ME Alumni Office.

Chairman Howard E. Degler

The College of Engineering recruited Howard Degler from the University of Illinois to assume the duties of Chairman in 1930 (Degler held the post until 1945, longer than any other Chair to date.)34 Degler’s area of expertise was Thermodynamics.35 Students, like John Scott (BSME '40) remember his supportive character:

“As Chairman of the ME Department, Professor Degler was an effective/efficient administrator...

“One day Professor Degler called me to his office when visiting companies started interviewing ME seniors. Degler told me to go to the interview that afternoon and said ‘you do not want the job they are offering.’ - The experience of being interviewed for positions I did not want helped me to be at ease in interviews for positions which did interest me. Professor Degler was a good friend. After WWII, I received a handwritten Christmas letter from Professor Degler every year until his death. His wife, Mary, carried on the tradition after his death.” 39

As Chairman, he was a level-handed administrator. James L. Malone (BSME '40) was involved in a lawsuit against The University (over a Student Union mandatory fee), and remembers H.E. Degler defending his right to maintain his job as a lab assistant.41

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1931 – Pi Tau Sigma Granted Texas Kappa Charter

On April 18, 1931, the Kappa Chapter of the Pi Tau Sigma mechanical engineering honor society was established at The University of Texas due largely to the efforts of Chairman Degler. Initially, the Texas Chapter included both Mechanical Engineering students and Aeronautical Engineering students. Eligibility was determined by academic performance: students in the top 15 percent to 20 percent of their class were eligible for election to membership. (Aeronautical Engineering students would adopt a separate scholastic honor society later.)

(from Kreisle) The first officers of the new Texas Kappa chapter were Richard Justiss (President), Robert Neal (Vice-President), John Boldrick (Secretary) and Clarence Griffith (Corr. Secretary). Professor Alex Vallance served as the faculty advisor. Dean Taylor welcomed the national president, Professor (full name?) Martinez, and the new members at the inaugural banquet at the Driskill Hotel in downtown Austin. Ray Woolrich, son of Willis Woolrich served as President in the spring of 1939. The ME faculty was active in the new Chapter; early advisors included Carl Eckhardt, Howard Degler, Byron Short, M. M. Heller, Joe Bruns, Myron Beegeman, Harry Kent, and Venton L. Doughtie. Each semester a picnic was held at an advisor’s home, for group members and initiates (Kreisle, cite 46, CH 5) The national convention was hosted by the Kappa Chapter for the Texas Centennial in November 1936. Chairman Howard Degler served as National President of Pi Tau Sigma around 1943.

Professor Leonard Kreisle recalls (does he recall, or is he just relating this?) the activities of Pi Tau Sigma:

“One of the initiation duties of initiates of Pi Tau Sigma was to make a two foot long wooden wrench, sanded to as smooth a surface as possible, and covered with several coats of bright red lacquer, which was hand compounded with a fine pumice powder and oil until the red finish of these wrenches was extremely polished. A contest was held among each set of initiates to determine who had the best overall wrench.

“All initiates were required to wear their initiation wrenches about their necks on a string or small rope as they went around to gather the signatures of the faculty and students who were already members of Pi Tau Sigma.” 46 (cite Ch 5, Kreisle 2002)
Memories of Myron Begeman

“Professor Begeman was my favorite professor. I was interested in engineering management - he was easy to talk to, and encouraged young engineers.” 61

- Bill Lueddecke, BSME ’40

The Depression

“Food was not served [at Tejas] at that time. I usually ate over at Seiks Restaurant (called the Greasy Spoon by some) and the cost there was about 25 cents per meal. I know I received $25 a month from home, and…I think $17.50 a month was what I paid Tejas. But living was cheap by almost any standard, mainly because nobody had any money. The summer of 1931 was the bottom of The Depression. As I recall, the banks had closed, and Franklin Roosevelt was just beginning to reorganize the Government. By graduation in 1934, prospects were looking up just a bit, and there was at least hope in the air. I don’t remember all of this being a gloomy time, but rather a sort of up-beat time with people feeling pretty good and saying with a smile ‘It’s tough, but we are all in this together’. I think the mood was different where there was great responsibility on the individual but not at school.” 82

- R.D. Hicks, BSME ’34

Chairman Myron Begeman. Photo courtesy of the Center for American History, UT-Austin

Gulf Sulfur Company “Open Air” Lunch circa 1936. Photo courtesy of UT ME Alumni Office.
Byron Short with his 72 inch slide rule. Photo courtesy of his wife, Mary Jo Short.

Tools of the Trade: The Slide Rule

The slide rule was an essential tool used by engineers and scientists for technical computations. Slide rules became a symbol of engineering, as many students wore one strapped to their belts. No ME professor was as synonymous with the tool as Byron Short. He consistently impressed students with his six foot slide rule, compounded the bewilderment of students as they first encountered such mysteries as enthalpy and entropy as properties of fluids. Dr. Ron Panton continues to demonstrate the use of a large slide rule at this printing [2003] to add excitement to his fluid dynamics classes.65 (in other places in the text, it talks about is 24-inch slide rule; were there many?)
The Life of an ME in the 1920s and 1930s

During the 1930's, tuition at UT ranged from $15 per semester to $25. Other fees included the library deposit of about $10, a blanket tax of about $10.50 which included admission to all sporting events, one Curtain Club play, the Daily Texan, the Texas Ranger magazine and lab fees ranging from $4 to $6. Prices for books ranged between $1 and $6. All engineers also had to have a slide rule, at a cost of about $10.67.

UT Mechanical Engineering students divided their time between their studies, jobs and social life. In their attire, students strove for a neat, clean, conservative appearance. When they were able to take a break from their studies, students enjoyed picture shows, football games, dances and club activities. Favorite places to go in Austin were the ice cream store on Congress and 9th, “The Tower”, Avalon, Hudson’s, Nighthawk, Dillingham’s Pasture, Varsity Theater, Lookes Cafe, El Patio, the Tavern, Hamilton’s Hole for picnics and Anderson’s Mill site for potato bakes. The Texas Union and dances at the gym were also favorites. Popular music of the time included Glenn Miller, Oran Tucker, Russ Morgan, Paul Whitman, Jimmy Weiler, Guy Lombardo and Artie Shaw.73

A typical weekday date consisted of coffee/coke just before the dormitory or sorority house closed. Dancing and picnicking were also popular pasttimes.74

Social organizations were an important part of campus life. Popular organizations included Pi Tau Sigma and the Tejas Club. R. D. Hicks, BSME ‘34, remembers his involvement in the Tejas Club: “A Tejas member, and their goals and activities in the 30’s were just the same as now. Its members consisted of outstanding (I don’t know how I got there) engineers of all varieties, lawyers, pre-meds, art and science majors, business majors and every walk of University life. This mixture of students and my association with them, will always stand out as a great plus in my university education.” 75

(cut out large portion of Hicks’s reminiscence...re: alcohol)

It was common for mechanical engineering students to seek jobs to provide some small income, especially in the summer between long sessions. R.D. Hicks, BSME ‘34, kept busy during the summers throughout his schooling. He drove a delivery truck, ran an elevator in the State Capitol at night during a special session of the Legislature, and also in a bank building in Waco, and worked at a filling station in Corpus Christi. Hicks’ highest paying job was at the Capitol for $20 a week.79 John Scott, BSME ’40, also held a number of summer jobs during his tenure at UT. These included preparing mill products for shipment, grading papers in the Department, and working on a surveying crew for a Rural Electrification Contractor.80

Photo courtesy of Lisa Schooley in the UT College of Engineering Development Office; Photo from Photographic Department, Lufkin Foundry and Machine Co. circa 1939.
A Portrait of a 1930’s Student
Bill Luedcke, BSME ‘40

“I entered The University of Texas Engineering School at mid-term, 1936. I had a 1933 Model Ford V-8 Sport Coupe with a rumble seat that cost me $250.

“During the summer of 1936, I went to Dallas and took in the Texas Centennial. I pledged Chi Phi social fraternity and was initiated into the brotherhood. My wife, Mary Ann, won the title of Miss Highland Park in Dallas.

“I became a student member of the ‘American Society of Mechanical Engineers’. I was elected to the Freshman Engineering Honor Society (Ramshorn) and Dean T. U. Taylor presented the Certificate and lapel pin to me personally...

“Once Fred Morse and I drove to New Mexico and Colorado. Of note - Breakfast cost between 10 and 20 cents, my car got 17 to 20 miles per gallon and gasoline was 24 cents per gallon.

“In the fall of 1939, I worked part time as an engineering draftsman for the Lower Colorado River Authority on Mansfield and Austin Dams projects. I designed electrical switching facilities and other associated structures.

“My most vivid memory was getting married in my senior year. Also, my pride in qualifying for the Ramshorn. It seemed to me that too much time was devoted to steam and steam technology in general. I felt that I received a good engineering education based on the technology available at the time. As I look back, I did not realize how fortunate I was to be in engineering at that particular time of history.”

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John M. Scott, BSME ‘40, compiled the following list of social venues that he enjoyed as a student in the 1930’s.

**Waco Club** - met for discussions.
**ASME (Student Chapter)** - meetings with guest speakers and movies.
**University Aeronautical Society** - guest speakers, movies. We built a large gasoline engine powered model airplane in the attic of the Engineering Building (Now Taylor Hall).
**Sons of Alec** - picnics. (Business meetings were adjourned and continued at Scholtz’s Beer Garden.)
**Pi Tau Sigma** - Smoker, Pledge Dance in Heat Power Lab. Hay Ride, Barn Dance, Picnic at Landa Park in New Braunfels, dinner meetings with dates.
**Honorary Engineering Fraternities Formal Dance. Engineers Student Council** - organized the honorary engineering fraternities formal dance, selected/elected the editor for *The Journal of Engineering and Architecture, Rams Horn Association* and held discussion meetings.

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**Student Life**

“My cost of living averaged $550 a year - that included all University fees, room, board, books, slide rule, drafting set, and a few corsages. I could get a plate lunch consisting of a thin slice of roast beef, mashed potatoes and gravy, a green vegetable, roll with a pat of butter, a slice of apple pie, and a half pint of milk for 25 cents. If I took a straw instead of a glass the price was 24 cents. I took the straw.”

- John M. Scott, BSME ‘40

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Course Registration Receipt courtesy of Bill Luedcke, BSME ‘40
Photo courtesy of John Milton Scott, BSME ’40. Group photo of Mechanical Engineers from October 5, 1939 in the Heat Power Lab.
Faculty Spotlight: Byron Short

Byron E. Short joined the ME faculty in 1926 (and taught until when?). Short received his B.S. and M.S. in Mechanical Engineering from UT in 1926 and 1930 respectively. Short spent several summers in the mid to late-1920s doing research for The Texas Company (Texaco.) In 1939, he received his doctorate from Cornell with a dissertation entitled ‘Heat Transfer and Friction for Heat Exchangers.’ (insert note 18 from ch. 2 or 3) Short taught courses in Thermodynamics, Heat Transfer, and Thermal Fluids at UT. He did extensive work on shell and tube heat exchangers, and that work was the basis of the convective heat transfer and pressure drop correlations that are widely used in the process industry today. He knew and worked with the most illustrious engineers in the thermal-sciences of the first half of the twentieth century. Short was as dedicated to teaching as he was to his own research; a stickler for detail, he expected much from his students. He left a lasting impression on the department and his many students. Professor Short retired in 1973 after teaching for almost fifty years, two tours as Chairman of the Department, and one year as Acting Dean of the College of Engineering.

Dr. Short was famous for his 20-inch slide rule. (listed as 20, 24, and 72 in other areas. which was it? ** check back in last chapter, don't repeat the slide rule stuff a million times). He and some other ME profs and instructors would play catch in baseball season outside the ME labs when the weather was good in the springtime. Dr. Short bought a new 1940 or 41 Pontiac with hydromatic drive. He was so proud of it that he devised an acceleration test to be done by students riding in the back seat as he drove his car up and down Speedway... A physics calculation was involved." 59

- William Osborn (Wilborn) Grimes, BSME '43

"Dr. Short had a fantastic memory and a real interest in his students and former students. Over 50 years after my graduation when talking with Dr. Short about various former ME students he would properly say 'he was in the class ahead of you or he was in the class after you' and he often knew where they were working. After WWII, when I was working in Houston, he took time to write me twice about job opportunities. He has been very supportive: recommended me for Who is Who in Engineering. He and his wife came to Waco for our 50-year wedding Anniversary, and for the Memorial Service for my deceased wife. He nominated me for the College of Engineering Distinguished Graduate Award. I told Dr. Short that it was the only foolish thing I knew he had done, since at that time neither he nor Professor Eckhardt had received that award." 62

- John M. Scott, BSME '40

"He was extremely thorough and helpful." 63

- Gerald Gustafson, BSME '40

"I best recall Dr. Short who gave me only 'F'. He had a 20' slide rule that he used in class. He said every engineer ought to be born with one hanging from them." (citation 69, from the 1960s chapter).

"My brother, Juan (who also got his BSME at the same time I did) and I both took Thermo with Dr. Short at the same time. There were approximately 130 students in the class, yet by the 2nd or 3rd session he knew everyone's name, and he never mixed up my brother's and my names.

"One time, when we got a graded test back from Dr. Short, one of my buddies had a note on his test from Dr. Short. The note said, 'Mr. Jones, this answer was wrong when Bill Smith turned it in 3 years ago, and it's STILL WRONG!' Apparently my buddy, Mr. Jones (names have been changed to protect the innocent!) had studied some old tests that were usually in circulation." 51
Faculty Profile: Byron Short

Dr. Short, Thermo Class, Engineering Lab Building, mid 1950’s

“This lecture room was large and air conditioned (not many were). Dr. Short had a huge slide rule suspended by a rope and pulley system from the classroom ceiling. When he wanted to demonstrate some exotic, unusual slide rule use, he would lower the rule to eye level (via his pulley and rope system) and use it as a teaching device. This slide rule may have been 8 feet long, sixteen inches high and one inch thick. It was heavy.

“Dr. Short was a dedicated, brilliant professor who had zero tolerance for a stupid response to a question he would raise. One day, during class, he received what he considered to be one of those stupid answers. To show the class just how bad the answer was, he lowered the big slide rule and made his point, but became quite angry when doing so. In fact, he was mad. When he finished, he raised the slide rule back to the ceiling with such a force that an eye bolt broke out of one end of the rule. That end came down right on top of Dr. Short’s head. It knocked him down, but he was soon okay - except for the lump on his head.

“I ran into Dr. Short in Austin later (maybe 15 years ago) and reminded him of that event. We both enjoyed a good laugh over that and other past events. He was truly an outstanding, never to be forgotten professor.” 52

- Nat Shapiro, BSME ‘57

"Byron Short - What an amazing man!

"[In the thermodynamics classes]... We all had assigned seats - by the end of the first week of every semester Dr. Short would have memorized the names of all the students. It would only take him a minute to check roll.

"In later years when I was back on campus as an EE student, whenever my path would cross with Dr. Short he would recognize me instantly. I continued to be amazed at such a mind." 47

- David Gris, BSME ‘58

"[Byron Short] Made great contribution to UT’s Engineering Department." 54

– R. C. Paulette, BSME ‘59

“His famous ‘long’ slide rule hung on ropes from the ceiling of ME 138. He could get much better accuracy than [we could with]our short slide rules.” 55

– Emil Friberg, BSME ‘58
Faculty Profile: Carl J. Eckhardt, Jr.  
BSME ‘25, MSME ‘30

Professor Carl J. Eckhardt devoted a lifetime of service to the Department of Mechanical Engineering and to The University. Eckhardt graduated with a Bachelor of Science degree in Mechanical Engineering in 1925. In 1926, he joined the ME faculty, teaching courses in the thermodynamics and power areas. Eckhardt continued his studies, and received his Master of Science degree in 1930 also from UT. In 1929, Eckhardt began a 44-year career as Director of The University’s Physical Plant.(He succeeded Hal Weaver)

Eckhardt was active in The University community, beyond the scope of the ME Department. In 1931, he was appointed supervisor of The University’s Tower construction, and it was Eckhardt who conceived the idea for lighting the tower orange to celebrate University victories. The tower was first lit orange in 1937, and Eckhardt helped to create the guidelines for using the orange lights. A skilled craftsman, Eckhardt produced the procession maces which are still carried at The University’s Commencement ceremonies.

Eckhardt was a great collector of University memorabilia and worked on several projects chronicling The University’s history. In 1958, he re-erected the Santa Rita No. 1 oil rig at the intersection of Trinity and Martin Luther King Boulevard. This was the first oil well to “blow in” on University-owned lands in West Texas, thus allowing for the creation of the Permanent Fund. Eckhardt recorded a 17-minute narration of the oil rig’s history which is played non-stop from 7am to 7pm, seven days a week, 365 days a year at the corner of Trinity and Martin Luther King Boulevard.

Carl Eckhardt retired in 1973, as Professor Emeritus. Students remember Professor Eckhardt both for his brilliant mind and personal interest in his students. On these pages are only some of the numerous vivid recollections of ME alums.

“Back in the years following WWII – 1946-1948 – the Ramshorn senior class sponsored the Engineering Open House and, at the end of the week, a dance. This was usually in early spring. Dr. Carl Eckhardt was the principal faculty advisor, but with the help of Dr. Benson, Dr. Begeman, Dr. Doughtie, Dr. Kent, Dr. Short, and others. Dr. Eckhardt – ever proper, always neatly dressed in suit and tie, no matter what he was doing – had a wonderful love of engineering, engineer’s education and hopeful engineers. He could, however, be quite stern and frowned on frivolous questions and actions.

“The Ramshorn Committee wanted to jazz up the open house publicity so one of the group approached his favorite sorority to see if several of the girls would pose for the Daily Texan photographer in their bathing suits in the mechanical engineering lab. The Ramshorn president was instructed to approach Dr. Eckhardt to see if he thought that appropriate.

“Dr. Eckhardt readily endorsed such an event. On the appointed day seven or eight pretty girls came over with their bathing suits and posed with the machinery and Dr. Eckhardt (probably Dr. Short, too). Several of the girls climbed on the huge flywheel of the old Cooper-Bessemer Gas Engine, with Dr. Eckhardt in the picture explaining the action. Two girls demonstrated the pony brake and some were with the four-bladed prop mounted on the WWII radial engine. For us, mostly returning ex-servicemen, it was quite a show that day!...”

- Cal Porcher, BSME ‘48

“Eckhardt was a brilliant orator and writer. As such, I think he inspired me in some of my later endeavors... He was also a professor who always had time for students.”

– George Helland, BSME ‘59.

“[Eckhardt] took a personal interest in the entire campus facilities (what). His Contracts and Specifications course could have been called Engineering Philosophy. It was a great course.”

– Emil Friberg, BSME ‘58
Faculty Profile: Carl J. Eckhardt

"Favorite professor - Professor Eckhardt because he seemed best prepared." 68

- P. Barry Niland, BSME ‘40

“Eckhardt, who I had only in a seminar, was remembered for his collection of slides of boiler explosions which he used to impress seniors of the hazards of their profession.” 69

- Forrest Gober, BSME ‘42

“I had a senior elective course under Mr. Eckhardt - Power Plants... One day he was speaking about the environment and the conservation of natural resources. Remember, this was shortly after World War II and well before the phenomenal growth of the petroleum industry and the discovery of the fantastic coal reserves in the West. Mr. ECKHARDT (why are these words in caps?) said during this lecture that we (the students - being younger than himself) would probably live to see laws passed that would prohibit the burning of a lump of COAL for its heat energy alone. Shortly after that, I was working in the oil fields of West Texas and the petroleum was beginning. There was one tremendous gas flare that was burning about 100 million cubic feet of natural gas per day. This was due to a delay in completion of a gas pipeline that would have transported the gas to market in the Northeast; and before the Texas Railroad Commissions NO FLARE order. You can imagine this young engineer fresh from Mr. Eckhardt’s class calculating the number of railway gondolas filled with coal that would be equivalent to the energy that was lighting up the night sky so bright that you could read a newspaper a mile away.” 70 (be careful about these citations, not from this chapter)

- Douglass Lee Brazell, BSME ‘48

“I came to know Professor Eckhardt best just as I graduated. I have forgotten the details, but we had my bicycle on his pickup truck, and it fell off. It was my fault, but he had it repaired and paid for it. Afterward, I kept in touch with him from 1941 until he died. He was 90 and had lived a very good and full life. I guess he was the best person I have ever known. He was religious and, most importantly, practiced his religion. His integrity was unquestionable. If you talk to other people who knew him, I think you will get the same answer.” 71

- Ike Kibbe, BSME ‘41

Cactus Yearbook picture of Carl Eckhardt, circa 1925.

“Professor Eckhardt would fill the blackboard, that ran across the end of the classroom, with calculations, then underline the answer and say: ‘Which is indicative of the fact that, in the ultimate, it is obvious that the solution may be obtained with consummate ease.’ Professor Eckhardt spoke of contractors attempting to ply him with ‘Cooling Libations’. Members of our class spoke of doing everything with ‘Consummate Ease’ and drinking ‘Cooling Libations.’

(leave all this in??)
“Professor Eckhardt was the faculty advisor for Pi Tau Sigma during the 1940 Spring semester. During an afternoon business meeting, plans for a Barn Dance at the Boy Scout Hut in Zilker Park were discussed. The proposal was made and adopted that the punch should be spiked. W. R. Hudson, an older & wiser married member, said the punch should be spiked with 180 proof grain alcohol - no use wasting good whiskey on the punch. Johnny Kainer volunteered to purchase the alcohol for the group. Professor Eckhardt was not at that meeting. Professor Eckhardt insisted on he and his wife providing the punch and cookies for the Barn Dance. Eckhardt and his wife hovered around the punch bowl all evening so it was impossible to spike the punch. At the next business meeting the matter of reimbursing Johnny Kainer for the unused alcohol was brought up. Professor Eckhardt was present and said it was all his fault the alcohol was not used, and while he did not use it, he had friends who would use it, so he wanted to pay for the alcohol. We did not accept his offer.” 47

- John Scott, BSME ‘40
“My favorite professor was Carl J. Eckhardt. I had great respect for him as a teacher – he really knew his thermodynamics. He became a kind of surrogate father to me (my father died when I was 17). He loaned me his car for one or two dates I had for ME social events. He made sure that I got a job with Westinghouse to engineer steam turbines.

“Carl J. Eckhardt was of average height, relatively thin in body, overrunning with energy, and always busy. He came into his Thermodynamics Class and from memory wrote values from the Keenan & Keys Steam Tables on the blackboard.”

- James L. Malone, BSME ‘40

“I had a senior class under Dr. Eckhardt in which he predicted the over populations of Eastern U.S. and shortages of oil and other resources. He was right.”

- Gerald Gustafson, BSME ‘40
Chapter 4: 1941–1960 The War and its Aftermath

Pamphlet for The University of Texas 34th Annual Exposition and Power Show, May 7, 1943. Courtesy of William O. Grimes, BSME '43
Chapter 4: 1941–1960

Population Statistics

<table>
<thead>
<tr>
<th>1940 Census</th>
<th></th>
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<tbody>
<tr>
<td>U.S. ... 132.1 million(^1)</td>
<td></td>
</tr>
<tr>
<td>Texas ... 6,414,824(^2)</td>
<td></td>
</tr>
<tr>
<td>Austin ... 87,930(^3)</td>
<td></td>
</tr>
</tbody>
</table>

State of the Department in the 1940’s

Mechanical Engineering entered the 1940s a strong and continuously expanding Department. But the advent of the War made an impact that would change the course of the nation, The University of Texas, its students, faculty and staff. The Department of Mechanical Engineering supported the war effort, and with the start of WWII, government sponsored war programs were administered on campus. U. S. Naval presence was at an all time high. Most students were drafted (do we have any kind of statistics on this?) into military service during the war and their studies were necessarily interrupted.

In the forties, the wartime shacks - makeshift classrooms-dotted the campus. War training programs were offered and because leaves of absence were permitted for military duty, several temporary faculty were hired (some of whom would remain permanently.)

In 1940, the doctoral program in mechanical engineering was approved.\(^{15}\) The first doctoral degree was granted as a combined major in Mechanical and Chemical Engineering to L. F. Bartlett in 1943.\(^{16}\)

Academics

Engineering classes in the 1940’s were held primarily in Taylor Hall. (deleted long quote: list of classrooms in the bldg) Despite the challenges of the war era, commitment to teaching in the ME Department remained strong. Influential faculty included Dean of the College of Engineering, W. R. Woolrich, Carl J. Eckhardt, Byron Short, Harry L. Kent, Venton Doughtie, Myron Begeman, and Grady Rylander. (Kent, Doughtie, Begeman, and Rylander would all later become Department chairmen.) New faculty hires in the 1940’s were M.J. Thompson (1941), Leonard F. Kreisle (1943), William J. Carter (1943), John R. Watt (1943), Horace E. Staph (1945), Billy H. Amstead (1946), H. Grady Rylander (1947), Jack A. Scanlan (1947), and Wayne E. Long (1948).\(^{13}\) Professors Howard Brown, Luis Bartlett, John Watt, Horace Staph, William Griffis, and Robert Slonneger were all vital to the Department and its students. Ms. Eloise Tew was Executive Assistant to Chairman Degler, as well as to Chairmen Short and Begeman. Laboratory Technician Fred Morris retired in 1948 after fort-five years of dedicated service.
Curriculum

The Mechanical Engineering Curriculum changed during the war years from a two-semester program to a return to a three-semester program, with a twelve-week summer session. This was done to accommodate the large numbers of students from across the country who transferred to UT for training in the new Naval V-12 unit military program.¹² The number of semester hours required for the completion of the undergraduate degree program increased to 140 hours in 1940, and remained that way until 1943. Mechanical engineering course content was modified by increased hours in Chemistry (2), Applied Mathematics (2) and 3 hours was added in the form of a Government class. A Senior Design course was also added. A new requirement of 9 hours of technical electives was added to the 6 hours of non-technical electives thereby increasing total elective hours by 7 hours. Figure 8 shows the Mechanical Engineering Curriculum for 1940. In 1943, an additional six hours of American Government were added.³¹

Students of the forties were required to execute a senior project. Sandy Hagan, BSME ’49, designed a water pump for Professor Doughtie. William Osborn (Wilborn) Grimes, BSME ’43, recalls that he and his classmates tested the thermal efficiency of the University Power Station, “which was fueled with lignite hauled by truck from the railroad tracks downtown out to the station. The test ran for 24 hours and involved all the class in data taking, and the report was a joint effort.” It was among Grimes’s favorite memories of coursework at UT. ⁶⁷

Research

Despite the tumult of the war era, Department faculty continued to make great strides in new engineering research. Dean Woolrich, Howard Brown and Luis Bartlett patented innovative food preservation methods involving freezing and dehydration which they had developed for the military before and during World War II. Woolrich continued the research on air-conditioning that ME Chairman Degler had started. Dean Woolrich and James D. McFarland designed systems combining forced-air ventilation with evaporative and ice cooling primarily for intermittent service, which they installed in churches and municipal buildings around Texas. Unfortunately, continued low energy costs contributed to the unpopular reception of these ideas. ³² In 1942, Carl Eckhardt, Jr. published the first reports on his study of the utility of lignite, providing early information on an abundant alternative fuel source in Texas.³³

Professor John Watt, who joined the faculty in 1943, was also active in refrigeration research. Watt held several patents, including important patents for ice-making equipment. The basis for much of the domestic and commercial ice-making equipment today is rooted in patents he developed while at The University.”³⁴

Harry Kent and Howard Brown were heavily involved in thermal fluids research. A significant thermodynamics textbook, Engineering Thermodynamics (Harper and Brothers), by Short, Kent and Burnett Treat was published during this period.(what year?)³⁵

Mechanical Engineering and the War

The need for trained engineers during wartime was great. A passage taken from the pamphlet of the 34th Annual Exposition and Power Show, 1943, highlights this need:

“It has been said that we are living in a Machine Age because the mechanical engineer has succeeded in transferring the burden of toil and hard labor from man to machinery. In doing this he has elevated the standards of living of the people to unprecedented heights. In time of peace his work has assumed a position of tremendous importance. In the great National Emergency which the nation is at present experiencing the continued security of the land depends to a great extent upon the abilities of mechanical engineers.” ⁴

Dean Woolrich eloquently summarized the scope, effort and importance of The University’s wartime efforts as follows:

“It is estimated that seventy percent of the officer personnel of the Navy are trained engineers and scientists. The training program of the army, likewise, indicates a great preference for men with technical education...

“Many thousand engineers and scientists educated at The University of Texas are engaged in the present war either as engineers and executives of war industries or as engineers and officers in the armed forces. They are doing a most important part in the greatest production task ever attempted by this or any other nation.

“The University of Texas’ laboratories have been actually [training] men and women twenty-four hours a day, six days per week. Hundreds have gone out to war industries and to the fighting zones, and still hundreds more are in training.”³⁹(woolrich in power show pamphlet?)
# 1940’s ME Curriculum

## Figure 8: Arrangement of Courses by Years (1940–1941)

### Freshman Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
</tr>
<tr>
<td>A.M. 204f, Plane Trigonometry</td>
<td>2</td>
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<tr>
<td>A.M. 309f, College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Ch. 801, General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Dnw. 301f, Engineering Drawing</td>
<td>3</td>
</tr>
<tr>
<td>E. 1, English Composition</td>
<td>3</td>
</tr>
<tr>
<td>General Engineering 01</td>
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<tr>
<td>Physical Training</td>
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<table>
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<tbody>
<tr>
<td>Second Semester</td>
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</tr>
<tr>
<td>A.M. 305s, Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>Phy 401s, Mechanics and Heat</td>
<td>4</td>
</tr>
<tr>
<td>Ch. 801, General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Dnw. 302s, Descriptive Geometry</td>
<td>3</td>
</tr>
<tr>
<td>E. 1, English Composition</td>
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</tr>
<tr>
<td>General Engineering 01</td>
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<tr>
<td>Physical Training</td>
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<td><strong>Total</strong></td>
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### Sophomore Year

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</tr>
<tr>
<td>A.M. 13, Calculus</td>
<td>3</td>
</tr>
<tr>
<td>E. 12 or 12Q, English Literature, or 13, Composition</td>
<td>3</td>
</tr>
<tr>
<td>Gov. 10, American Government</td>
<td>3</td>
</tr>
<tr>
<td>ME 311f, Manufacturing Processes, or approved non-technical elective</td>
<td>3</td>
</tr>
<tr>
<td>Phy 812, Electricity and Magnetism</td>
<td>4</td>
</tr>
<tr>
<td>Physical Training</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Second Semester</td>
<td></td>
</tr>
<tr>
<td>A.M. 13, Calculus</td>
<td>3</td>
</tr>
<tr>
<td>E. 12 or 12Q, English Literature, or 13, Composition</td>
<td>3</td>
</tr>
<tr>
<td>Gov. 10, American Government</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 315s, Statics, or approved non-technical elective</td>
<td>3</td>
</tr>
<tr>
<td>Phy 812, Wave-Motion, Acoustics, and Optics</td>
<td>4</td>
</tr>
<tr>
<td>Physical Training</td>
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<tr>
<td><strong>Total</strong></td>
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</table>

### Summer Session

Six semester hours to be taken during the Summer Session. The following courses are suggested for summer work: ME 311; C.E. 315, 333; A.M. 325; approved non-technical electives.

### Junior Year

<table>
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<tr>
<th>Semester</th>
<th>Hours</th>
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<tr>
<td>First Semester</td>
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<tr>
<td>A.M. 325f, Advanced Calculus</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 224, Surveying and Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>C.E. 220f, Kinematics and Kinetics</td>
<td>2</td>
</tr>
<tr>
<td>C.E. 333f, Strength of Materials</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 322f, Mechanism</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 342f, Heat Engineering with Laboratory</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
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<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Second Semester</td>
<td></td>
</tr>
<tr>
<td>A.M. 326s, Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 221, Surveying and Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>M.E. 221s, Dynamics of Machinery</td>
<td>2</td>
</tr>
<tr>
<td>M.E. 328s, Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 413s, Heat Engineering with Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>M.E. 257s, Fluid Mechanics</td>
<td>2</td>
</tr>
<tr>
<td>M.E. 258s, Applied Fluid Mechanics with Laboratory</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
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</table>

### Senior Year

<table>
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</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
</tr>
<tr>
<td>E.E. 35, Direct and Alternating Currents</td>
<td>3</td>
</tr>
<tr>
<td>E.E. 436, Electrical Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>M.E. 361Kf, Heat Treatment and Welding of Metals</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 465f, Machine Design</td>
<td>4</td>
</tr>
<tr>
<td>M.E. 375f, Industrial Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Approved technical elective</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Second Semester</td>
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<tr>
<td>E.E. 35, Direct and Alternating Currents</td>
<td>3</td>
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<tr>
<td>E.E. 436, Electrical Laboratory</td>
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<td>M.E. 262Ks, Seminar</td>
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<tr>
<td>M.E. 466Ks, Machine Design</td>
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<td>M.E. 077s, Inspection Trip</td>
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<td><strong>Total</strong></td>
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</table>
The Civilian Pilot Training Program and the War Effort

In 1940, the Civil Aeronautics Administration chose the Department of Mechanical Engineering at The University of Texas at Austin to administer the Civilian Pilot Training Program. As Dean W. R. Woolrich describes it in his account of the history of the College of Engineering, *Men of Ingenuity From Beneath the Orange Tower*, the program was begun in order to "give the youth of the nation an opportunity to learn to fly." But more than that, Woolrich continues, the program in effect "provided the nation with the nucleus of pilots for World War II." The Civil Aeronautics Administration controlled the curriculum and supervised both the ground school instruction and the flight training, gave all examinations and flight tests and issued private-pilot certificates. The Department of Mechanical Engineering supervised the entire operation.

ME instructor (professor?) Harry Kent was coordinator of the preliminary course from the fall of 1940 through the summer of 1941. Professor Venton Doughtie was coordinator of the secondary course and then in the fall of 1941 took over as coordinator of the entire program. Other ME faculty teaching the Civilian Pilot Training were R. V. Vittucci and W. J. Carter. There were four phases of the training. Ground school training took place at the University Airport on the Dallas Highway, and the flight school training was conducted at the Austin Municipal Airport. There were 165 applicants for the forty trainee spots. Of the forty enrolled in the first program, 36 were men and four women. Woolrich explains in his book, "Eligibility requirements were enrollment in the University for not more than 15 hours, United States citizenship, lack of any other pilot's certificate, two-years college training, an age between nineteen and twenty-six, parent's permission to fly if under the age of twenty-one, and a physical examination." Thirty-seven completed the course. H. G. Rylander, BSME '43, MSME'52, PhD (Georgia Tech), '65, was trained in the pilot training program in San Antonio. Rylander recalls his experience there:

"Pilot training started in 1940 and I was in one of the first classes in San Antonio where I received a pilot's license. The Civilian Pilot Training Program was started to train pilots for military duty but we were not automatically in the military. By the time I received my pilot's license I was in the advanced stages of a mechanical engineering degree, which allowed me to finish my degree and go to work for Westinghouse in a highly secret research program to design the first US jet aircraft engines.

In the 1942-1943 school year, training accelerated and the course was taught in two units, in the fall and spring. These courses taught high school teachers, prospective ground-school instructors, those applying for private pilot's certificates and those who were entering the Air Services. One hundred and nine students enrolled for the three pre-flight aeronautics courses. By January 1943, the Navy used the entire facilities of the pilot training program, at the University Airport and also the Austin Municipal Airport. Cadets were on active duty, received pay and were assigned by the Navy. "The program ended on July 29, 1944, having handled 1026 individuals. Since some students pursued a follow-up course there were actually 1426 enrollees. Altogether, 53,652.25 hours had been flown with only one trainee receiving an injury - the loss of four front teeth during a forced landing. This trainee later became a naval-aviation officer." Who is this quoting?

The ground school consisted of 72 hours of class work in civil air regulations, navigation, general service of aircraft, and meteorology. Flight training of 35 to 45 hours of dual solo time in light planes such as Taylorcrafts, Aeroncas, and Piper Cubs was provided. "The secondary course began on February 10, 1941, with twenty students. Training equivalent to the preliminary course was prerequisite for this course. The student was allowed to carry a maximum of 12 hours of University work while pursuing this course. There were 108 hours of ground school including navigation, power plants, and aerodynamics and 35 to 45 hours of flight in Waco-UPF7s. All secondary courses were given at the University Airport.

Picture taken from the Cactus Year Book 1945
According to Woolrich, “Beginning with the 1941 fall class, each trainee was required to sign an affidavit that he would enlist in either the Army or Navy Air Corps upon completion of the course. At the end of the college phase of training, May 2, 1942, 272 trainees had been enrolled, 225 had successfully completed training, and 192 were in air service by May 15, 1942.” This number included seven women who completed the training.

In 1943 the federal government initiated the accelerated program to train pilots for the war. Woolrich describes the stringent program as follows:

“Both Army and Navy personnel were trained. The Army trainees were recruited by the coordinator and enlisted in the Army Air Force Enlisted Reserve Corps for the duration of six months. The Navy trainees were V-Cadets on inactive duty status. The federal government provided room, board, transportation, and cost of training, but the trainees received no pay. Even though neither group had had previous military training, trainees were expected to be under strict military supervision, with reveille and taps at a definite time, meals regularly, military drill, and a regular twenty-four hour schedule. Their entire conduct and training was under the supervision of the coordinator . . .”

Mechanical Engineering students remember with pride participating in the war programs at The University of Texas. Charles R. Frederick, BSME ’44, recalls his greatest memory at UT was “...being placed on active duty in the Navy V-12 Unit living in Carothers Dorm [a womens’ dormitory] where the staff needed two weeks before they learned all those big guys ate more than the girls had.”

W. W. (Bill) McGinnis, BSME ’40, also remembers the pride associated with lending his efforts to the war. McGinnis states that “The greatest memory for me was being one of the first enrollees in the NROTC (1940) which allowed me to graduate on Feb. 28, 1944 with a commission (Ensign) and orders to a destroyer in the South Pacific.”
Student Life in the 1940s

WORK on these next pages to get social life and then course recollections grouped together

The Depression had been a powerful leveler of economic status. Coming out of the thirties, most students (and most Americans in general) understood what it meant to be poor, if not from firsthand experience at least from what they had witnessed. Students brought with them a renewed sense of purpose, to achieve an education that would mean lifelong financial security.

The war had beneficial effects on students as well. Prior to that time, most had never traveled far from home; the war sent them across the country and around the world. Some had the opportunity to put their engineering knowledge to work before completing their degrees, thus gaining valuable practical knowledge. Military experience and a taste of the “real world” emphasized the value of a good education. As a result, many students were prompted to pursue their studies with heightened vigor.¹¹

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Portrait of a 1940’s Student

“So I... was half through my Junior year when Pearl Harbor happened. I was attending an APO meeting in the Union when we got news of the attack. Immediately things changed. The draft was instituted and engineering students were given a deferred rating. Lawyers were not. Many of them were forced to enter service one way or another. Engineering students were encouraged to speed up their class work to graduate early and enter the industrial work force as soon as possible. I was not able to accelerate and complete my senior year on regular schedule...My older brother had been drafted and sent to San Antonio and stayed there the duration as a member of the military band. He was a professional musician and made his career as a member of a big dance band, finally settling in Las Vegas and raising 8 children. My little brother joined the Army Air Force, flew B-24’s and flew many missions from England. My sister, who had a degree in Home Economics, had taught a couple of years, and decided she should join the SPARs [S.P.A...R.s?] the women’s auxiliary for the Coast Guard. She was stationed in San Francisco as a Ship’s Cook.

"I went to work at GE first at Fort Wayne, Indiana...and then it became obvious that my deferred draft status would be changed, so I went to New York City and made application for a commission in the U.S. Navy. I was on vacation in Austin when word came of my acceptance. I went to Houston to be sworn in and bought my uniforms and caught a plane to Plattsburg, N.Y. for indoctrination. After 90 days there, I was transferred to Ft. Schuyler for advanced indoctrination, and afterwards elected to go to Motor Torpedo Boat training in Melville, R.I. After that training, I was shipped to the Phillipines and joined MTB Squadron 24, operating in Davao Gulf of Mindanao Island, also at Basilan Island just south of Zamboanga. I was at this location when the war ended. We were ordered to dismantle and destroy the boats and I was shipped to Pearl Harbor to work in the area petroleum office until my “points” accumulated to rate a discharge."³⁶

- William Osborn (Wilborn) Grimes, BSME ’43

Class sizes fluctuated significantly as growing numbers of students were drafted into the war effort.¹² The sizes of graduating classes decreased markedly in 1944 and 1945.

Tuition and housing costs were significantly lower in the war years. Underclassmen lived in the dormitories, as students weren’t permitted to live in apartments until their junior year. (Clever sophomores sought “adoption” by a junior to skirt the rule.) Fifty dollars a month was a typical allowance, and an apartment might rent for $25 per month. Dice and dominoes were popular games and good music was inexpensive and easily accessible. Distinguished speakers visited the campus: in 1940, noted science fiction author H. G. Wells gave a talk to the student body.⁹
Students and faculty have vivid memories of their days in the ME Department. Stanley Kuenstler, BSME ’44, remembers many a sleepless night trying to get his Heat Power Lab reports in on time. Douglass Brazell, BSME ’48, remembers being late to Dr. Greenwood’s class one morning. When he explained to another tardy student that they could sneak in unnoticed when the instructor turned to the blackboard, “...” Instantly, there was a panting voice behind us that said, “That won’t work this time.” It was Dr. Greenwood, late for his own class.”

Dr. Werner Goldsmith, BSME ’44, remembered a particularly chilling incident for Chairman Degler, involving the zero-degree room, which was used for freezing and heat research. In addition to its actual purpose, the room had become a storage place for graduate students and faculty to store meat and other foods, alongside research samples. Goldsmith, a master’s candidate at the time in 1945, inadvertently locked Chairman Degler in the room, from the outside, and left the building. Fortunately, Professors Kent and Short were in a laboratory office, heard Degler’s banging on the cold room wall, and were able to let him out. Woolrich describes the incident in his book:

“Werner Goldsmith, now a professor at the University of California, still harks back to his graduate student days when he imprisoned in a zero-degree locker room, the Chairman of the department of which he was a candidate for his higher degree. Had professors Short and Kent not remained for a planning discussion that lasted long enough to hear Professor Degler’s hammering, it could have been a very long and cold Texas weekend in mid-summer.”

Students like Douglass Lee Brazell, BSME ’48, remember Professors Begeman and Kreisle fondly. Brazell says of Dr. Kreisle that he “was always business-like and intense with his task of teaching. These were the very early days of Dr. Kreisle’s career. He was very young and probably not yet a PhD - We and he referred to his Strength class as ‘The class to separate the shoesalesmen from the Engineers.”

Dr. Leonardt Kreisle is remembered for telling his students amazing, and possibly tall, tales. Ed Galle, BSME ’50, remembers Kreisle describing a childhood camping trip on which Kreisle befriended Thomas Edison, B.F. Goodrich, Henry Ford, and another illustrious figure. Galle captures Kreisle’s flare for the dramatic: “To make the story even better, [Kreisle] tells about Edison recounting the famous first telephone conversation between [himself] and his assistant Watson. Naturally, Dr. Kreisle insists that the true conversation is quite different from the official one...” (cite 55)

Memorable classes included Principles of Engineering taught by Myron Begeman, shop labs, and Dr. Harry Kent’s Thermodynamics class. Some Professors made lasting impressions on their students because of the personal touches they brought to their classrooms. Professor Eckhardt began his classes with a “thought of the day,” usually a reading from the Bible. Ike Kibbe, BSME ‘41, had a great respect for Carl Eckhardt: “As far as I am concerned, Professor Eckhardt, who was also Superintendent of Utilities, was one of the finest men who ever lived, and I exchanged Christmas cards with him until his death about five years ago.”

Students have fond memories of the instruction they received at UT. Troy Morris, BSME ’48, says Harry Kent “had a knack for explaining concepts clearly, but he was a down to earth kind of guy who was never pretentious.” Joseph Wier, BSME ’42, a fan of his machine design class, describes his instructor, Venton Doughtie, as “one of the most interesting and capable professors”. Professor Doughtie gave his students a treat by allowing them to correct him by finding all the errors in his newly written book on Mechanical Design. (last 3 quotes are same source)
Werner Goldsmith an earlier grad, BSME ‘44, recalls that during his student years at UT, “1941 - 1945, only the first two months and the last month were without World War II, so our lives were totally skewed…”[no citation!] After-effects of war also impacted the student body. Don Foster, BSME ‘48, remembers that the “classes of 1946 and 1947 were great. There was a seriousness that was rare. We didn’t have much money but it was enough. Few had more.” (citation?)

Terrell Small, BSME ‘42, remembers the day that affected so many, “Certainly the most vivid memory is what turned out to be the major watershed in most of our lives...I was working with Hub Colley on a lab report on December 7, 1941 when the Japanese attacked Pearl Harbor. For the next couple of months, we did a lot of partying thinking that we might get our degrees early and avoid all the senior labs and exams. We finally decided that we had better buckle down or we might end up in the walking army.” 73

The social life of a 1940’s mechanical engineering student consisted of “Germans” (what is this? Dr. R. doesn’t know...) at Gregory Gym, picnics, and dancing at the honky tonks on South Congress. John McGill, BSME ‘49, remembers enjoying hamburgers at Dirty Martin’s and chicken at Youngblood’s. Other fun places to go were the Hoffbrau for steaks and red wine on Saturday nights or swimming at Barton Springs. UT football was popular, and David Donaldson, BSME ‘47, happily recalls beating Texas A&M in 1940 by seven to zero.

Grady Rylander remembers when he and his wife, Betty Zirkel, graduated with BSME’s in 1943: “…one of the big highlights came when the wartime blackout was briefly lifted to light the tower at our graduation.” Rylander remembered other highlights including the UT Roundup Parades with most of Austin watching. The UT Sweetheart elections were exciting with a lot of politics involved.”

Pi Tau Sigma, ASME, and Tau Beta Pi were popular social organizations for mechanical engineers in the forties. Chairman Degler served as the national president of Pi Tau Sigma in the early forties and the UT advisor. Professor Benson was the faculty advisor after Degler for Pi Tau Sigma.78 Importantly, Pi Tau Sigma began to include women and minority members beginning in the 1940s. Frank Burguss Pugsley, BSME ‘42, recalls his involvement in PTS was a significant part of his ME education: “I was privileged to join three outstanding UT student leaders on a trip to Pittsburgh for the national convention of Pi Tau Sigma. They were Joe Wier, President; Terrell Small, Vice President; and Hub Colley, Secretary of UT’s Pi Tau Sigma chapter.”80 After the meeting, the group continued on to Washington, DC, where they heard the final debate on a bill on to expand the “Lend Lease” program.(same citation)

Popular bands of the forties were Glenn Miller, Stan Kenton, Guy Lombardo, Harry James, Benny Goodman, Tommy Dorsey, Kay Kaiser and Artie Shaw. Werner Goldsmith, BSME ‘44, remembers hot topics for discussion during the 1940s included: “The firing of Homer Rainey as [UT] President, which produced a strike of faculty and students while the war was still going on. The general animosity of the campus towards the extremely conservative and controversial Board of Regents. The general rivalry between the fraternities and sororities and the independents. The restrictions placed on everyone due to war time conditions (i.e. gas rationing). The restrictions on alcohol consumption then extant.” 84

The patio outside of Taylor Hall in the 1940’s was a popular spot for Department gatherings and for student courtships. In 1942-43 Grady Rylander and Miss Betty Zirkel would meet there between classes and Grady would pick a gardenia for Betty to wear to class and SRD Dormitory. They got married later in 1943.75 From 1947 through 1951, the ME Department held its annual departmental picnic at Camp Ben McCullough in Spicewood, Texas. Dr. Leonardt Kreisle remembers the faculty-student baseball games, swimming in the creek, and all-you-can-eat BBQ dinner.
To save money, some 1940’s ME students lived at home or with relatives. But those who did not sought jobs. Some of these jobs included pumping gas, washing dishes, driving trucks in the summer, operating elevators, working as janitors, waiting tables, grading papers, delivering newspapers and typing. Compensation ranged from about $.25 to $.50 an hour. William Grimes, BSME ‘43, worked ushering at UT football games as a Boy Scout, in a NYA (what is this?) job at the Memorial Museum for Mr. T. Garland Adair, in the Loan Library at the checkout desk and in the stacks for Miss Lorena Baker. Bill Luedecke, BSME ‘40, worked for T. U. Taylor, painting Taylor’s rental properties for the summer. Werner Goldsmith, BSME ’44, worked as a newspaper carrier for the Austin American, from 2:00- 6:00AM nightly. Goldsmith recalls “When war broke out, the newspaper cut the commissions on most routes - not mine. However, the carriers decided to go on strike, and one night dumped all papers either at the Scottish Rite Dormitory or into the Colorado River. I was named by the newspaper as the leader of the strike (which was not true). However, because I was an enemy alien (refugee from Nazi Germany), I was very concerned about the consequences. Nothing happened. However, my radio and camera had to be turned in, and I could not move more than 20 miles without obtaining permission from the U. S. Attorney.”

Tuition per semester was about $25. Activity tickets, books, lab fees and slide rules were all extra. Cost of living ranged between $25 and $39 per month. Sandy Hagan, BSME ‘49, remembers that haircuts were one dollar. Karl Bartels, BSME ‘42, says his parents paid for his university education and kept good records of his expenditures, “therefore, we determined that my four years of education cost $760. That sounds ridiculous today, but tuition was $25 a semester, blanket tax was $5, dormitory rent at Little Campus was $25 a semester, and I mostly bought reused books. My social life was pretty restricted.”

After the war, into the 1950’s, some students worked academic office jobs, some worked manual jobs, and some were fortunate enough to do engineering work while in school, like James Partin, BSME ‘58, who worked for a consulting engineer throughout his education. George Helland, BSME ‘59, demonstrated early on an entrepreneurial spirit, when he started a laundry service for fraternity brothers.

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**One Alum’s Professional Career**

**(Liza: Dr. R is fine with deleting this—thoughts?)**

“In 1942 I was assigned to investigate the lubricating properties of various coatings materials by Westinghouse Research Laboratories for use in stampings from sheet stock. These stampings were for manufacturing transformers and electric motors. The report was distributed to management as well as presented to a national meeting of ASME.

“Further worked on developing jet engines. After deciding to return to Texas with my wife, stopped in Austin to ask Mr. Howard Degler, Chairman of the Department of Mechanical Engineering, about employment. We discussed teaching, but I had taught at the University of Pittsburgh and found that I did not want to teach. Mr. Degler suggested that I go to Houston and ask Humble Oil for employment and accept any job they offered me.

“My first assignment with Exxon was to work with railroads converting from steam to diesel power. A committee was formed to recommend how to use the land acquired for oil when the oil was gone. I was asked to arrange travel for the committee. My participation made me aware of the potential of real estate. I enrolled in real estate classes and graduated.

“I formed Robertson Properties and handled the sale of large farms, ranches, and businesses. Health and age eventually limited my participation and I retired in Austin.”

- Bill P. Robertson, BSME ‘42
1943: 34th Annual Exposition & Power Show

In 1943, the College of Engineering was proud to display its accomplishments in engineering education at the 34th Annual Exposition and Power Show held on The University of Texas campus. The 1943 Show was the final show before the U.S. entered the War. And after this, everything changed. (per Dr. Rylander, the reason this year was so significant is b/c it was “the last one before WWII and after that everything was different. Need to explain how??) The show made it possible to display and pay tribute to advances in technology. And, with the impact of WWII, it was a chance to look toward future research and knowledge that would change with the needs of the nation.

At the Power Shows the Department of Mechanical Engineering could display the specialized tools and equipment used to train students. At the Thirty-Fourth Annual Exposition and Power Show, the ME Department displayed equipment from the Engineering Shop Laboratory, Machine Shop Laboratory, Pattern Shop Laboratory, Foundry Laboratory, Heat Power and Fluid Mechanics Laboratory, the Refrigeration Laboratory and the Metallurgical Laboratory. Also on view were an assortment of pumps and blowers, the Condenser Pit, the Fuels Testing Laboratory, and a Drawing display. The next pages list the equipment available to a UT Mechanical Engineering student of the 1940’s.40

The Power Shows continued to be enormously popular with students in the fifties. Mechanical Engineering students liked to show race cars and entertaining exhibits like the Rube Goldberg Machines which are still a focus for national contests. The show attracted numerous high school students, introducing them to opportunities available in Mechanical Engineering. The Power Show remained an important tool for recruiting until the 1960’s when other media forms, including television made information more easily accessible.36

The Engineering Power Show and the accompanying informational pamphlet provided to visitors provided detailed information about Mechanical Engineering at UT. Prospective students, parents, and the general public could learn about the areas of study, available facilities, the components of the Engineering Shop Laboratory and what kind of equipment students and faculty use there. (make sure the pamphlet from this show supplied by William O. Grimes is cited as source.)

Can we get a picture here? of the power show?

Portrait of a Student in the 1940s

“A short block separated us from the old land office building, in which millions of bats lived. I understand that they have taken up residence under the Congress Avenue bridge. The Kash and Karry grocery store was located on the northeast corner of Congress Avenue. I would go there and get a pound of 18 cent meat (hamburger) and a quart of Bryant’s sweet milk. After 11th Street crossed San Jacinto it went (and still does go) steeply downhill to Red River. We kept our food in a wooden box containing 12-1/2 pounds of ice and covered with a towel, newspaper and a board. On my bicycle I would go down to Red River, turn right and go to 9th where the Southland Ice factory was. Southland Ice owns 7-11 as you know. I would put the ice in the basket on the handle bars and pump my way up 9th Street to San Jacinto and back home.

“...For several summers I worked for a fellow in Brownsville by the name of Les Mauldin who took large old airplanes like Ryans, Travel Airs, Bellancas and Fairchilds and converted them for the purpose of hauling coffee in the Yucatan peninsula. He got a Civilian Pilot Training contract in 1940, and asked me if I wanted to learn to fly; he did not have to ask me twice. And that is how I learned to fly. All in all, I have been pretty lucky. I got a degree in engineering, learned to fly, and have had the help of a lot of good people along the way. Professor Eckhardt tops the list, and I tried to tell him so while he was alive. People are eulogized after they are dead, but they may not be able to hear it.” 95

- Ike Kibbe, BSME ’41

After the War

In 1945, some members of the mechanical engineering faculty assisted in the establishment of the Defense Research Laboratory for a Ram-Jet study.91 After the war, large numbers of students returned to the university to complete their undergraduate programs or to do graduate work. Because of the influx of students, the ME department was in need of more faculty (were there any add’I faculty hires in the 40s, besides Rylander?) Grady Rylander,
BSME ‘43, was hired in 1947. During the war (check this, when?) Chairman Degler obtained a leave of absence to work with the post-war educational program in Europe. At the recommendation of the President of The University, a new policy of rotating the department’s chairmanship among the four full-time faculty who had professorial status commenced. The eligible professors included Professors Begeman, Degler, Doughtie and Short. Dr. Byron Short became the eighth chairman of the Department of Mechanical Engineering and served for two years until Dr. Myron Begeman took over. From 1949 until 1951, Professor Doughtie held the position. 92

World War II resulted in four times the American fatalities (292,131 military and 6000 civilian) that World War I produced. Large numbers of veterans returned to The University to take advantage of the educational benefits and financial stipends offered under the G.I. Bill. Enrollment in Mechanical Engineering increased rapidly. The ME Department’s resources were taxed by educational and financial demands. Budget limitations set the nine-month salary for Assistant Professor as low as $2500 making it very difficult for the department to hire new Ph.D.s.

But this was not yet a time for peace. Russia blockaded Berlin in 1949. American military pilots broke the blockade daily ferrying food and supplies to the city. When on June 25, 1950, North Korea attacked South Korea, President Truman sent Navy, Air Force and ground troops into Korea a few days later. Some of the World War II veterans who had remained in service or joined the National Guard were sent in. Enrollment at UT and in ME was again reduced.

A Change in Focus

....As a new decade dawned in a changing nation, the Department of Mechanical Engineering was ready for the challenge. In the fifties Dean Woolrich shifted the focus of the College of Engineering to vigorously promote research and development.4 Government and industry had begun to place a greater emphasis on engineering research, beginning with World War II. This accelerated scientific discovery and as scientific knowledge grew so did the demand for engineering applications. Innovations in engineering sustained the economic boom experienced during and after World War II, which in turn created more money for further research in engineering. The result was a permanent transformation in engineering education at The University of Texas at Austin, because The University had to produce more highly educated engineers.5 (what is this ref?) “Industry . . . [was moving] much too fast to rely on the accumulation of personal experience for innovation; engineering researchers required the background afforded by graduate education, preferably at the doctoral level, in order to contribute effectively.”6 (who are we quoting?) The federal government began funding organized technological research programs at a higher level than ever before.7 By 1950, the faculty within the College of Engineering agreed that all among their ranks who were associate professors and above should be registered engineers.8

Population Statistics
1950 Census
U.S. ... 151.3 million1
Texas ... 7,711,1942
Austin ... 132,4593

74
In his book, *Commitment to Excellence: One Hundred Years of Engineering Education at The University of Texas at Austin*, former College of Engineering Dean Earnest Gloyna, notes that after World War II, the world needed a different kind of engineer. Industry and academia sought engineers with doctorate degrees who “had more profound understanding, more extensive scientific knowledge, and more highly cultivated creative powers.” (cite this!) The College of Engineering rose to meet this demand with an increase in doctoral degrees conferred. In 1937 the College awarded 82 doctoral degrees. This number had risen to 647 in 1958, the year that Dean Woolrich retired. *(these #s need to be clarified: were these cumulative for respective years? or were 82 degrees conferred in 1937?)***see Woolrich book pp 252-53. this is a HUGE discrepancy in the #s: Woolrich BK says 4 PhDs and 97 in 1958. !!!!

The reinvigoration of enrollment after the war necessitated new construction on campus and, for the ME Department, additional faculty hires. The Department continued to rotate the Chairmanship throughout this decade. In 1950 Venton L. Doughtie was department Chairman; Byron Short succeeded him as 11th Chairman of the department in 1952. A year later, Myron L. Begeman assumed the chairmanship for a second time. In 1957 Venton L. Doughtie became the 13th Chairman. Faculty hires of the 1950’s were Wayne E. Long (1951-1978) in Thermodynamics, Eric H. Bucknall (1956-1966) in Metallurgy, M. El Sadik (1959), Kenneth C. Rathbun (1957-1961) and Herbert A. Rundell (1957-1961). [staff capsule: “Mrs. Margaret Scholeman was Executive Assistant in the late 1950’s to Chairmen Begeman and Doughtie. Records are not available on the shop staff for the 1950’s.”]

**Curriculum**

During the fifties, the Department of Mechanical Engineering continued to develop coursework in the traditional fields of mechanical systems and thermal fluids. In addition, the department expanded into nuclear power. Byron Short, as chairman of the faculty committee responsible for developing curriculum, established a fifteen-hour plan of study in nuclear engineering for a minor in the doctoral program. Interest in further development, however, was hard to achieve until Visiting Committee *(have we explained what this is? NO, check appendix)* Chairman George L. MacGregor came to the department’s aid. “MacGregor and other Texas utility owners realized the limitations of fossil fuel and wanted to foster research in power generation by nuclear fusion, bypassing the more volatile fission process. They initiated a thirty-year project under Hagerty’s administration, with the support of both Logan and Ransom.” *(who’s the quote?)

Gloyna elaborates on the development of the University’s nuclear program:

“With broader support the program in nuclear engineering began to take shape, coordinating the efforts of several departments. In Electrical Engineering, [Arwin] Dougal developed innovative studies in fusion mechanics. His research was funded in part by the Texas Atomic Energy Research Foundation and the Atomic Energy Commission (AEC), which had finally been persuaded to contribute. The Chemistry and Chemical Engineering Library became an official depository of valuable classified and unclassified material from the AEC and chemical engineering faculty [and] under the chairmanship of McKetta supplemented their research in petrochemicals with new inquiry into irradiation of materials.”

**Academics**

ME faculty continued to excel in research and teaching, and the impact of the professors made lasting impressions on ME students. Leonardt Kreisle connected with his students, as Keys Curry, BSME ’58 recalls, “My favorite professor was Leonardt Kreisle because his passion for education showed every day.” James Partin, BSME ’58, also remembers Kreisle:

“My favorite professor was Dr. Leonardt Kreisle whose interest in the welfare of students was profound. He encouraged me to go to graduate school and served on both my Masters and PhD committees. He invited my wife and me to his lakeside country home many times... Leaving campus in 1965, I would not see Dr. Kreisle again until it was time to find campus housing for our second son, Kevin in 1984.
"On campus during the regular week, we by chance looked for Dr. Kreisle in his Taylor Hall office. He was there, as usual, counseling two students. I walked in followed by wife and son and he looked up surprised and said ‘Hi Jim... and Annella... and is that Jimmy?’ He had never met Kevin, since he was born after we left Austin. Kevin would go on to an Aerospace Engineering degree, modified to include Dr. Kreisle’s design courses.”

R. C. Paulette, BSME ’59, names M.L. Begeman as an important influence because he was “…down to earth and easy to understand.” Emil Friberg, BSME ’58 remembers that Begeman wanted his students to “become business-oriented and read the Wall Street Journal.” John Knobelstorf, BSME ’52, found that a number of his professors were outstanding, particularly Professor Treat.

Venton Doughtie was also remembered by his students as an outstanding professor. Nat Shapiro (BSME ’57) notes that, “I had only one course with him, but it was one that was to be remembered... not the course so much as his teaching style. He was different - no one ever went to sleep in his class!” Emil Friberg (BSME ’58) was impressed that Doughtie’s “Machine Design book and his class urged us to be practical and use tools that were available rather than deriving the equation from the beginning.” Mary Jo (Ross) Knobelstorf (BSME ’52) still invokes Professor Doughtie’s language today: “Anytime a student asked a question that Doughtie did not want to answer he responded that ‘it was intuitively obvious that...’ To this day Johnny and I respond that ‘it is intuitively obvious that...’ when we are asked a question we don’t want to answer.”

I think there are some missing Prof. pictures from this era...links are missing. (like Doughtie and Woolrich)

(Research)

The Engines Test Laboratory created by Chairman Venton L. Doughtie in 1949 was renamed the Engines Research Laboratory in 1951. Byron Short directed operations at the Engines Research Lab from 1952 to 1959 with the exception of 1953 “when Myron Begeman served as Coordinator of Activities. Studies were conducted in two areas: combustion of gases under steady flow conditions at pressures up to ninety pounds per square inch, and heating of sea water up to 330 degrees Fahrenheit, a project which received funding from the Texas Gulf Sulphur Company as part of its systematic effort to find methods to substitute salt water for fresh water in offshore sulphur mining.”

In 1959, Kenneth C. Rathburn became director of the lab. With this the lab changed its name again to the Mechanical Engineering Propulsion Laboratory. Technological advances continued to change the field of mechanical engineering. Numerous instrumentation additions were made to take advantage of the new high-speed indicating and recording devices of the digital age. Slide rules gave way to high-speed computers, significantly changing engineering computational methods. The first UT mainframe computer for general use, an IBM 650, was purchased in 1958 and installed in the Experimental Science Building under the direction of math professors David Young and Robert Gregory.

During the fifties, the College of Engineering participated in a cooperative effort to help upgrade the engineering program of Chulalongkorn University in Bangkok, Thailand. Three mechanical engineering professors, Harry L. Kent, Wayne E. Long, and Dean W. L. Woolrich participated in this effort. In 1955, Kent built the first sanitation laboratory in Asia at Chulalongkorn. Other professors from the UT College of Engineering soon followed in his footsteps and traveled to Thailand. Nineteen faculty from Chulalongkorn came to the United States for advanced degrees; eight attended UT.

Enrollment increased markedly after the war years. The size of the average annual Mechanical Engineering undergraduate class during the fifties was roughly 90 students. Favorite professors included Drs. Leonart Kreisle, Byron Short, Harry Kent, Burnett Treat, Wayne Long, Leonard Benson, and Venton Doughtie. Thermodynamics, metallurgy, and Senior Design classes were popular, as were Dynamics and Design classes taught by Bill Carter or Leonart Kreisle. Professor Doughtie’s Machine Design class was, according to Bill Spears (BSME ’58), “a wealth of down-home philosophy coupled with practical engineering common sense.” Examples of senior design projects from the time include a hydraulic nut cracker (George Helland, BSME ’59), an automatic jack system (Bill Spears, BSME ’58), a plexiglass case for taking movies underwater (Nat Shapiro, BSME ’57) and a helical car jack (R. C. Paulette, BSME ’59).
Efforts in securing new funding for engineering research and study continued to move forward. Federal funds for advanced study in engineering had been made available since 1910, but were often given to the land-grant colleges. The land-grant colleges had a successful lobbying association called the Land Grant Association (LGA) which enabled them to secure additional support. In 1938 seventeen presidents of state universities created two lobbying associations, one for business and one for engineering. Dean Woolrich led the Engineering Lobbying Association as its national president. This battle for federal support eventually (when?) resulted in the alliance of all engineering schools and the agreement to pool resources and to share information through the creation of an organization called the Engineering College Research Association. This association led to the creation of the National Science Foundation for Scientific and Engineering Research better known as the NSF.50

**Advances in Engineering Funding**

Dean Woolrich recognized the need for a permanent fund for the College of Engineering, and in the mid-1950s, this came to be in the form of the Engineering Foundation. *(who’s the quote?)* “The Board of Regents announced the creation of the Engineering Foundation on March 12, 1955 to be responsible for soliciting funds and supervising their disbursement through salaries, grants and fellowships, coordinating curriculum evaluation and keeping abreast of current educational trends as an advisory association for the Dean.”18 The foundation, led by active alumni Joe J. King, George L. MacGregor, William J. Murry, Jr., Clarence L. Lender, William B. Franklin and Ernest Cockwell, Jr., was able to establish a permanent financial endowment and to provide direction in curriculum development. The initial goal, to raise $1.5 million over a five-year period, was met and surpassed. In creating its own funds via the establishment of the foundation, the College of Engineering was able to "undertake those projects that are not normally permissible under the rules and regulations laid down by the Legislature and the Texas Constitution." *(quote??)* The College of Engineering benefited greatly from the resulting freedom in planning, research and development that were now made possible by having the use of discretionary funds.19

At the same time, the Engineer’s Loan Fund, established by T.U. Taylor in 1910, continued to grow under the direction of Banks Mclaurin, James D. McFarland and Venton L. Doughtie who secured a number of generous bequests such as $100,000 from engineering alumnus, Louis C. Wagner in 1951. *(citation 9, ch 2)* Although engineering faculty consistently directed the Engineer’s Loan Fund, it was never an official part of the College of Engineering until it was transferred to the College in 1977. *(cite 10, ch 2)* Then it was administered by the Office of Engineering Scholarships. As the old administration retired, subsequent directors, including Leonardt Kreisle, were selected to keep the fund active. The last three directors were William C. Dueaterhoeft, H. Grady Rylander, Jr., and Carl W. Morgan. *(cit 11, ch 2)*

**Women in Mechanical Engineering**

Since the first days of The University of Texas, the enrollment of female students in engineering and the sciences was extremely low. It was not until the national emergency that was World War II that women were actively recruited for the engineering program. The Curtiss-Wright Engineering Cadette Program was one of the first organized efforts by the College of Engineering to recruit women. The Curtiss-Wright Corporation selected seven schools, among them UT, to conduct its Engineering Cadette Program. The program gave 100 women an intensive forty-week course in mathematics, aircraft drafting, mechanics and principles of flight.21

Although women were not actively recruited into engineering programs until the 1940’s, there were a few female students prior to that time. The first woman to earn a degree from the College of Engineering was Ruth W. Lawhon when she received her Architectural Engineering degree in 1929.22 Leah Moncure, who earned her degree in Civil Engineering in 1937, was the first woman in Texas to register as a Professional Engineer.23 Despite the trend of low female enrollment during the fifties, two sisters became the first and second female students to earn a bachelor of science degree in Mechanical Engineering. They were Mary Jo (Ross) Knobel (1952) and her sister, Bertha (Ross) Powledge the following January in 1953.24

**Mary Jo Knobel**

Mary Jo (Ross) Knobel was not concerned that engineering was a male-dominated profession in the late forties and early fifties. She knew she could obtain the same degree the men did. She remembers her college days:

“I was 16 when I entered UT with a major in ME. During my first fall term I took G.E. 001, Professional Orientation, a required non-credit course for all freshman engineering majors. One of the lecturers said ‘Count yourself and the next 9 students in your row. Three of you will graduate in engineering; seven of you will either change your major or drop out of UT.’ I just assumed I would be one of the seven since I was a 16 year-old girl and no girl had earned a degree in ME. I had always been a good student so I decided to continue the path I had chosen. First it was a quiz at a time, then it was a course at a time, later a year at a time. I just continued taking required courses waiting for the one that would take me down. Instead I passed all of them and graduated with my ‘Rank in 1952 Engineering Class: 7th decile.’

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“When I passed Engineering Mechanics 220 (Dynamics) during my sophomore year, Dean Woolrich’s secretary won a steak dinner from my instructor, Richard Welty. She was dating Mr. Welty at that time and he had told her that a woman could not comprehend acceleration analysis. They made a bet concerning my passing or failing his course. When I heard about the wager, I made up my mind that I would pass his course no matter how I did in my other courses. I have always given him a bit of credit for my making it through engineering. I made a C, not a great grade, but good enough to keep me plugging away.

“I think I selected engineering because math was easy for me but I did not want to be a math major since the most common job option for a math major in the late 40’s and early 50’s was teaching school. To me Mechanical Engineering was just applied math; engineering was just using math to solve problems. I had several favorite professors. Prof. Treat, Prof. Doughtie, and Prof. Benson. They did a good job of teaching the material and I made good grades in their classes. My favorites were metallurgy and machine design. I thought they were interesting and they were easy for me.

“My first job was in the Metallurgy Department at Cameron Iron Works in Houston. I was head of the Spectrometer Lab. Cameron made high alloy steel and my lab provided accurate data about the alloys in the steel while it was in a molten state. Cameron interviewed me while I was at UT.

“My fondest memory of UT? Through the years, as I look back on my days at UT, my fondest memory is recalling that I was making it; I was going from freshman to sophomore to junior to senior to graduation.”

Mary Jo (Ross) Knobelsdorf, BSME ’52, on steps of the Engineering Building.
Operation Gopher

Engineering students of the fifties combined their energies with Department faculty and alumni to create the original "T - Room," in the basement of Taylor Hall, a student-faculty recreation and lounge. When the project was begun, it was a completely unexcavated space. "Obviously, this was considered impossible by many people, but not to this group of engineering students who were determined to see their idea of an engineer's lounge carried out. With optimism in their hearts and an abundance of courage, they convinced the Engineering college and University administrators that the engineering students could and would remove the dirt. "After all," responded the group of promoters, "it is an Engineer's benefit we are proposing, and the students will be glad to help out." The excavation procedure was tagged "Operation Gopher" and shortly thereafter the digging was begun.  

“Operation Gopher” commenced on December 4, 1952 and was comprised of twenty one students and two faculty members, A. Anthony Toprac (Civil Engineering) and Leonard F. Kreisle (Mechanical Engineering). The students quickly solicited the help of Professor Carl J. Eckhardt, Director of the Physical Plant, to help remove 2000 cubic yards of dirt and rock. Over a four year period, 3000 engineering students removed 2300 cubic yards of material mostly by pick and shovel but some equipment was provided by Rolf, Coutcher Cummings Company. The Physical Plant provided the necessary wiring and plumbing free of charge, and engineering alumni contributed $27,000 for the room enclosure. The "T-Room", named in honor of T. U. Taylor, was dedicated on May 13, 1957.

The Basement of T.U. Taylor Hall once excavations had been completed by students, faculty and alumni. Circa 1954.
The U–Salute from the Dean's Office
By Dean W.R. Woolrich
(Excerpt from the "T" Room Flyer, circa 1956 produced by the Student Engineering Council, Office of the Dean of Engineering)

"Teachers of the rigorous science disciplines in years gone by could gather some solace from the poet's pen:

"Good timber does not grow on ease
The stronger wind, the tougher trees
By sun and cold, by rain and snows
In tree or man, good timber grows

"The new story we can now relate is not of growing trees but a more realistic chronicle of reducing many hundreds of tons of solid rock to shoveling size and then removing these broken stones through a tortuous path by hand, by bucket by wheel barrow and by conveyor from its ever resisting geological formation to areas of usefulness on the University Campus.

"It is every smidgen a remarkable historical annal in that outstanding student leaders of the College of Engineering of The University of Texas first dreamed the possibilities, then they were challenged by their advisors against its possible completion but this only inspired their greater enthusiasm and against all types of discouragements, roadblocks, hard labor blisters, and time restrictions carried their seemingly impossible project to fruition.

"Their part of the contract called for the removal of more than eighteen hundred cubic yards of rock and fill by their own labor at other than classroom hours. Jackhammer staccato and stone delivery discordant notes are not compatible to classroom lecturing and thus it was necessary to set the timing for work schedule beyond the hour of 5:00 PM except on Saturday afternoons.

"The engineering alumni were great supporters of the enterprise. They gave unqualified approval of the project and agreed to furnish the funds for the interior furnishing and decorating. Nearly $25,000 has come from loyal "Ramshorns" of former years. (check this, on previous page it says $27k) They played their part of the game with real distinction.

"What a selfless project! Those men who moved the rock-those men who furnished the funds are to be paid primarily in pride of accomplishment for the student engineering generations of tomorrow. Even those who conceived and promoted this project are loyal alumni by now or will be by the time the rooms are completed.

"There is real pride of accomplishment in faculty, alumni and students of the College of Engineering of The University of Texas in this probably the most unique and useful student enterprise of the current decade on this continent. Operation Gopher will go down as one of the great traditions of the College of Engineering of The University of Texas."
Student Life in the 1950s

McCarthyism impacted the nation in the 1950s, as did the Korean War. Significantly, African-American students were admitted to The University for the first time (when? do we have a year?) James Partin, BSME ’58, MSME ’60, PhD ’65, remembers the signs of the times: “By the time I heard about the USSR Sputnik on short-wave radio, I was a fifth year engineering student. I would be employed for much of my career in the space race that followed . . . I was able to analyze designs of space vehicles from Apollo and surveillance spacecraft to the International Space Station. These programs contributed to the collapse of the USSR and the end of the cold war.” 60

Several ME students were members of fraternities such as Sigma Nu, Pi Kappa Alpha and Delta Upsilon. Many students were also involved in student government. George Helland, BSME ’59, was active in managing the intramural athletics program. For Ronald Guinn, BSME ’59, the Westminster Fellowship at the University Presbyterian Church provided Sunday night fellowship, projects, and retreats. Guinn also participated in the APO’s (an organization of former Boy Scouts) service projects, including a picture display in the observation room atop the UT Tower. Engineering student organizations such as ASME and the American Society of Heating and Ventilating Engineers were also popular. Other organizations that students participated in were the Texas Student Publication Board, the Senior Cabinet, and the Student Engineering Council.68 James Partin (BSME ’58, MSME ’60, PhD ’65m) remembers his fellow Tejas Club member Harley Clark invented the ‘hook ‘em horns’ symbol in 1955, and that it “was great fun in the late 50s to watch student sports fans try to show each other how to make the “hook-em-horns” sign with the fingers.” 39

- James R. Partin, BSME ’58, MSME ’60, PhD ‘65

Dr. Kreisle and Jim Partin

Anella Partin
Alums of the 1950s also remember a few well-executed and harmless pranks. David Gris, BSME ’58, recounts a particularly amusing one:

“...The most memorable story I can tell occurred in the winter of 1956 or 1957. I was in Prof. Benson’s metallurgy class one morning sitting on the front row. The metallurgy class was studying the iron-carbon equilibrium diagram, a copy of which was rolled up like a window shade just above the blackboard. Prof. Benson was making some cogent remarks and to make a point he reached up and pulled down the iron-carbon diagram. Someone had taped a playboy centerfold over the diagram!!! Pandemonium broke out and we must have laughed for almost 10 minutes. Prof. Benson never lost his cool. He just stood there and smiled while we were all rolling on the floor laughing! After a while he removed the centerfold and continued calmly through the rest of the class.”

James Partin (BSME ’58, MSME ’60, PhD ’65) admits to being the prankster. He recalls the incident was great fun, and that Professor Benson "...was never able to approach the chart again without the class giggling.

Intramural sports, football and basketball games, engineering social functions, family events, movies, pep rallies, dates and church activities, were all popular into the 1950s. Favorite places to go in Austin (in the fifties) were Tony’s, Jack’s Around the Corner, Pete’s on the Drag, the Night Hawk, the Petite Club, El Matamoros on Guadalupe Street and Scholtz’s Beer Garden. Also popular were Hamilton Pool for picnics and swimming, City Park on Lake Austin, Mount Bonnell, the UT Museum, and Dr. Kreisle’s country home on Lake Austin. Popular music of the time included Tommy Dorsey, Gene Krupa, Ted Wiggins, and of course, Elvis Presley.

Study dates were common. Mary Jo Knobelsdorf, BSME ’52, remembers that “Very often during my senior year John Knobelsdorf would call and invite me to go out with him for coffee. Usually he would request that I bring my slide rule so that I could check the math in his lab report. Since I thought he was a great guy, most of the time I said ‘yes’.”

Other popular date spots included coffee and cream pie at the Toddle House, or hamburgers at Dirty Martin’s.

Bill Spears, BSME ’58, spent summers working for Superior Oil Company and Tennessee Gas in the oilfields of Louisiana and for the Texas Highway Department. He worked about 20 hours and made “about $1,200 per summer”.

(Natal Shafran) Nat Shapiro, BSME ’57, worked as a lifeguard in the summers at Barton Springs. John Knobelsdorf, BSME ’52, transcribed data from scrolled charts and manually entered the information onto prepared tables for Professor R. E. Long, while his wife Mary Jo Knobelsdorf, was a grader for Professor MacLaurin in the Engineering Mechanics Department.

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**Portrait of a Fifties Student**

“I quit high school at age 15 as a sophomore to join the Navy in April 1942, and served until I received an honorable discharge in December 1945. I attended “boot camp” and Diesel Engine Classes in San Diego, CA, was transferred to the Amphibious Training Facility near Norfolk, VA, and was then assigned to duty aboard ship.

Three years of my time at sea was spent on board two different ships in the South Pacific, participating in many island invasions from Guadalcanal to Okinawa, and living through two separate Japanese “Kamikaze” crashes on one of the ships. After my discharge, I worked as a truck driver for various companies during the day, and attended high school classes at night. In order to receive sufficient credits to be able to enter an engineering school, I quit work and returned to my “old” high school for my last semester of study. By that time, I was 21 years of age, and it was interesting to be attending classes with the younger students.

“While I was at UT, a Texas State law required students to sign an oath stating that they were not Communist. I always wondered what real value such a scrap of paper could have. I suppose a few students refused to sign on grounds of protest, but I doubt that any true Communist who wanted to remain a student would have hesitated to sign.

“My fondest memory of UT is attending engineering classes with the young lady who selected me to become her husband. We will have been married 50 years on April 6, 2003."

- John C. Knobelsdorf, BSME ’52

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During the 1950’s the department chairmen and their wives hosted parties, picnics, senior breakfasts and fish fries to bring the department closer together. Professor (?) Bill Carter, who was also an engineering consultant for the Glastron Boat Company of Austin, owned a large sailboat on Lake Travis, and most of the faculty had small outboard motors (usually about 5 HP) to use with rental boats, which they would take out to fish for white bass. Most of the fish were caught at night fishing under a lantern. A few trot lines added some large catfish to the catch. Faculty and students kept their catch in the deep freeze room for research in the back of the Thermodynamics Laboratory.

On the day of the fish fry, the faculty arrived at the Chairman’s home to build fires and fry the fish in large metal containers full of oil. Wives of faculty members provided salad, vegetables and dessert, and during the meal many fish stories were shared.64
Chapter 5: 1960’s & 1970’s

subtitle...
Chapter 5: 1960s and 1970’s

UT ME in a new Era

In the 1960’s undergraduate enrollment in Mechanical Engineering declined sharply not only at The University of Texas but across the nation.\textsuperscript{25} The fall in enrollment was attributable to both internal and external factors. According to Earnest Gloyda who writes in Commitment to Excellence: One Hundred Years of Engineering Education at the University of Texas at Austin:

“Public perceptions about technology in the 1960’s seemed to cast a pall over the future development of engineering education in the United States. Prejudice against technological enterprise grew in large measure from the vocal protest against the apparent corporate support for the war in Vietnam, the related demand for nuclear disarmament, and from the more widespread concern about environmental conservation. Enrollments in non-technical degree programs climbed sharply from 1965 to 1970, but the number of students in engineering programs fell sharply. The federal government, which had vigorously supported research since the end of World War II, became more restrictive in its grants and contracts, forcing engineering colleges to look elsewhere for development funds. Some institutions discontinued certain engineering degree programs when the flow of new students and revenue slowed to a trickle.” (look up this quote, I altered slightly. fix it) \textsuperscript{16}

Population Statistics

<table>
<thead>
<tr>
<th>1960 Census</th>
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<tbody>
<tr>
<td>U.S. ... 179.3 million\textsuperscript{1}</td>
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<tr>
<td>Texas ... 9,579,677\textsuperscript{2}</td>
</tr>
<tr>
<td>Austin ... 186,545\textsuperscript{3}</td>
</tr>
</tbody>
</table>

ME...??

UT...??
Gloyna saw a number of factors impacting the enrollment drop, among them lower birth rate during World War II, the new community college system, other engineering programs being established in Texas (including those at Lamar State College and Arlington State College,) as well as more rigorous admission standards of the College of Engineering. In order to correct this trend, Dean Hagerty endorsed a series of television programs called “Paths to Progress.” The fifteen-minute programs, sponsored jointly by an Austin station and the Travis County Chapter of the Texas Society of Professional Engineers, highlighted the achievements of engineers in Texas. (I believe this info is in the Gloyna book—per Dr. R, see p 82) With these programs the UT engineering faculty attempted to counteract the public’s apathy toward scientific and technological disciplines. The Engineering Foundation also began to fund scholarships in an effort to attract academically competitive high school students. As another way to promote the program, Dean Hagerty expanded the annual report and printed it for distribution.

Retention rates were also declining. In 1968, the downward trend in student retention rates was alleviated by the development of a special college-wide freshman engineering course, geared to engage students more deeply in engineering. The program was so successful that it had to be discontinued in the seventies because enrollment had become too great.

But Mechanical Engineering at UT continued to grow, with numerous significant faculty hires in the 1960s, as well as new facilities. Two important structures for ME were completed in the early 1960s: the Engineering Laboratories Building, in 1960, and the Engineering Science Building in 1964. The Engineering Laboratories Building, renamed W. R. Woolrich Laboratories in 1977, now houses the Aerospace Engineering and Engineering Mechanics. Today, the Engineering Science Building is home to Electrical, Computer, and Biomedical Engineering.
Faculty

Numerous faculty hires were made possible in the 1960s thanks to increases in oil revenue from the Permanent Fund. Faculty who joined the department during this decade were Lyle G. Clark (1960) in Design; A. W. Morris (1960) and Charles S. Beightler (1961) in Operations Research; E. F. Infante (1961) and J. Parker Lamb, Jr. (1962) in Thermodynamics; Carl Gatlin (1963) as Chairman; John P. Stark (1963) in Metallurgy and Materials; H. Allan Walls in Thermoscience (1963); A. D. Thomas (general) (1963); and William R. Upthegrove (1964) as Chairman. Also joining the faculty were Stephen Gage (1965) in Nuclear; Paul A. Jensen (1967) and William G. Lesso (1967) in Operations Research; Kenneth Ralls (1967), Gerald Wagner (1968), Lew Kowarski (1968), Thomas Courtney (1968) in Materials; John J. Allan III (1968) in Mechanical Systems; and Billy Koen (1968), George B. Thurston (1968) and Ernest Linn Draper (1969) in Nuclear.

From 1963-1964, Carl Gatlin was the fifteenth Chairman of the Department of Mechanical Engineering. In 1964, Gatlin followed Dean Hagerty to the Drexel Institute.

Professor W. R. Upthegrove, a Michigan graduate, (why the footnote?) became Chair in 1964. With the support of Dean John J. McKetta, Upthegrove continued building the department in non-traditional areas such as Materials Science, Nuclear Engineering and Operations Research.

In 1967 Margaret Baker, who had been hired as an instructor in Drawing in 1954, became the first woman in the Department to receive tenure as an assistant professor. The following year, Ms. Baker became the first female faculty member of the Department of Mechanical Engineering when Engineering Drawing was merged into the department. In 1969 the College of Engineering initiated FEW, Future Engineering Women, to recruit female students into the profession.

Dean Hagerty (NEED dates)

(who is the quote? Gloyna, p 68--introduce quote!)

"To expedite development, Dean Hagerty changed the administrative structure of the College of Engineering, giving more authority to the department chairmen. Although the chairmen under Deans Taylor and Woolrich had functioned as executive officers for the dean, they often had to share their authority with others within the department, notably the members of the Dean’s Advisory Council, budget councils, and Graduate Dean’s Council. Dean Hagerty enacted a series of reforms to allow chairmen a greater voice in the administration of the College. He also discontinued the practice of rotating department chairmanships. Throughout his term Dean Hagerty focused on achieving an efficient administrative organization.

Departmental Visiting Committee

One way Hagerty largely improved administration was the implementation of the Departmental Visiting Committees for each of the departments within the College of Engineering. Although the establishment of the committees was approved in 1959, implementation would not take place for several years (When?). This needs to be explained: who was on the committees, how were they selected, what exactly did they do? Some of the Visiting Committee members were also invited to serve on the Engineering Foundation’s Advisory Board. Members of the Visiting Committee worked closely with the department and its faculty to do what? Meetings were held in the corporate facilities where the faculty attended as guests, were served dinner and given tours of facilities during the two-day meetings.

In 1963, Dean Hagerty resigned, and accepted an appointment as president of Drexel Institute in Philadelphia. Gloyna stated that Hagerty brought a lasting “measure of prestige” to the engineering program, and “...a College that was much improved by his brief tenure.”
Six Very Good Years in Austin \cite{36}

"...To the extent that I had any preexisting goals as I accepted the position, they had emerged largely out of these conversations [with faculty, staff, and central administration.] In very general terms they included commitment to maintain and enhance the quality of our undergraduate student experience, to expand and improve the diversity and rigor of graduate offerings, and to broaden and increase faculty involvement in sponsored research and graduate student supervision. I believe that we made progress in all of these areas but I would certainly defer to the judgment of those who were responsible for our departmental programs following my tenure in 1970.

"In my opinion, the number one requirement [for good performance as chairman] is open and unthreatening communication. That involves not only [to] be willing but wanting to listen to all of the constituencies and equally important, sharing your thoughts and decisions with all constituencies. There needs to be candid and open discussions of problems, opportunities, and performance.

"The leadership must make decisions with the realization that they will please some but displease others. Decisions must be made with the objective of maximizing overall department performance and achievement. The chairman must resist the urge to choose decisions that only level or minimize unhappiness.

"The most important influence that a chairman can have is in the areas of recognition, recruitment, promotion, and retention or termination of faculty. To the extent that I was able to leave a positive contribution to the UT M. E. Department, I see it reflected in the people that we were able to bring in during the six years that I was there. Indeed I’ve often said that I would like to have my tenure in any job judged by the quality and achievements of the people that I have been able to attract and encourage.

"I will close noting one very positive experience that I had. At the time of my departure, Byron Short wished me well and said that he felt that I might have been the best Chairman that they had. Those of you who knew Byron will understand why I treasure that assessment." \cite{Chairman W. R. Uptegrove. Photo courtesy of the UT ME Alumni Office.}

Under Uptegrove’s leadership, the department had experienced marked growth, demonstrated in an increase of Bachelor of Science degrees from 62 granted in 1964 to 117 with the start of the 1970s.\footnote{17} This increase was partly due to the expanded areas of mechanical engineering and kept with the university-wide trend at this time. Chairman Uptegrove continued \textit{(after he was no longer Chair?--Dr. R says no; how did he continue to do this?)} to recruit faculty in all areas.\footnote{18}
Dean John J. McKetta (1963–1969)

John J. McKetta became Dean of the College of Engineering in 1963, in an era of rapid technological advancement. The College of Engineering had to keep up. Assistant Dean Amstead said to his class, “Gentlemen, I have a confession to make - one - half of what we taught you while you were here is wrong . . . Unfortunately, we don’t know which half is wrong.”

McKetta strove to create an environment that would promote “free unhampered pursuit of knowledge and achievement.” To achieve this end, and to provide for students a “functional education rather than stratified and segmented training,” McKetta approved a more flexible curriculum. “Theory to Practice . . . for the good of society at large” was his primary stress. (Dr. R says this sentence is OK)

Under McKetta, the College of Engineering (COE) adopted a goal of twenty percent growth in undergraduate and graduate enrollment for the following five years. The College also strove to find new funding sources and to hire new faculty and staff. The fundamental goals of engineers of the sixties were identified by McKetta as “1) to integrate technological change and 2) to improve the human condition throughout the world.” The shared desire was to create a system of education which was “as dynamic and rapidly changing as the profession itself.”

McKetta renewed emphasis on teaching excellence, and recruited additional support, financial and otherwise, from industrial leaders. Under McKetta’s leadership, The University administration and alumni gave the college greater support. “Through the diversified support of outside sources, the College budget increased from a little over three million dollars in fiscal year 1964 to $8.2 million by the end of fiscal year 1969.”

Local alumni and visiting committees played a large role in this increase and gave generously to the departments. Many of these gifts took the form of scholarships and fellowships for worthy engineering students.

In 1964, the Department of Mechanical Engineering implemented five blocks of study: Design I, Energy II, Material III, Nuclear IV, and Optimization V. Students could specialize in a block and thereby obtain considerably more depth in their chosen field. Engineering Drawing was reorganized within the Department of Mechanical Engineering as Engineering Graphics when James D. MacFarland retired in 1968. By 1969, the curriculum was redefined to include six options: general Mechanical Engineering, Operations Research and Management, Materials Engineering, Mechanical Systems, Nuclear Engineering and Energy Systems. In 1968-69 there was an apparent change in UT’s grade point system (from a 3.0 to a 4.0) as the requirement for qualifying for Pi Tau Sigma jumped by one full point. (is this true? see later reference) (this sentence is awkward and seems unreliable. delete? or move where?)

Major Developments in Curriculum

Significant changes were made to the ME curriculum in the 1960s. In 1960, the Mechanical Engineering curriculum was reduced to 135 hours by condensing the basic ME curriculum and adding a 15 hour block of required courses. This curriculum was changed to the form shown in Figure 9 in 1967 with the block courses taking on names that are recognized today.
<table>
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<td>Ch. 301, Introductory Chemistry</td>
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<td>E. 601s, English Composition</td>
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<td>Ch. 302, Principles of Chemistry</td>
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<tr>
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<tr>
<td>E. 601b, English Composition</td>
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<tr>
<td>English Literature (elective)</td>
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<tr>
<td>Gov. 310a, American Government; or American History</td>
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<td>M. 326, Differential Equations with Engineering Applications</td>
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<td>Phy. 415, Heat, Wave-Motion, and Optics,</td>
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<td>E.M. 319, Mechanics of Solids</td>
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### Summer

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### Junior Year

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<th>Semester</th>
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<tr>
<td>E.E. 335K, Fundamentals of Electricity and Electric Circuits</td>
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<tr>
<td>M.E. 424, Kinetics and Dynamics of Mechanical Systems</td>
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<td>M.E. 326, Thermodynamics I</td>
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<td>M.E. 336, Materials and Manufacturing Processes II</td>
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<td>M.E. 345, Fluid Mechanics</td>
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<td>M.E. 328, Thermodynamics II</td>
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<td>M.E. 339, Heat Transfer and Rate Processes I</td>
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<td>M.E. 364L, Vibration and Control</td>
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### Senior Year

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<td>E.E. 435L, Industrial Electronics and Automatic controls</td>
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Throughout the 1960s, the Mechanical Engineering undergraduate enrollment per class was a few hundred. The classes themselves had as few as fifteen to as many as fifty students depending on the course and its level.

The Mechanical Engineering Department maintained its commitment to outstanding instruction. Alums of the 1960s remember their ME professors vividly, among them is Sockalingam Kannappan, MSME '70, who praised Grady Rylander as "my favorite professor. He was very kind and supportive to students who needed help."68

Kannappan also spoke highly of Dr. Upthegrove and his evident personal commitment to his students.70 Mark Finley, BSME '63, remembers being encouraged by Dr. Short and Kent, and the powerful and supportive bond felt between he and his fellow engineering students.71

Finley also remembers a mood created in Dr. Kent's classes: "...I do not recall an individual event...but I do remember with great clarity the atmosphere that he created in his classes. He was there to make you succeed. You could see it in the smile in his eyes and the humor he found where others found dryness. I never left him without a feeling of reassurance that I would succeed. Because of that, I did."77 Harry Kent's personality and approach to teaching impacted Jay L. Poth, BSME '62, who remembers Kent saying: "Now let me tell you, I am not one of those smart guys teaching up on the Hill. I'll just show you how to solve some problems."79 Gary Watt, BSME '70, remembers that Dr. McKetta's level-headed input was enormously valuable in helping him to decide what area of engineering to study.72

The Senior Design project was an important component of a UT ME's metuculation. Gary Watt and his teammate had a memorable Senior Design project: they were asked by Whirlpool Corp. to design a consumer refrigerator icemaker that produced clear, rather than cloudy, ice. Watt recalls, "We succeeded in making clear ice cubes with the standard Whirlpool model by enhancing the icemaker with a small ultrasonic vibrator to eliminate bubbles in the filling process and an inline filter to remove particulates from the inlet water."76

A new computation center was opened in 1961 at UT, only three years after the first mainframe computer, an IBM 650, had been installed by The University.17 The Computation Center was equipped with a Control Data Corporation CDC 1604 computer. Clearly there was a need for new computational programs; Mechanical Engineering faculty wrote many of these programs for both research and teaching. As batch-operated programs, they used punched cards, which were clumsy to handle and required access to a punch card room.18 In 1967 teletype consoles to The University's Control Data 6600 were installed in each engineering building. In 1962, Mechanical Engineering Professor Leonard F. Kreisle succeeded Jack Lenhart as director of the freshman computer effort.19 An IBM 1620 was installed for undergraduate use in 1967, the only such unit available for students at The University. This quickly became obsolete as dramatic technological advances continued to develop.20

New Areas of Study: Changing with the Times

[the info on the OR group below was "contributed by Bill Lesso" how was this contributed? how to cite him?]

As discussed earlier, the 1960s were a time of great transformation for the ME Department, and this was evidenced in the formation of new areas of research. The Operations Research group was one of these areas, and was significantly altered during the course of the decade. William G. Lesso, who joined the Department in 1967 as a professor in OR, relates that before this time, OR was "not a formal area and mainly offered courses in the traditional discipline of Industrial Engineering."(how to cite?) Lesso continues, noting that in 1966, "...the Coordinating Board authorized the department to confer a Masters of Science in Operations Research degree. (This may have been the first non-traditional degree authorized for the college.) (was it? or not?)" (again, cite this properly.)

In 1967, Lesso and Paul A. Jensen joined the faculty. Lesso recalls that the popular OR block "...began to attract military officers who were sent [to UT] by their commands for Masters and PhD degrees. (At one point in time there were over six graduates from our program on the faculty at the United States Air Force Academy and for more than a decade there were always at least two from our graduate program there.) The US Army starting in 1968 would send one officer after another for the MS in OR degree."51

The Nuclear Program

In 1963, the Atomic Energy Commission purchased a TRIGA MARK I fission reactor for the College of Engineering and installed it in Taylor Hall. This bold step into advanced technologies was indicative of a new era for engineering and UT ME. Jack A. Scanlan from the Mechanical Engineering Department was the first director of the Nuclear Reactor Laboratory. In the first year, the reactor was operated in(on?) an interdisciplinary basis but gradually was taken over by mechanical engineering in 1966.52

Gloyna elaborates on the development of the University’s nuclear program:

"The TRIGA Mark I reactor went critical in August 1963 and was used almost exclusively in developing nuclear coursework and graduate student experiments. It was one of the only two in the country capable of such broad transient operation, and was unique in the Southwest. The
University accepted the first doctoral candidate in nuclear engineering in 1962 and granted the first degree in 1964. The coursework remained interdisciplinary, conducted in the Departments of Mechanical, Chemical, Civil, and Electrical Engineering under [Jack] Scanlan, Eugene Wissler, [Earnest] Gloyna and [Arwin] Dougal respectively. The research focus in nuclear engineering later changed, as the effort to develop a fusion reactor became the primary goal, but the program in the Department of Mechanical Engineering retained a broad spectrum of study and research focusing on the TRIGA.  

“In 1968, Stephen Gage of Mechanical Engineering added fuel elements to the TRIGA reactor, a teaching unit, upgrading it from a steady state of 10 KW to 250 KW, and under the supervision the Atomic Energy Commission installed a battery of cobalt 60 rods, totaling 8400 curie, for research in materials irradiation.”

Faculty hired to help operate the new Nuclear Reactor Laboratory were Stephen J. Gage (1965-1973), Billy V. Koen (1968) and L. Linn Draper (1969-1978). Dong Nguyen was also among the early faculty of the nuclear area (when?).

TRIGA Nuclear Reactor. Picture of reactor taken in its current location in the Nuclear Engineering Teaching Laboratory at Pickle Research Center.
Research

Research was encouraged and expanded during the 1960s. Gloyna remembers that Dean Hagerty wanted “the faculty to be working on ‘engineering problems of the future’ not ‘pick and shovel’ work.”67 It was this emphasis, on larger research projects of regional or national concern that helped to improve UT’s reputation and put Texas research in the spotlight.68 In 1960 the Engineering Laboratory and Shop Building Number One was (were?) completed. Research groups from the Departments of Mechanics and Aerospace, Civil, Chemical, Mechanical, Electrical and Drawing moved into the new building which was a useful adjunct to the overcrowded Taylor Hall.59

Dr. J. Parker Lamb came to The University as a professor of Aerospace Engineering and Engineering Mechanics in 1962 (what dept. is this?), and joined the Department of Mechanical Engineering in 1963. Lamb worked on fluid mechanics and heat transfer in wakes, a major application that was the base area of rockets.60 (what date?) Lamb succeeded Kenneth C. Rathbun as director of the Mechanical Engineering Propulsion Laboratory, in 1959.61 Starting in the early 1960’s and continuing through the present, there has been an ongoing fluid mechanics research thrust at UT and in engineering departments across the country, largely a result of the national aerospace program.62 In 1964, the Defense Research Laboratory merged with the Military Physics Research Laboratory.63 In 1967, DRL relocated to the Balcones Research Center.64

Students discuss nuclear engineering

Portrait of a Sixties Student

"I was a graduate student from September 1968 to June 1970...."

"I had to drop Vibrations course offered by Dr. Thompson since I did not know FORTRAN programming. Dr. Rylander was very helpful to me. I learned programming [and FORTRAN language]....

"Protest against the Vietnam war was picking up. As an international student, I was an observer when UT students slept overnight in the lawn near the Main Building clock tower to protest the war. I walked on the sidelines when the students marched to the Capitol Building protesting the Vietnam war. I still remember when students climbed up the trees to stop the expansion of the Memorial Stadium...

"I had an opportunity to go for PhD with the recommendation of then ME Chairman Upthegrove. He just became the Dean of Engineering at Oklahoma University, Norman. I decided to go to Houston. University of Texas at Austin is a good school for International students. After 32 years since my time (?), my son Ramakrishnan graduated with BSCE degree last year. He is doing PhD [work] in environmental engineering at UT now."66

Sockalingam (Sam) Kannappan P.E., MSME ‘70
The Life of an ME: the 1960’s (combine this with 70s)

Hotly debated national and international issues were a constant presence for students in the 60s and 70s. Of course, topmost among them was the war in Vietnam. Students tried to ensure that they would not be drafted and struggled to maintain the necessary grades to stay in school. Mark Finley, BSME ’63, says, “I must confess that most of us tried to stay away from Vietnam. Many of us were given letters by the Scientific Manpower Commission to hand to our draft boards requesting that we be deferred.” (no citation)

Some ME students got involved in other pressing political issues, like Mark Williams, BSME ’62, and Jay L. Poth, also BSME ’62, who each remembered protesting segregation, both on campus (in dormitories) and throughout Austin.88

But less political activities were of course still part of students’ lives. Many ME students were members of fraternities like Pi Tau Sigma or Tau Beta Pi, as well as other school organizations including the Longhorn Band, ASME, and ROTC, to name a few.

Favorite places to go around town included Barton Springs, Lake Travis, the Paramount Theatre, Orange Bull, Bull Creek, Windy Point, Charlie’s Playhouse and Zilker Park. Favorite date spots included the movies, football games, dining at Dirty Martin’s or at the Hofbräu Steakhouse. Popular music included Johnny Cash, Louis Armstrong, The Beatles, Jimi Hendrix, The Doors, and Austin’s own 13th Floor Elevators, Stevie Winwood, Joan Baez, Bob Dylan, The Beachboys, The Kingston Trio, Marty Robbins, The Hot Nuts Band, The Lettermen, the Jackie Gleason Orchestra and Herb Alpert.82

In 1965, a tradition began that would be a part of ME students’ senior year for decades to come, when graduating seniors were rewarded with breakfast prepared by the ME faculty. Faculty members built outside fires and cooked sausage, bacon and eggs. Hot biscuits were served with plenty of butter, honey and syrups. The breakfasts were usually held at the Chairman’s home, and proved to be an enjoyable way for faculty and students to interact.

Tuition throughout the 1960’s ranged from $30 a semester to $50. Students still paid additional money for the blanket tax, lab fees, and books. The textbooks for mechanical engineers cost anywhere between $80 to $100 per semester, and it seems they got more expensive for the upper level courses.73 Most classes were held in Taylor Hall, which Mark Finley remembers as “…a wonderful place. In some sense, it was the whole world.” (where is the citation?)

Many students sought employment during their schooling. Some, like Mike McShane, BSME ’68, worked for various professors as teaching assistants or as graders, or at the Balcones Research Center. McShane worked summers for a mechanical engineer at the Air Force Security Service Lab at Kelly Air Force Base in San Antonio, Texas. Ruell Solberg, Jr., BSME ’62, worked full-time as a research engineer during graduate school for Defense Research Laboratory (later renamed Applied Research Laboratories).69

After graduation, Mechanical Engineering alumni of the 1960s enjoyed a diverse range of job opportunities. Ruell Solberg, Jr., developed hardware for NASA, and Jay L. Poth, started his engineering career with Continental Oil Company, then turned to aerospace, tunnel construction and finally owned a packaging machinery company. He is presently a working writer who enjoys boating and ranching and has published a novel, “The Last Cowman.”94

Dr. H. Grady Rylander
Continued Expansion

As the sixties came to a close and a new decade dawned, Mechanical Engineering continued to grow and change. In the seventies, enrollment, faculty hires and building construction all experienced significant growth for the ME Department at UT. The Center for Electromechanics was established. Department facilities at the Balcones Research Center were renovated to convert a fluid-flow heat transfer lab into a nuclear radiation facility under the administration of the Nuclear Reactor Teaching Laboratory. A new Mechanical Systems Lab was constructed in Taylor Hall, and Operations Research also obtained a lab in Taylor Hall. New research areas were added in solar, geothermal and fusion fields. The ME Chairman’s office moved from Woolrich Hall back into Taylor Hall in 1975. Also of note, the Department of Mechanical Engineering assumed control of space and personnel in the former COE Machine Shop. In the mid-seventies, the department began moving its own shop technicians into this location and renamed the facility the Central Machine Shop.

Dean Earnest Gloyna (dates)

During the 1960s, campuses across the country had been affected by students’ general distrust of administration. The UT College of Engineering attempted to bridge this gap by including students on the committee that selected the next Dean, Dean Earnest Gloyna.

Gloyna had served in World War II as an Engineer Officer for the Army, serving during six campaigns in Europe. Gloyna received his BS in Civil Engineering from Texas Technological College in 1946. He was hired as an instructor at UT Austin the following year, and taught while he completed his graduate studies for a Master’s in Civil Engineering in 1949. In 1952, Gloyna received a PhD from Johns Hopkins University in sanitary and water resource engineering. Then he served as the director of the Environmental Health Engineering Laboratory and the Center for Research in Water Resources. (this is at UT)

As Dean, Gloyna expanded the College’s endeavors into new areas of teaching and research during a time of rapidly increasing enrollment. Gloyna described his vision as follows: “the basic thrust of our College is to develop the best possible professional base for the future engineering practitioner, for those who later choose to direct their leadership capabilities toward the management of public and private enterprise, and for those who wish to add to basic knowledge through research.”
Governmental agencies were placing additional requirements for stricter management of contract research and program development.\(^\text{12}\) (what does this mean?) A program of intensive planning and continuous reevaluation was initiated and intensified with time.\(^\text{13}\) (again, this is not clear...) Reorganization and expansion included enhanced placement efforts for alumni and graduating students.\(^\text{14}\) Under Gloyna, each department within the College was required to produce an annual report for distribution.\(^\text{15}\) In 1976, the Engineering Foundation established the Clint W. Murchison, Sr., Chair of Free Enterprise, which continues to foster a vital link between the business community and The University.\(^\text{16}\)

**Dr. J. Parker Lamb, Chairman 1970 – 1976**

Dr. J. Parker Lamb received his B.S. degree in Mechanical Engineering in 1954 from Auburn University and his PhD in 1961 from the University of Illinois. Lamb spent two years as an Air Force officer managing research and design projects at Wright-Patterson AFB. Lamb’s research interests were in fluid mechanics and heat transfer, and he joined The University of Texas as a Professor of Aerospace Engineering and Engineering Mechanics in 1962. Additionally, Lamb served five years as a graduate advisor.\(^\text{do we need to repeat this? **maybe move his info from earlier up to here?}^\text{20}\) He also directed the Center for Aeronautical Research (CAR).

During his first tour as Chairman (1970-76), Lamb strove to build graduate enrollment. He succeeded, bringing enrollment from 100 to 150, and increasing faculty size from 20 to 40. Lamb also worked to improve ME facilities.\(^\text{21}\) He was considered an important catalyst for change: he revitalized the ME Department’s curricula, directing inquiry into new areas of research, including advanced energy technology and electronics.\(^\text{24}\)

In 1976, Dr. Lamb stepped down to become Associate Dean of Engineering for Academic Affairs for the College of Engineering.\(^\text{22}\) As Associate Dean, Lamb worked to solidify the standing of the Equal Opportunity in Engineering program for minority students, as well as other student support organizations. In 1981, he accepted the appointment to chair the Department of Aerospace Engineering and Engineering Mechanics.\(^\text{23}\)

During the 1970s, a significant building boom occurred campus-wide. In 1974, the Engineering Teaching Center I was named in honor of Ernest Cockrell, Jr, the founder of the Engineering Foundation.\(^\text{was it named, or built in this year?}^\text{38}\) who donated $3.3 million to complete the endowment of COE faculty positions.\(^\text{38}\) The building added 198,145 square feet of offices, classrooms and laboratories to the engineering physical plant, and cost $7 million to erect.\(^\text{39}\)

Enrollment overall surged in the seventies, and the number of women registered in the College swelled dramatically (in 1973).\(^\text{25}\) In 1970, there were 44 women enrolled in the College of Engineering. By 1979, that number had grown to 636.\(^\text{28}\) During the seventies and against the national trend, minority enrollment increased significantly at the University.

![Dr. J. Parker Lamb](image.png)
Curriculum and Research

Building on the changes begun in the 1960s, from 1972-1976 other Blocks were added to the ME curriculum including Biomedical Engineering, Energy and Fluids System Engineering, Mechanical Systems Design Engineering, Metallurgy and Material Engineering, Nuclear Engineering, Optimization Research and a Petroleum Industry Application. (Vliet questions this?) The 1974-1976 curriculum was a four year, 130-hour program. From 1976 through 1989, the curriculum remained fairly stable with most of the changes occurring in the block areas. The core of classes common to all disciplines was 58 hours in 1970.33 As technology continued to change, in 1978, (just 1978, or beginning in 78?) the College taught graduate courses via circuit television with two-way video and audio communication to students in San Antonio, with faculty traveling every three weeks to meet with their pupils.34

UT ME faculty continued to make strides in research. Ronald Panton, who joined the faculty in 1971, conducted research on incompressible fluid mechanics topics and, early in his career at UT, did research on wing tip vortex shedding using a Schitzer glider. He also authored a widely adopted graduate textbook, Incompressible Flow (Wiley, 1984 & 1996). Bill Oberkampf, who joined the faculty in 1970, studied computational aerodynamics.43

A broad effort in the area of energy conservation, environmental thermal pollution and alternative energy began around the mid-1970’s following the 1973 Arab Oil Embargo. Phil Schmidt had joined the faculty in 1970, followed by Gary Vliet in 1971, Jerold Jones in 1973, and John Howell in 1978. (make sure this is not repetitive, with faculty section) Schmidt studied(when?) thermal pollution of Lake LBJ, the site of a major power plant. Schmidt and Vliet performed research on the effect of magnetic fields on liquid metal heat transfer. Vliet also researched turbulent natural convection. All of these faculty, in addition to heat and mass transfer fundamentals, have pursued topics that were often ‘energy systems’ oriented.62(awkward sentence)

New Interdisciplinary Graduate Degrees

In the 1970’s Operations Research coursework was expanded to incorporate business and plant management courses. Manufacturing Systems Engineering (MSE) combined classes in Mechanical, Electrical, and Aerospace Engineering with those taught by the Graduate School of Business and the Department of Computer Science to educate students who would design and manage the computer-integrated manufacturing systems of the future.35 Roy Harris, a mechanical engineer and former Chairman of the Department of Management in the College of Business Administration, became the first director for MSE.36 Del Tesar’s work in robotics added complexity to the program. (Vliet says he didn’t come to UT until 1985?) Walter S. Reed introduced computer-aided designs to all sections of engineering graphics in 1977. Davor Juricic then rapidly expanded the coursework, enhancing the utility of this modern medium of engineering communication.57

Center for Energy Studies

is this part of the ME dept or the COE? I don’t understand this:

In 1972 an important facility for research opportunities, the Center for Energy Studies (CES) was established as The University of Texas Energy Research Group and was established at Balcones Research Center (now Pickle Research Center).(this is confusing, explain better?)63 The group was renamed Center for Energy Studies in 1973 with Herb Woodson as director. At that time the Center was operated with the support of approximately forty corporate supporters. At the Center, research topics encompassed almost every conceivable source of energy.64

A variety of projects addressing conservation in building energy systems were conducted by Jerold Jones. Thermally powered cooling systems were explored in several projects conducted by Howell and Vliet. Dr. Phil Schmidt conducted research on process energetics. Vliet examined solar energy applications in partial association with the Center. During much of this time research scientist Bruce Hunn directed and/or was associated with much of this work.(clarify) Important facilities used in this research at CES were Schmidt’s Process Energetics Laboratory and the general purpose Flow Test Loop.65
Solar energy research began in the late seventies in the Taylor Hall laboratories, and was continued and expanded with the inclusion of a Solar Energy Laboratory on the 10th floor and roof of ETC.

Five of the founding members of the group, Schmidt, Howell, Vliet and Jones with Mike Hart started ‘Energy Engineering Associates’ in the late 1970’s. After two years, this firm was turned over to Hart, and has become a very successful local Austin engineering firm.57

Graphics Area Revived

In 1978, Chairman Rylander recruited two tenure-track faculty to revive the Graphics Area of Mechanical Engineering, Dr. Davor Juricic from Stanford University as a Full Professor, and Dr. Ronald Barr from Texas A&M as an Assistant Professor. Their mission was to bring Graphics at UT into the computer-aided design era which was unfolding in industry in the late 1970’s.41

The first computer graphics teaching laboratory on campus was opened in 1979 in Mechanical Engineering. The laboratory consisted of eight stand-alone Hewlett-Packard desktop computers running locally developed modular graphics software. No commercial computer-aided graphics software was available for educational purposes, so the Graphics Area faculty devised their own software units that they termed “Mini-CAD”.42

Operations Research & Industrial—curriculum Engineering Area (????)

Gerald R. Wagner joined the faculty and introduced a series of courses in Applied Statistics and Information Systems that attracted many graduate students, especially military officers.

Faculty of the Operations Research Group distinguished themselves by winning prestigious awards. Charles S. Beightler along with Doug Wilde won the highest award of the Operations Research Society of America for their book, Foundations of Optimization. (publ when?) Paul A. Jensen and J. Wesley Barnes won the top award of the American Institute of Industrial Engineers for their book, Network Flow Programming. (publ when?)44

Undergraduate Enrollment: 1972-1979

Student and Dr. Gary Vliet with an absorption cooling unit.
H. G. Rylander, Jr.

H. Grady Rylander, Jr., Chairman 1976–1986

When Dr. H. Grady Rylander, Jr. became Chairman of the Department of Mechanical Engineering in 1976, he strove to educate engineers who could complete a project more quickly and at a better cost than their competitors. Move to NUCLEAR: Despite uncertain public support, the nuclear engineering program continued to develop under Dale E. Klein. Move: The nuclear faculty involved themselves in research for the application of fusion technology along with other alternative energy sources.

In addition to academic experience, Rylander had valuable experience in industry, which was beneficial for the Department and students alike. Rylander and others recognized the changing face of engineering. One major consideration was the revolution of education and industry by computers which began in the 1970’s, and would be addressed fully by Dr. Rylander at the start of the next decade. At the same time, in the mid-seventies, the expanding department was again in need of new facilities. Rylander worked to obtain an additional building for the department, complete with offices, classrooms, and laboratories, new furniture and equipment. Rylander’s goal would be realized in 1983 when the department moved into the ETC II.

Rylander writes of his experience as Chair:

“The most important thing that a Chairman can do is to keep the department a little uneasy with new ideas, proposals and operating plans...The Chairman quickly learns that the Dean and the Budget Council have the last say; thus, they must be courted. If the chairman loses their support, he will not be able to fulfill the needs of the department.” (cite Rylander, 2003)

Portrait of Chairman Rylander

Henry Grady Rylander was born on the family ranch in Frio County, Texas, three miles from nearby Pearsall, a town of about 3000 people...

In 1939, he started college at the University of San Antonio (now Trinity University)...After two years of pre-engineering at the University of San Antonio, Rylander transferred to the University of Texas and joined Pi Tau Sigma and Tau Beta Pi. Rylander graduated in 1943 with a degree in mechanical engineering, married Betty Zirkel, and started a job with Westinghouse. At Westinghouse, Rylander helped design supercritical steam turbines, landing craft, jet engines, and the first axial flow gas turbine engine. In 1947, Rylander returned to teach machine design at UT and to do research on sonar and radar scanning devices at the Defense Research Laboratory (now the Applied Research Laboratory). From 1949–50 he worked for Fargo Engineering on a contract with the LCRA (Lower Colorado River Authority) with a group of six engineers who designed the two dams and hydro-electric plants at Marble Falls.

In 1950, Rylander returned to UT to teach control theory, machine design, reliability theory, and advanced dynamics. In 1952, he received his MSME from UT Austin. In 1965, Rylander received his PhD from Georgia Tech and became a Professor of Mechanical Engineering at UT.

In 1970, Rylander began work on the development of the homopolar generator with Herb Woodson and Bill Drummond, to investigate better methods of energy storage. The Center for Electromechanics was born out of this research, and Rylander was director there until 1985.

From 1976 to 1986, Dr. Rylander served as Chairman of the Department of Mechanical Engineering. Undergraduate student enrollment increased from 577 to 1108 over the course of these ten years graduate enrollment grew from 146 to 257. Research funding increased from $1,353,000 to $5,240,042. Rylander was the major impetus in the planning and completing of ETC II, an important new facility. He also helped establish significant programs in materials and manufacturing engineering.

In 1985, Rylander received the prestigious ASME Leonardo da Vinci Award for his contributions to the development of the homopolar generator. He is a Fellow of ASME and has held six different Professorships in the College of Engineering. He is a Distinguished Graduate of the College. Rylander has an invention displayed in the Smithsonian Institute, the Klein-Rylander Medio-Lateral Knee Testing Instrument. Rylander is also listed in the American Men of Science and in Who’s Who in Engineering.
Rylander actively recruited new faculty members for areas he deemed were weak. Over the course of his Chairmanship, he hired forty-three new faculty in seven different areas, thus significantly increasing the scope of the department's research, as well as graduate enrollment. Rylander also worked to link the Senior Design Project program with industry. Dr. Leonard F. Kreisle formulated a successful plan to incorporate industry into this academic effort. **(how? Rylander says “long story”)** Both parties, students and industry, benefited from the exchange of ideas and this system is still active today. Because of its demonstrated success, the Senior Design Project at UT has served as a model for other institutions.55

Rylander expanded the use (how so?) of the Engineering Co-Op Program and the Visiting Committee. Modelled on a program active at Georgia Tech, the Engineering Co-Op program at UT College of Engineering, enabled ME students to work in engineering earning good pay and valuable work experience. These students could return to school after one or two semesters with sound engineering experience, and often a job offer in hand and seniority from the employer.57

To stay abreast of advancing technology, he expanded the use of computers in offices and classrooms for faculty, students and administrative staff. **(is this stated later?)** Rylander’s success benefited faculty in the form of better working conditions, and thus facilitated research and learning. Students achieved a greater association with industry, and therefore could be more competitive in the workplace. Many UT ME graduates doubled their starting salaries in five years.53

**Reflections of Dr. Gary Uliet**

(I cut this down...if this is a problem, pls let me know)

“We arrived in Austin in late August 1971 from California. My wife Donna was 7 and 1/2 months pregnant with our third child and that fall was one of the hotter ones on record...”

“I had come from 10 years in industry with zero teaching experience, other than serving as a lab TA in college. I met with Parker Lamb...He told me it would be ‘Heat Transfer’ and ‘Thermodynamics’....

“My first research project dealt with turbulent natural convection, and to do this in air I needed a very tall heated surface. John Pedraine was mainly responsible for constructing the 24 foot tall plate. Fortunately, the heat power lab had a large and deep pit (trench) that had been used for previous power and heat transfer equipment, and the roof had a saw-toothed construction that went up almost 20 feet above the floor. So the plate could be mounted vertically from the pit bottom to near the roof. The problem was that the heat power lab was not air-conditioned, resulting in a typical temperature variation during the summer of about 70 degrees in the pit to 130 degrees near the roof. The only solution for this was to start the experiments in the early morning (about 4 a.m.) when the stratification was minimal!”

(Rylander added this in):

Rylander introduced the Co-op Program to the COE. It was modelled after a successful program operated at Georgia Tech while he was in residence as a PhD student. The active use of the ME Visiting Committee helped formulate useful curriculum changes and brought in additional support.

**Staff Capsule here**

![Department Visiting Committee, 1974](image-url)
Visiting Committees

The idea of Department Visiting Committees was established by Dean William Hagerty in 1959, but were not formally realized until 1975. And even then, the Committees were not being cultivated to their greatest capacity. Mechanical Engineering faculty tended to shun the committee (how? why? find another way to say this), thus compromising the beneficial relationship, even though Visiting Committees helped furnish laboratories, raised funds for students and helped formulate curricula. From the mid-seventies on, the Committee began to meet once on campus and held one meeting off campus, sponsored by a committee member, usually an evening banquet and a half-day tour of their facilities. The arrangement was successful, and the new meeting format fostered better communication between companies and faculty.58

move to somewhere with funding?? fundraising??

Friends of Alec was established in 1973 to encourage alumni donations (how did it do this) to endow teaching positions in the College. Directed by Joe J. King (who is this?) during its first year, the project has exceeded all expectations and continues to be a reliable source of financial support.60

Center for Electromechanics

(I don’t understand this) The Center for Electromechanics began as the Energy Storage Group as a result of the Physics Department’s effort to find a reusable energy supply to ignite fusion devices, primarily TOKAMAKs. Drs. Woodson and Rylander assembled design ideas for a homopolar generator which served as a ME Senior Design Project at the Energy Storage Group in 1971-72. This 0.5 MJ homopolar generator was built in the ME Shop and then assembled and tested in the Thermodynamics Laboratory in Taylor Hall. It should be noted that this simple direct current device was fully described by Michael Faraday in 1831.58

In 1977, the Energy Storage Group was chartered as The Center for Electromechanics, CEM, with Rylander as Director and Woodson as Associate Director. From 1972 to 1985, CEM was located in Taylor Hall. Numerous important prototypes were constructed and demonstrated in the old Civil Engineering Testing Laboratory of Taylor Hall.69

Ulight Reflections continued . . .

I think this should be shortened -- other professors do not get as much page time... Dr. Rylander says no.

“In the mid-70’s Phil Schmidt and I obtained an NSF grant to do some liquid metal work that involved the effect of magnetic fields on both convection and boiling. We needed some air-conditioned lab space, and such space was not available anywhere in the Heat Power Lab area, but a screened off area in the northeast corner of the lab was available. So we used some of the grant funds (likely not legitimate) to close in, insulate and air-condition it with a window unit. It was, I believe, the first air-conditioned research room in the Heat Power Lab area.”

Some Archeology

“In the late 1970’s Phil (Schmidt) and I approached Dr. Rylander about converting the vacant lab behind Prof. Short’s office into a thermal-fluids lab, as there was interest in providing space for lab experiments associated with the fluid mechanics and heat transfer courses. With the help of the shop personnel, mainly John Pedraine and Morland (Benny) Benningfield, the various pieces of antique equipment and other junk in the room were shipped to surplus and the room otherwise cleaned up... It is interesting to consider the change over time: no great concern over persons being seriously exposed to mercury 60 years ago, to significant concern over an unoccupied lab being contaminated with mercury 30 years ago, to the almost elimination of mercury from all current instrumentation and equipment.”

An Artistic Side of Mechanical Engineering

“Around 1980 Professor Hatgill of the UT Art Department started sculpting in acrylic media and discovered the Taylor Hall Shop equipment to be invaluable. He would construct a mold with a particular shape and sequentially pour in layers of liquid acrylic of different colors, letting each set. Sometimes the mold orientation was fixed as all layers were poured, and in other cases the mold would be inclined from one layer to the next. After filling each mold he would then cut up the layered solid cast of acrylic into varying shapes with a band saw and then use one of the shapers in the shop to ‘shape’ the various pieces into desired forms. The shop personnel instructed him initially, but he got to be pretty proficient in using the shaper. He would be there for hours, day after day, and we could see the results develop as we walked by. The final products were really of high quality and several of them appeared in Art Department and other exhibitions and were sold to collectors. It is unfortunate that the Department does not have one of his sculptures on display in our building to show how the Mechanical Engineering and Art Departments ‘collaborated’ in his artistic work.”
The Mechanical Engineering Propulsion Laboratory -- Vliet questions that Heyt was first director. (?)
(move this earlier, with other new bldgs?)

John W. Heyt became director of the Mechanical Engineering Propulsion Laboratory in 1970 and renamed it the Mechanical Engineering Systems Laboratory. Heyt and Wayne E. Long developed applications for high velocity air flows in ducting for heating and air-conditioning systems in all varieties of buildings. In 1972 William Oberkampf directed the lab. As interests shifted, the lab became known as the Nuclear Radiation Laboratory (NRL).\(^7^6\)

In conjunction with fusion research projects, Draper began investigations of fusion-reactor blanket materials and served as Coordinator of nuclear studies for the CES, overseeing research in operational safety, atomic waste disposal, uranium mining, national policy analysis, and nuclear economics. The NRL no longer exists.\(^{since when?}\) Its research responsibilities have been assumed by other research units at the Balcones Research Center.\(^7^7\)

The Nuclear Engineering Teaching Laboratory
(should this be earlier, with the new nuclear program?) Dr. Rylander says to omit and keep in the appendix??

The Nuclear Engineering Teaching Laboratory, led by Dale Klein \(^{Vliet says Linn Draper. According to Vliet, Klein did not come until 1977 “and I believe he did not take over till at least a year or 2 later. Linn Draper left in 1978 or 79 (?) and was director until he left. This needs to be reworded.”} in the seventies, provided facilities for fission experiments within the CSME \(^{Vliet: What is CSME?}\) and also conducted its own graduate research and teaching. Other faculty involved were Dale Klein and Billy Koen and Nolan Hertel.\(^{Vliet: “I don't believe Nolan Hertel was hired until the 80s. At least he's not listed as a faculty hire on pg 138. He is listed as a TFS in 1973, but I'm sure this is incorrect.”}\(^7^8\)\) At this time the NETL was located in Taylor Hall.

Klein conducted research on heat transfer and on methods of reprocessing nuclear fuel for reuse instead of its disposal as radioactive waste. The NETL housed the Mark I TRIGA thermal fission reactor, described earlier in this chapter. Along with the reactor in Taylor Hall were the subcritical assembly, a 2000 curie Cobalt - 60 irradiator, and the electronic components used in specialized radiation detection and counting systems. A high purity germanium detector with a microcomputer data acquisition and evaluation system facilitated measurements of neutron activation analysis techniques. A 14 MeV Texas Nuclear neutron generator in the basement of the Engineering Science Building permitted examination of 14 MeV neutrons with various materials. Such equipment allowed graduate students to study the operation of a fission reactor, learning about nuclear power generation through its full cycle, from startup to shutdown. Billy Koen worked in nuclear safety and reliability. Nolan Hertel worked in radiation shielding and protection.\(^{per Vliet, again did he come in the 70s?}\(^7^9\)
The Life of an ME in the 1970’s

In the Classroom

The average mechanical engineering student enrollment was roughly 2000 (per Vliet: “I think this is very high, the max was 1400, and not in the 70s) students. Classes ranged in size from 10 to 40 students, but some freshmen and sophomore courses had hundreds of students.

Linda Woosley, BSME '79, enjoyed Dr. Bourell “because he wasn't bored or boring”. Rick Relyea, BSME '70, said Dr. Rylander “took me under his wing and guided me through my career choices and I still use some of his advice today.” John Casstevens, BSME '74, remembers, “Grady Rylander was my favorite and he was my supervisor and helped me solve problems with carefully targeted suggestions; his support was very important to me.” Casstevens was also impressed with Dr. Vliet, Ron Panton and Ken Ralls, who “went to bat” for him to get into the graduate program.(citation 100) Gary Finch, BMSME '73, characterized Vliet as “one of my inspirations. He was very dedicated and excited about what he was teaching.”(cite 99) Ken Cockrell, BSME '72, appreciated Dr. Oberkampf “for unveiling the mysteries of compressible fluid flow.” 82 Elliott Short, BSME '73, had an unusual experience with teaching at UT: “Like most students, I had the Who’s Who of Professors: Eckhardt, Kriesle, Kent, Vliet, Oberkamp, Wall, Ralls, Brown and Halfenstine. But I also had my father, Byron Short, for four courses plus untold office hours assistance in other courses and years of background education…”

Joe Beaman, BSME '72, remembers of Dr. Rylander’s classes: “One of his favorite problems in Dynamics was a bug on a windshield wiper of a car going around a curve.”

“'I was impressed with Dr. Carter,” remembers John Casstevens, BSME '74, “and I often told people that “the ME department should keep that guy around as an example of how to be a cool engineering guy so the students could see one. Grady Rylander is another man who I admire. He was always courteous and cordial even when giving bad news and he knew his stuff both theory and hands-on. Great raconteur. Good entrepreneur. He once said the main product of the big Energy Storage Group he set up was students. ... Howard Webb who ran the Taylor Hall shops had a lot of hands-on experience and was always a pleasure to work with once you got past his gruff manner. Larry Hoberock was so deeply interested in his subject matter that it was out of the question not to do his homework and work hard in his classes. I sometimes thought he had some psychic power. His explanations and examples in class were captivating. Dr. Vliet was a genuinely professional teacher and engineer and one who I felt was supporting me as a student…”

Favorite classes included courses on controls, engineering economics, metallurgy, computer modeling, jet and rocket propulsion, fluid mechanics/thermodynamics, and bearing design.

Professors Amstead and Allen taught the Senior Design class in the 1970’s. Examples of senior design projects included helical storage for automated testing (Joe Beaman, BSME '72), redesign of a punch for Texas Instruments (David Hughes), a welding fixture for a railroad rail (Ted Aanstoos, BSME '80), a gadget to feed pieces into a drill press (Linda Woosley), a scrubber for an ecology problem at the Alcoa and Dow plants in Freeport, Texas (Rick Relyea, BSME '70), fixing a glitch on a newspaper sorting machine built by Cutler-Hammer Company that was being used by the Houston Chronicle (John Casstevens), an upgrade to a water chiller system at a factory in Ft. Worth (Ken Cockrell), and the design of a stairway for Cameron Iron Works (Gary Finch). 91

Linda Woolsey, BSME '79, recalls her experience being a woman in the ME program in the 1970s: “I actually had a professor tell me that I couldn’t be an engineer because I was female. Now I would sue him...There were 4 other women in all of my classes. I purposely flunked typing (in high school) and drafting (in college) by freehand drawing all the work so that I could honestly tell a future employer not to make me be a draftsman or a typist.”

In keeping with the changing technologies, some students began to replace their slide rules with a more advanced device. In the 1970’s, the scientific calculator became an integral tool for ME students. John Casstevens (BSME '74), was one of the first students to have a scientific calculator, which he described as his “secret weapon.”

Portrait of a Student in the 1970s

“My main goal was a 4-year degree so that I could be a pilot in the armed services. I chose engineering because I thought I could understand it and it would enable me to get a good job if I couldn't be a pilot for some reason. I chose Mechanical over Aerospace to provide more secure job opportunities.

“After graduation from Texas, I joined the Navy and became a pilot, flying A-7 Corsairs in the '70's and F-18 Hornets in the '80's. In the Navy, I got my masters degree during flight training and completed test pilot training in 1979. I was on active duty for 15 years, during which I made 650 carrier landings and did a variety of flight test work. In 1987, I left active duty and went to work for NASA as a research pilot. In 1990, I was selected as an Astronaut, and have flown five shuttle missions, the last three as the Mission Commander.”

- Ken Cockrell, BSME '72
SHORTEN THIS: This is a very long quote by John Casstevens.....

“When I was in graduate school, I built up a high speed friction testing system to test brush materials for the Homopolar Motor Generator that was the basis of the Energy Storage Group. In order to get the surface speed that I wanted, the 15-inch diameter rotor needed to turn 10,000 to 15,000 rpm. To power the rotor, which ran in automotive hydrodynamic bearings, a turbocharger rotor from a WWII aircraft engine was rigged to be driven with high pressure air. I arranged to have a 2-inch diameter air line brought over from the two large air compressors in Taylor Hall. One was a 150 hp two-cylinder Ingersoll Rand and the other was a 75 hp V twin Sullair. I would typically crank up both compressors and add in all the so-called ‘plant air’ that I could get. With all that air coming in I could get over 12,000 rpm on an average day and almost 15,000 rpm on a good day. The standard shut-down procedure after running the big compressors most of the day was to go out to the north side of Taylor Hall and open a valve on a 1000 gallon air receiver tank and blow the condensed water out. I didn’t like that chore because the condensed water and oil that had collected had a smell much worse than a truck load of sweaty gym shorts and when the last of the 15-50 gallons of foul water came out the escaping blast of air gave a deafening blast of noise that hurt my ears. One day I was tired and in a hurry to get home and rushed out and opened the valve without looking. The 20-30 foot stream of smelly oil and water normally shot out into the parking lot. I looked up and heard a cry and saw a poor guy who had just been mounting his bicycle when I opened the valve. When I got the valve shut he and his books and bike were drenched with the terrible compressor discharge and he was looking at me in shock with his dripping hair in his face. I said I was sorry that I hadn’t seen him. At the same time I knew he would never understand why anyone would do such a thing to him or why I was opening valves like that at 6 PM. I knew that he would get over the shock and the heavy odor pretty soon. I said I was sorry again and slipped back inside Taylor Hall and locked the big doors behind me as was the usual procedure and went out the other side of the building. It was something I am sure that guy still remembers and I was always careful to look down range before opening the valve after that.

“When I was working odd hours running the brush testing machine mentioned above I would run tests at all hours of the night with no particular schedule. Sometimes I would make a short run at 2 or 3 AM for example. One day at around mid-morning I was running the test rig and I suddenly felt that I had a lot of company. When I turned around I met a grim-looking group of about four people staring at me with one of them wearing a tie. After I got the test rig stopped, I took off my ear protection and asked them what I could do for them. It turned out that the man in the tie was the manager of the UT Power Plant which was next door to Taylor Hall. His first words were ‘You are the one who has been putting spikes in my curve.’ After I detailed what I was doing and why, he explained that my use of ‘plant air’ in addition to the output of the two Taylor Hall compressors had been such a large use that it was causing the control systems for the steam turbines of the power plant to go out of control. The turbine control systems used compressed air and they had been hunting for the massive transient ‘air leak’ for months but could never find it because the ‘leak’ would disappear about the time they started looking for it. Since the work crew with him had suffered through months of 2 AM and 3 AM emergency air loss situations they were disappointed when all the manager did was tell me he was going to put an orifice in the air line to restrict the air flow from his plant to Taylor Hall. I am sure they considered me to be some sort of terrorist.”

Dr. Phil Schmidt and student
Campus life, outside the classroom

Once again in the nation’s history, it was a war that dominated the lives of students, this time in Vietnam. The draft issue weighed heavily on the minds of young men. Students of this era remember the controversies surrounding the war, conservative versus liberal viewpoints, and protests on campus. Rick Relyea, BSME ’70, felt the pressure of the draft on his professional life. “Every decision you made was to try to graduate and not get drafted. It seems to me that an engineering degree was 138 hours in those days. There was no way I could go to summer school and have enough money to go to school. So it was a race to graduate before the draft.” Ken Cockrell, BSME ’72, discusses his experience: “I was there from ’68 to ’72, so the prevailing issues were the Vietnam war and the draft, and sort of a non-specific movement of the people (mostly us young ones) against the ‘Establishment’”. Gary Finch, BSME ’73, sums up his impressions of the era: “This was the Vietnam era. Hippies were dancing in the ‘peace’ fountain naked on the West Mall. I remember being a naive young man from a conservative small town in Texas seeing the hippies dancing and thinking, ‘What have I gotten myself into!’” ⁴

The occupation of the U.S. embassy in Iran by Ayatollah Khomeini created some tension, “I was in classes with a lot of Iranian students,” recalls Linda Woosley, BSME ’79, “They all stopped talking to the rest of us, and even withdrew to another corner of the T-Room and started whispering, when Ayatollah Khomeini and mob took over the U.S. embassy. I am afraid that most of us were so consumed by school that we didn’t know it had happened, and had to ask why.”

UT ME students remember controversial issues of the day. Linda Woolsey states: “Birth control was the only issue that impinged on my concentration. I still detest politics.” ¹²¹ Ken Cockrell’s most vivid memory of campus life was “...hundreds of students spending the night on the grass in front of the fountain, after the Kent State killings.” ¹²³ And Warren Waggoner, BSME ’74, remembers the general tenor of UT in the 1970s:

“Austin was a key stop along the southern route between California and the east coast. We attracted a lot of hippie culture, liberal views and engineers were such a minority group (I think we had only 2000 undergraduates in the College of Engineering) that we had to seek social support from within our small relative population because we were viewed to be so conservative. West campus area (Main Building, Union) were sites of daily protests, banners, etc. Frank Erwin polarized the campus with his manhandling of protesters who did not want trees cut down for building expansion plus he was not liked by students opposed to the Vietnam conflict.” ¹²⁴

[Portrait of a Student]

“I originally started at UT in the Business School in accounting...I was drafted into the Army during the Vietnam War and started mechanical engineering when I came out of the Army two years later...

“Worked as a mechanical engineer for Fluor Engineers and Constructors after graduation from UT. Left Fluor to work for Union Carbide Nuclear Division at Oak Ridge, Tennessee at the Oak Ridge Y-12 Plant which is the largest nuclear weapons fabrication facility in the US. Worked on various nuclear weapons as a member of the Development division. Also built the national flywheel test facility for testing flywheel energy storage devices for use in electric vehicles. The major work at Oak Ridge was in the area of super precision machining of optical components for use in laser weapon systems in support of the Strategic Defense Initiative (SDI) “Star Wars”. Left Oak Ridge and established a super precision optical fabrication capability for a military optics company in Dallas, Texas called Optic-Electronic Corp. After ten years in the optics business left OEC as Vice President of Advanced Products Div. to found Dallas Optical Systems, Inc. in 1991.⁹⁷

- John Casstevens, BSME ’74
Social Life in the 1970's

Popular activities included sporting events, rugby, fraternity parties, softball, intramural sports, keg parties in the park, concerts, movies, the Longhorn Band, cultural events sponsored by UT, R.O.T.C. events, waterskiing at Lake Austin, and Tau Beta Pi events.

Favorite places to go in Austin included the Posse East, fraternity houses for parties, parks along Lamar Boulevard and on 30th St. behind the fire station, Zilker Park, and the Broken Spoke. The music of Big Brother and the Holding Company was big, as were Bob Dylan, the Beatles, the Rolling Stones, the Dave Clark 5, Creedence Clearwater Revival, Elvis, Led Zeppelin, Janis Joplin, Elton John, Willie Nelson and Merle Haggard. 105

Linda Woosley, BSME '79, remembered her dating experience as a UT ME: "I remember a Harry Chapin concert in the women's gym. I went to a lot of baseball games, and some football and basketball games, especially after I started dating a band nerd. When really poor, we just played pinball in the bar in Dobie...I did manage to get over to Armadillo World Headquarters a few times." 106

Students were active in school organizations. Phi Kappa Tau was a popular social fraternity with many mechanical engineers as members. David Hughes, BSME '72, remembers coaching a football league for under-privileged kids with Phi Kappa Tau. The American Society of Mechanical Engineers was also a popular organization. Some students were also involved in ROTC and Tau Beta Pi. Pi Tau Sigma remained popular as well. In the seventies the requirement for qualifying for PTS jumped by one full point. [Vliet says not true, check the text b/c this is said earlier as well]. At the pledge initiation starting in the 70's the pledges were required to parade around and up and down Taylor Hall blind-folded and carrying a cup of water, a tradition that continued until Spring 2003. In the late 70's the 'Posse East' restaurant was discovered (on San Jacinto) and since that time, it has been the site of numerous PTS meetings and functions. 101

During the decade of the 1970's, tuition ranged from $50 to $200 a semester, depending on Texas residency. The blanket tax was $16. Students spent between $40 and $200 on books per semester. 10

Tuition and the cost of living in Austin were on the rise, and many students got jobs to make ends meet. David Hughes, BSME '72, drove school busses for $1.60 an hour. Linda Woosley, BSME '79, [if a student has been introduced earlier, do we need to keep repeating this?] worked double as a waitress and as a tutor. Rick Relyea, BSME '70, worked as a fry cook at Dobbs House for 65 cents per hour plus tips. Ken Cockrell, BSME '72, worked in the cafeteria freshman year, then worked in air-conditioning repair during his sophomore year, and as a line serviceman for Ragsdale Aviation at Robert Mueller Airport during his senior year. Gary Finch, BSME '73, cleaned and cooked at Jester Cafeteria for "maybe $3 to $4 an hour". 111

Some students held jobs as research assistants and engineering assistants within the Department. Ted Aanstoos, BSME '80, worked as an Undergraduate Research Assistant at the Center for Electromechanics. John Casstevens, BSME '74, developed hardware for Ron Panton's glider. Later, he worked as a grader of thermodynamics for Gary Vliet. Still later he was a Graduate Research Assistant with the Energy Storage Group under Grady Rylander when he was working for his Master's Degree. 112

Students recognized that their engineering educations were relevant to the war effort. David Hughes, BSME '72, stated: "Yes, Dow made napalm - we designed plants." 113 Ted Aanstoos, BSME '80, noted that students did substantial research in Star Wars related technologies. 114 And John Casstevens stated: "This question may relate to World War II era engineering students, but my 7 years of work with nuclear weapons at Oak Ridge and near continuous work on military optical systems since then show up in the current war on terror and the past Persian Gulf War. Night vision systems, laser rangefinders, laser weapons, infrared imaging systems, space surveillance systems, space shuttle optical systems are all products that I have been involved in since UT." 115

Dr. Joseph J. Beaman, Jr. became part of the UT ME Faculty in 1979.
Graduate Student Picnic

The graduate student picnic is a beloved tradition that came into being in the 1960s. ME Chairman Bill Upthegrove, appointed Parker Lamb Graduate Advisor, and urged him to build the graduate program to at least 100 students. Early on, the graduate students were a small and closely knit lot, but as the program grew during the 1964-69 period that Parker was the advisor, specific graduate areas developed and the students became less cohesive. Sometime around 1966-67 the Department began holding the picnics to improve camaraderie across areas of study and between students and faculty. The first GSP (and many successive picnics) was held at the Ziker Clubhouse overlooking Town Lake and the city. Initially it was held late in the spring semester, but was soon switched to the Fall semester to include incoming graduate students. Students and faculty enjoyed socializing, modest imbibing and a rousing game of volleyball. The main event was dinner prepared by the faculty, which was a hearty meal including baked potatoes and green salad. The feature item were the juicy steaks cooked on the old barbecue grill that had been fabricated in the ME shop.85

In the 1970s, the GSP evolved into a more theatrical event. A few graduate students, in collaboration with Jean Sanford (the ‘mother’ of many of the graduate students), began incorporating skits that gently teased the faculty into the day’s events. A couple of the early instigators were Don Berry and Gary Polansky. The addition of the skits went on for 3 or 4 years, each year the graduate student ‘roast’ becoming more pointed, but still in fun. Another skit in a similar vein was, ‘Kays hold the Crawford’, with probably Gary Polansky the instigator. A student walks up to the Co-Op textbook counter and says, “I’d like a copy of ‘Kays and Crawford’. The ‘clerk’ puts a big pile of computer paper on the counter and says, “That’ll be $34.50”, to which the student responded, “Well, could you hold the Crawford. You see I really want a copy of ‘Kays’, but since that edition is out of print, I’ll settle for ‘Kays and Crawford’, but hold the Crawford.” After much haggling the clerk says, “You want me to take out everything contributed by Crawford?” “You got it”, responds the student. This goes back and forth and finally the clerk says, “Ok, have it your way”, quickly leafs through the ‘book’ and meticulously tears out a single page and says, “That will be $49.95.” The student responds, “But that’s more than ‘Kays and Crawford’.” The clerk says, “I can put the Crawford back in ....”, to which the student backs away, holding up both hands and says, “NO! I’LL PAY! I’LL PAY!”

At the event in the Fall of 1979, a special award was presented to Parker Lamb. It was on behalf of all the students who took his class, but was presented by Gary Polansky and was the ‘Golden Screw Award’ .... the golden threads of a 4 inch lag screw protruding up through a wooden base....Recently (2002) Parker proudly showed me this award which occupied a special place in his bookcase... (I’ve already cut this some, but it needs more.)

One of the earliest, if not the first, of the skits consisted of Don Berry doing standup with material supplied by various graduate students. He had Gary Polansky for ‘security’ and at one point in his presentation, when Gary reached in his coat as if going for a gun, a few empty .38 cartridges fell to the ground...One of the skits involved Don aiming his ‘research’ bow and arrow toward Joe Beaman standing across the room wearing one of those arrow-through-the-head gadgets. Another was the Al Traver Look-Alike contest... (I cut this down)...

Another involved a student pushing in a wheelbarrow full of bound paper. On being asked what he was doing, he responds that he is on his way to class. The bystander asks, but why the wheelbarrow? To this the harried student replies that he is going to Dr. Panton’s Incompressible Flow class and it was essential that he have the errata for Panton’s new graduate text with him at all times, or else he couldn’t understand the book.
Chapter 6: The 1980’s
An Era of Continued Growth
Chapter 6: The 1980’s

Population Statistics

1980 Census
U.S. ... 227.2 million¹
Texas ... 14,229,191²
Austin ... 345,496³
UT ...
ME ...

What remains of the original Alec

Mechanical Engineering in the 1980’s

In the eighties the Department of Mechanical Engineering saw many improvements including significant construction of modern facilities that increased research and classroom space available to faculty, students and staff. Chairman H. Grady Rylander’s goal to provide the department a new building was realized in 1982 (or 83?) with the completion of the $30 million⁵ Engineering Teaching Center II. Additional research space became available in 1986 with the construction of the Electromechanics and Energy Building at the Balcones Research Center (Vliet questions whether this is the correct name?). Notably, the Cray X-MP/24 supercomputer was installed at the BRC in 1986.⁷ More space was also made available for research in nuclear engineering in the eighties. The TRIGA reactor was moved from its location in Taylor Hall to the new Nuclear Engineering Teaching Laboratory at the Balcones Research Center. There, faculty and students had significantly more room for research activities.⁸

During this period the microelectronics industry expanded rapidly in Texas thus creating a new era in UT programs for microelectronics and computers. In 1983, the research consortium Microelectronics and Computer Technology Corp (MCC), located its research center (can we say headquarters?) in Austin, Texas, and the Center for Materials Science and Engineering (now called Texas Materials Institute) was established. Many other manufacturing and research facilities came to the Austin area during this period thus providing jobs and research opportunities at all levels.⁹

The stock market crash of 1987 was an enormous economic set-back for the nation. Fortunately, The University was not as devastated by the crash as it may have been, thanks to the Permanent Fund. Dividends and interest income that were distributed to the Available Fund increased from $31 million in 1973 to $236 million in 1987-88.

The eighties saw a tremendous growth in faculty positions in the department. By 1983, the faculty in Mechanical Engineering had grown to 45 full-time positions supplemented by 16 part-time faculty and 65 teaching assistants.¹¹ In 1982, the Jones-Lindsey report, sponsored by the American Council on Education, National Research Council, American Council of Learned Societies and Social Sciences Research Council, ranked the Mechanical Engineering doctoral programs at 228 universities across the United States. UT Mechanical Engineering ranked 16th in the nation in “Faculty Quality” and “Program Effectiveness” and first in the South and Southwest in the same categories. The department was rated second in improvement over the previous five years.¹²
The department itself became more progressive in the eighties under the leadership and initiatives of Chairmen Rylander and Howell. In 1986, the department finally hired its first African-American faculty member, Dr. Harovel Wheat, hired as an associate professor of Materials Science and Engineering.14

In 1983 The University of Texas celebrated the 100th anniversary of its founding. President Flawn and his staff organized a number of events and celebrations throughout the UT System. The Board of Regents commemorated the anniversary with a special drive for professorships and chairs: they provided matching funds for each donation ($100,000 for Professorships and $500,000 for Chairs as a minimum contribution) using the funds generated by the interest from the Permanent Fund.10

On the occasion of the hundred year anniversary of the College of Engineering(was the COE also 100?), Dean Earnest Gloyna summarized the progress of engineering research at The University of Texas at Austin and its effects on the state as a whole in his book, Commitment to Excellence:

“The goals of faculty and students have remained constant during the one-hundred-year history of the College. Beginning with the efforts of Dean Thomas U. Taylor before the turn of the century, engineering research at The University has facilitated greater use of the natural and human resources in the region and led the way to more diverse industry as technology progressed rapidly after World War II. Both the public and private sectors of the state economy benefited immeasurably from the innovations of the engineering laboratories in Austin during the tremendous growth and change that characterized an industrializing Texas in the twentieth century.” 27

In his last College of Engineering Annual Report (1986-1987), Dean Gloyna voiced his encouragement and faith in the Department’s faculty and staff in the following statement:

“Great challenges lie ahead. The frontiers of engineering education are expanding at an unprecedented rate. Risk-taking and experimentation are essential in planning relevant curricula. Programmatic goals will not be established for the College by the higher echelons of University administration; these goals and their associated objectives must be developed by the dean, the chairmen, the research directors, and the budget councils. Ultimately, the individual members of the faculty must be held accountable for achieving the standards of academic excellence articulated in the College goals.

“Pinnacles of excellence are built to be scaled. I leave this post with no doubt that this College will succeed in reaching the summit, because its administration, its faculty, and its staff have a strong sense of direction and a willingness to excel.” 29

Enrollment and Curriculum

Student enrollment in 1982 was 1110 undergraduates. Enrollment in the graduate program was 119 at the Master's level and 49 at the PhD level.13 Enrollment in the UT ME Department reflected national and global changes. In the eighties, international students made up a significant portion of engineering enrollment. While non-native undergraduate enrollment never exceeded 13 percent of the student body, in the fall of 1982 the non-native graduate population swelled to over 47 percent.15 Incentive programs were implemented to induce more American engineering students to enter graduate school.

An unprecedented growth in engineering enrollment forced the implementation of restrictions on new admission and candidates for undergraduate degrees. Between 1974 and 1982, enrollment in engineering tripled. Faculty committees and the University administration formulated a plan, implemented in the fall of 1982, to coincide with the campus-wide enrollment restriction effort initiated by President Flawn.17 What was this plan?

The core of classes common to all disciplines was 44 hours in the eighties (compared to 58 in 1970.) From 1976 to 1990, the curriculum remained relatively stable with most of the changes in the block areas. In 1984 the total hours were increased from 131 to 134, but then returned to 130 hours in the 1988-1990 catalog as shown in Figure 10.18

ETC II

As already mentioned, UT enjoyed a building boom in the 1980’s. The major construction program included a new home for Mechanical Engineering, the Engineering Teaching Center II. This new facility, which was ready for occupation in 1983, contains more than 225,700 square feet for classrooms, offices and labs. The ETC II was able to house the entire department, with the exception of the Nuclear Engineering Teaching Laboratory, which was located at the Balcones Research Center (now the J. J. Pickle Research Center.) Much faculty interest was stimulated by the more than $5 million was allotted for equipment.
### Figure 10: Suggested Arrangement of Courses for Eight-Semester Program (1988–1989)

#### First Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 301, Principles of Chemistry I.</td>
<td>3</td>
</tr>
<tr>
<td>E 306, Rhetoric and Composition</td>
<td>3</td>
</tr>
<tr>
<td>M 808A, Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>ME 102, Introduction to Mechanical Engineering</td>
<td>1</td>
</tr>
<tr>
<td>PHY 303K, Engineering Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHY 103M, Laboratory for Physics 303K</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM 306S, Statics and Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>M 808B, Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>ME 201G, Engineering Graphical Communication</td>
<td>2</td>
</tr>
<tr>
<td>PHY 303L, Engineering Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHY 103N, Laboratory for Physics 303L</td>
<td>1</td>
</tr>
<tr>
<td>American Government</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

#### Second Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 316K, Masterworks of Literature</td>
<td>3</td>
</tr>
<tr>
<td>EM 319S, Mechanics of Solids for Mechanical Engineers</td>
<td>3</td>
</tr>
<tr>
<td>M 427K, Advanced Calculus for Applications I</td>
<td>4</td>
</tr>
<tr>
<td>ME 324, Kinematics and Dynamics of Mechanical Systems</td>
<td>3</td>
</tr>
<tr>
<td>ME 335, Probability and Statistics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 319, Mechanical Engineering Computations</td>
<td>3</td>
</tr>
<tr>
<td>ME 326, Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td>ME 334, Materials Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ME 353, Engineering Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>American Government</td>
<td>3</td>
</tr>
<tr>
<td>Approved natural science elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

#### Third Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 331K, Electric Circuits and Electronics</td>
<td>3</td>
</tr>
<tr>
<td>ME 328, Thermodynamics II, or ME 361M, Thermodynamics of Materials</td>
<td>3</td>
</tr>
<tr>
<td>ME 333T, Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>ME 336, Materials Processing</td>
<td>3</td>
</tr>
<tr>
<td>ME 345, Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>ME 145L, Fluid Mechanics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 338, Machine Elements</td>
<td>3</td>
</tr>
<tr>
<td>ME 339, Heat Transfer</td>
<td>3</td>
</tr>
<tr>
<td>ME 340K, Mechanical Engineering Measurements and Instrumentation</td>
<td>3</td>
</tr>
<tr>
<td>American history</td>
<td>3</td>
</tr>
<tr>
<td>Approved mathematics elective</td>
<td>3</td>
</tr>
<tr>
<td>Approved technical area elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

#### Fourth Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 344, Dynamic Systems and Controls</td>
<td>3</td>
</tr>
<tr>
<td>ME 144L, Dynamic Systems and Controls Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ME 366J, Mechanical Engineering Design Methodology</td>
<td>3</td>
</tr>
<tr>
<td>Approved electrical systems/digital systems elective</td>
<td>3</td>
</tr>
<tr>
<td>Approved technical area electives</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 366K, Mechanical Engineering Design Project</td>
<td>3</td>
</tr>
<tr>
<td>American history</td>
<td>3</td>
</tr>
<tr>
<td>Approved fine arts or humanities elective</td>
<td>3</td>
</tr>
<tr>
<td>Approved social science elective</td>
<td>3</td>
</tr>
<tr>
<td>Approved technical area elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>
Twenty years later, the Engineering Teaching Center II remains the home of the Department with few modifications. The building was one of the earliest designed for computer networking, featuring wiring to all rooms and a central control in the two studio classrooms. Today, use of the building is quite similar to initial intentions. The first floor houses the machine shop, foundry, storage and heavy machines with laboratories for engine tests, manufacturing, vibration, fatigue tests, combustion, thermoscientific and polymer processing. The second floor was designed for classroom space with an instrumentation laboratory and the CAD/CAM (Computer Aided Design and Computer-Aided Manufacturing) laboratory with a Remote Job Entry Terminal connected to the Computation Center.

The third floor was designed for Graphics and Computer Aided Design with plenty of laboratory space to handle the large number of engineering students taking drawing. The fourth floor was for Mechanical Systems and the labs to teach mechanical design, systems dynamics, vibration, controls, acoustics and robotics. The fifth floor contains the administrative offices and the Operations Research group along with two studio classrooms. The sixth floor houses the building’s air supply, as well as a fluid mechanics research lab and some project labs.

On the seventh floor is the Thermoscientific group including laboratories for fluid mechanics, heat transfer, and energy conversion. The eighth and ninth floors house the Materials Science groups with laboratories for mechanical tests, heat treating, microscopy, magnetics, rheology, radioisotopes, ceramics, composites, thin film deposition, optics and microelectronics. An X-Ray facility and electron microscope are also located on these floors. The tenth floor is only a partial floor which houses HVAC equipment for the seventh through tenth floors as well as one laboratory for solar energy experiments. 

A study lounge with refreshment facilities is located on the second floor to make up for the loss of Taylor’s T-Room.

As a ten-story structure, the assignable areas are: 25

<table>
<thead>
<tr>
<th>Area</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classrooms</td>
<td>33,091 sq. ft.</td>
</tr>
<tr>
<td>Laboratories</td>
<td>83,080 sq. ft.</td>
</tr>
<tr>
<td>Offices</td>
<td>31,713 sq. ft.</td>
</tr>
<tr>
<td>Lounges</td>
<td>3,172 sq. ft.</td>
</tr>
<tr>
<td>Sub-Total Net Assignable</td>
<td>151,056 sq. ft.</td>
</tr>
</tbody>
</table>

Net/Gross = 151,056/225,700 = 0.67
In August of 1983, Chairman Grady Rylander, in a memorandum (was it?) to UT President Peter T. Flawn, described the future plans for the Department, and how these would be achieved with the new ME facility:

"Long range goals of the department include a commitment to excellence through increased productivity of the faculty, staff and students. These goals will be met by concentrating on new areas of study such as the Manufacturing Systems Engineering Master’s program which will develop an interdisciplinary option to the Master’s degree in Mechanical Engineering. A new CAD/CAM (Computer Aided Design and Computer Aided Manufacturing) laboratory is now being [1983] established in this building with a large gift from IBM. Other industrial grants are anticipated which will make this program grow into one of the best in the world.

"Texas is an ‘energy’ state and this building will contribute heavily in the future through research and teaching in such fields of study as nuclear power, fusion power, coal, gas and oil combustion, fluid mechanics; engine design, heat transfer, solar and wind power, and the materials science studies which are needed by all power producing bodies.

"An ever expanding electronics economy, with its associated microelectronics research must have a supply of students trained in materials science, laboratory experience on the electron microscope, X-Ray, ion implantation and surface analyzers. These facilities are supplied on the 8th and 9th floors of this building."

**Graphics**

The Graphics area, among other areas, benefited greatly from the new facilities in the ECT II and the equipment budget. A considerable investment was made in acquiring the Holguin Computer-Aided Drafting and Design (CADD) system, which was used for teaching the graphics courses during the 1980’s. Ron Barr, Davor Juricic, Margaret Baker and Walter Reed continued to be driving forces behind the development of the Graphics program during the eighties. Ms. Margaret Baker, ME’s first female faculty and a long-time Associate Professor in the Graphics Area, retired, leaving an lasting impression on the Department. She had also acted as a guidance counselor in the Engineering Dean’s office. Other Graphics faculty included Teaching Specialists Thomas Krueger, Wendell Deen, Charles Perkins, Laneda Miller, Mostafa Pirnia, and Billy Wood.

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**Taylor Hall Memories**

1980’s alumni remember the impact of the move from Taylor Hall into the new ETC II:

"It had a lot of character. I remember dates from the 20’s scratched in some of the desktops. The T-Room in the basement was popular, however it seemed dark and spooky to me."

- Brian Pillittere, BSME ’86

"I enjoyed Taylor Hall…I cannot remember what we called the little “canteen” in the basement, but many hours were spent there studying, drinking bad coffee, and chatting with classmates.”

- Rudy Acevedo, BSME ’83

"I especially liked the classroom next to the gas turbine lab. The smoke room in the bottom of Taylor Hall was interesting. Walking down the stairs was like flying into LAX."

- James Miller, BSME ’85

"I liked the building, as it was light in the classrooms, it had a certain history, and walking through the shops every day was kind of an inspiration, even with (or maybe because of) the antique machinery that was in it."

- Dick Morton, BSME ’83

"My first 3 years were at Taylor Hall, then we moved to ETC. I really missed the T-Room, but I was grateful to have a women’s restroom on every floor."

- Alice Hatfield, BSME ’85
Chairman Rylander (i cut this significantly b/c this gets a lot of focus in the 1970s as well)

During the ten years of his Chairmanship, Dr. Rylander strove to revolutionize the ME curriculum to shift the focus to issues of productivity. Though it was not possible to dramatically alter the set curriculum, he was successful in upgrading the department’s graphics program from triangle and T-squares to a computer-based program, and hired Ronald E. Barr and Davor Juricic to transform all of Graphics.\(^{31}\) Laboratory facilities, including the NETL, the Robotics Laboratory and the Tribology Laboratory were still in the planning stages. But all of these new facilities were complete by 1993, at the Pickle Research Center.

Dean Herbert Woodson

Dean Herbert Woodson took office in 1986 when Dean Gloyna stepped down. Herbert Woodson was former chairman of the Department of Electrical Engineering and director for the Center for Energy Studies as well as the Center for Fusion Engineering. In 1986 he joined the College’s Administration as Associate Dean for Development and Planning,\(^{41}\) the same year he became Dean.

ME Faculty

do I want to list the faculty hires in the 1980s??:


A number of staff changes occurred during this period as well, partly as a result of the move of the Department from Taylor Hall into its new building. Ms. Alpha Gonzalez continued as Executive Assistant under Chairmen Rylander and Howell until she retired in 1989. Ms. Patricia Kleinert continued as Undergraduate Assistant and Jean Sanford remained Graduate Assistant until she retired in 1989. During part of her time in ME, she was also the supervisor for the clerical staff. Kathy Worley continued as Financial Assistant and Josephine Crutcher provided print shop support. Hank Franklin was Shop Supervisor through the eighties, with Pedracine, Spurgeon and Holt continuing.
Dr. John R. (Jack) Howell became the 19th Chairman of the Department of Mechanical Engineering in 1986. Howell worked closely with Dean Woodson in thermodynamic research, seeking to improve the efficiencies of electric power generation systems. A chemical engineer, Dr. Howell studied at Case Institute of Technology (now part of Case-Western Reserve University) in Cleveland, Ohio. After receiving his doctorate, Howell went to work at NASA Lewis (now Glenn) Research Center in Cleveland where he spent seven years. After ten years at the University of Houston, Howell joined the faculty at UT Austin in 1978. His research centered primarily on controlling temperature and energy.

Dr. Howell strove to improve and broaden recognition of the ME Department, both within The University and without. He took a keen interest in the quality of the teaching and research missions of the department. Dr. Howell set out to strengthen and support ME faculty, in the belief that this would be to the greatest benefit of the students. As Dr. Howell’s term progressed, he worked to increase faculty diversity and was aided in this by a University initiative that allowed the department to pursue and hire qualified women and minority candidates. Dr. Howell initiated monthly staff meetings and a staff award program. He reorganized and expanded the administrative staff to provide better support for teaching and research activities. He also reorganized the support for the Chairman by creating three Associate Chair positions to cover the areas of research, academics and scheduling/planning. These positions worked well, although the activities of the Associate Chair for Research changed as the Office of Sponsored Projects began more adequate tracking of proposals/awards. The expansion of staff and faculty support was necessary to achieve some degree of efficiency and these expansions continue with modifications at this present 2003 writing.

Prompted by an external review and suggestions for modernization, Dr. Howell, like Dr. Rylander, sought to revise the Mechanical Engineering curriculum. And he too, met with some challenges in achieving the changes. Dr. Howell left the office of the chairman in 1990, and was Director of the Center for Energy Studies from 1990 to 1992. Howell later became Program Director of the Thermal Transport and Thermal Processing Program for the National Science Foundation, Washington, D.C., in 1994. After returning from NSF, Dr. Howell served as Associate Dean for Research in the College, and today remains active on the department’s faculty. He co-authored with Robert Siegel *Thermal Radiation Heat Transfer*, Taylor and Francis, which at this writing is in its fourth edition (2002). Howell is also author or co-author of four other books, and has developed numerous teaching tools, websites, programs and videos that aid in undergraduate and graduate teaching.

Below Dr. Howell recounts his term as chair: This is all said in the text already; Dr. Rylander, do you prefer this in the text, or as a long quote?

"I took office in 1986, serving that year for Dean Earnest F. Gloyna in his final year as Dean. The next three years were with Dean Herb Woodson. Both took a healthy interest in the development of the ME Department, and provided continual support. Dean Gloyna agreed to my only condition for becoming Chairman, which was to remove the external members of the ME Budget Council that he had appointed because of concerns with organizational problems.

"My initial faculty meeting in the Fall of 1986 gave me the opportunity to inform the faculty that a three percent across the board pay raise for faculty had just been rescinded by the Texas legislature. Not an auspicious start for a new Chairman! However, from that point on, I was blessed with increased resources for the Department, and we were able to greatly expand the faculty along with some increases in staff for the Department. The head count of faculty increased from 43 in 1986 to 56 in 1990. Part of the increase occurred because of a UT administration policy of increasing diversity by allowing additional faculty slots for women and minority candidates. These slots were over and above the normal recruiting allotment. ME was able to take advantage of this policy to hire extremely well-qualified candidates in both categories and carry out a much-needed expansion of the faculty."
Because of the growth of the department and the increased duties that were accruing, I added a number of new posts, expanding the previous single Associate Chairman to two positions initially, an Associate Chairman for Academics (Gary Vliet), and an Associate Chairman for Research (Glenn Masada). Through the Associate Chairman for Research, we began to actively track the number and dollar amount of proposals submitted by ME faculty as well as awards, so that we could better plan and encourage research. Later, I added an Associate Chairman for Planning and Scheduling (Jerry Jones, who had previously been Graduate Advisor, and was replaced in that post by Paul Jensen). The Undergraduate Advisor for two years was Ken Ralls; Billy Koen then took over. The administrative staff was also expanded, adding a person to coordinate academic planning between the graduate and undergraduate offices. Academically, we underwent a major review of the curriculum. Two external reviewers (Prof. Frank Incropera, then ME Chairman at Purdue, now Dean at Notre Dame, and Bob Reid, then ME Department Chair at OSU) were brought in to examine and comment on the curriculum, and make some recommendations for change. A faculty study resulted in some reductions in degree credit hours (from 134 to 130 SCH), modification in labs and block options and some other reorganizations of course offerings. However, the changes were not as sweeping as I personally had hoped. We implemented a Technical Writing course, hiring Michael Alley to organize the offerings and teach sections of the course. Michael did an outstanding job, and we won a national award for the innovations in the program, which continues to the present under Christy Moore, who took over when Michael left.

During my tenure as Chairman, we faced similar problems to those that continue today. The TA budget was continually cut. I made up for part of the deficit by reducing the number of part-time instructors that we normally employed until, at the end of my term, we were only partially supporting a few visitors who were brought in on research programs. Nevertheless, we were forced to reduce the total number of funded TA positions, and partially fund some TA positions by drawing on funds earned by industrial subscriptions to the Senior Design course.

One accomplishment which saved countless faculty hours was to win agreement, along with the other Chairman, that the College should combine the multiple reporting requirements by the Departments (at that time, semi-annual reports to EFAC, an organized research report, faculty short and long forms, and departmental reports) into a few multi-purpose reports containing the same information and with common submission dates. It worked!!

I initiated monthly staff meetings to provide information exchange and air any problems or common grievances. This worked reasonably well, and I believe was appreciated by the staff. One outcome was the initiation of a departmental staff award program.

I generally enjoyed my term as Chairman. I had stipulated that I would only agree to a four-year appointment, and stuck to that position. I believe that I was finally learning most of the ways to work the system by the time my term ended, but I was nevertheless glad to return to my teaching and research in the Fall of 1990."
Research in the 1980’s

The Electromechanics and Energy Research Building (EME)

One the most significant factors in facilitating research in the Department of Mechanical Engineering was the building of the Electromechanics and Energy Research Building (EME) at the Balcones Research Center. In 1985, The University of Texas System spent $22 million to construct this state of the art research facility. The Balcones Research Center, later named the J. J. Pickle Research Campus (PRC), was a 475-acre research campus and was the nation’s primary magnesium refinery during World War II. (this doesn’t make sense: it was built in 1985) Eventually the campus and its equipment were declared war surplus and were deeded to the University. The University heavily invested in the PRC building new roads, constructing an 85-MVA substation and loop, chilled water plant, supercomputer, conference center communications link and adding five new research buildings, including the EME. The new 140,000 square foot building contained multifunction labs, fabrication shops, distributed heavy-duty utilities, data communication networks, a vertical firing range for electric guns, office and conference rooms complete with modern instrumentation and data acquisition equipment.  

WERE CEM and CES located in the EME building??  
Center for Electromechanics (CEM)

Dr. Grady Rylander remained director of the Center for Electromechanics until 1985. At that time, William F. Weldon, who had been Technical Director under Rylander, succeeded him as director, and remained in that position until 1993. CEM was born of a 1972 student project, and since then has been awarded more than 220 funded projects resulting in over 75 patents. It is considered one of the premier electro-mechanical research and development laboratories in the world for rotating machines, pulsed power, material fabrication and processing, hybrid electric vehicles and accelerators which include electric guns. CEM (did a group working at CEM invent?) invented the compuslator, pulsed D.C. welding, rapid powder consolidation and electro-sprayed coolings. With an operational power supply of 9MA, many more world-class experiments are anticipated.

CEM primarily research interest is in practical development and application of pulsed electrical power technology, recalling the turn of the 19th century when the overriding concern of mechanical engineers was steam turbines for generating electricity. Most of the (financial?) support for CEM comes from sponsors interested in industrial and defense applications, a shift from the recent past when funds came mainly from sources interested in energy-related projects. Researchers have produced three devices important in fusion and alternative power studies; a homopolar generator, capable of discharging ten million joules of electric power in less than a second, a compact six megajoule version that weighs only 3400 pounds and can be carried in a small vehicle and the versatile compensated pulsed alternator or compuslator, the first fundamentally new rotating electrical machine to be invented in the twentieth century according to the US Patent Office.

In the eighties, research focused on the compuslator which provides multiple bursts of intense energy for application in many projects such as CEM’s Railgun. The Strategic Defense initiative for possible incorporation into a space-based defense system and other more peaceful purposes provided most of the support for research at CEM.

Center for Energy Studies (CES)

In the early eighties Herb Woodson directed the Center for Energy Studies (CES). The CES was created in the College of Engineering to provide a venue for interdisciplinary energy research. Many mechanical engineering faculty conducted research at CES in the eighties. [this next part is rewritten by Vliet:] For example, Gary C. Vliet and John R. Howell did extensive work on a variety of hybrid absorption and desiccant cooling/dehumidification concepts. Vliet embarked on development of extensive solar radiation data for Austin. Extensive work was conducted for the State Energy Conservation Office (SECO) by Jerold Jones to reduce energy consumption in state buildings. During this time, Bruce Hunn was director of the Conservation’s Solar Energy Program at CES, and was heavily involved with several of these research projects. Phillip Schmidt developed the Process Energetics Laboratory. The work in this lab involved improving the efficiency of energy use in a variety of industrial processes using infrared and microwave heating. [end Vliet]

Other Mechanical Engineering faculty involved included Ronald Panton, Ronald Matthews, Glenn Masada and Phillip Varghese (Vliet: “what research?”).
Center for Materials Science and Engineering (CMSE)

The Center for Materials Science and Engineering (CMSE) was organized in 1982 to study the microstructure of materials for applications in diverse areas including the reduction of friction in machinery and solid-state transport. Directed by Harris L. Marcus, researchers in the Center for Materials Science and Engineering (CMSE), contributed to electronics manufacture. They studied catalysis, solid state transport, surface adsorption and chemical reactions, friction, wear, and corrosion, thin-film semiconductor materials, impurity effects in ceramics, metals and semiconductors, and the rheological and engineering properties of polymers.66

One challenge important in the eighties, electronic packaging, involved “two often contradictory goals; communication by the device with the outside world and protection of delicate microelectronic circuitry from environmental impacts.”67 Reducions in the size of electronic devices presented new problems in high packing density. Other research focused on the reduction of interface failure by the elimination of mechanical instability between composite materials. “Studies on the connection of a chip with the other system elements involved research in materials for bonds and wires, and even incorporated the light fibers being developed in the ERC. (Vliet puts a big question mark by this?) The CMSE also sponsored a project to devise better sealed casings from metal, ceramic, or polymers to protect the chip and systems from the elements. Mechanical Engineering faculty involved in the CMSE included Zwy Eliezer, Kurt M. Marshek, Kenneth M. Ralls, John P. Stark and David Bourrell.68 John B. Goodenough from Oxford University, a member of the NAE who specializes in ceramic materials and batteries, also became a part of this group in 1986.69

Nuclear Engineering Teaching Lab (NETL)

In 1986 nuclear research moved out of Taylor Hall to Balcones Research Center. The TRIGA reactor was rebuilt in this facility which provided more room for fission research. (has this been said?) The NETL, led by Dale Klein, conducted fission experiments within the CMSE and provided graduate research and teaching. Graduate students at the NETL studied all phases of electrical power generation by fission.70

Other Research

Research in the Department of Mechanical Engineering of course was not confined to the formal research centers. ME faculty like Zwy Eliezer, Charles S. Beightler, Paul A Jensen, and William G. Lesso, actively pursued research in the field of manufacturing systems and processes. Del Tesar is well-known for his innovative research program in robotics. Alfred E. Traver and Joseph J. Beaman focused their attention on the properties of dynamic systems. Davor Juricic, Margaret R. Baker, Ronald E. Barr, and Walter S. Reed conducted computer-aided design studies.72 Kurt M. Marshek performed mechanical design analysis and H. Alan Walls researched problems in thermosciences.73 Ilene J. Busch-Vishniac, Theodore L. Bergman, and Mark F. Hamilton (are these faculty?) were elected as Presidential Young Investigators. Such vital research and dedicated faculty signaled an exciting future for Mechanical Engineering research at UT Austin.74

introduce this:(were these particularly significant?)

Dr. Gary Vliet recalls exciting research in the TSF area in the 1980’s: “Vliet, Howell and Jones presented a number of short courses on ‘solar energy, solar cooling and energy conservation’ at UT and around the US in the late 1980’s and early 90’s. Schmidt, with a colleague from Purdue, presented a number of workshops on Industrial Electrification, Technology and Economics at several locations around the US from 1986 through the present. Professor Howell was director of CES from 1988 through 1991.48 (this is Vliet)

Society of Automotive Engineers (SAE)

The major thrust in combustion and combustion engines in ME commenced in 1980, when Ron Matthews was hired. In 1980, Dr. Ron Matthews and three ME students, Paul Miller, Mike Best and Robert Edwards established the UT Chapter of the Society of Automotive Engineers (SAE). SAE provides students with valuable hands-on experience not found in the typical classroom setting. SAE’s goal is to improve engineering education by involving students in real-world engineering design projects. While students design, modify, and build vehicles, they learn time management, project management, and teamwork. Participating in SAE exposes students to a work environment, thus enhancing their employment prospects. UT’s local SAE chapter has been one of the most active student chapters in the United States, winning many national competitions.

In 1981, Dr. Matthews founded Formula SAE (FSAE). The first four Formula SAE competitions were held at the University of Texas in 1981, 1982, 1983, and 1984. The very first competition (held during the “Memorial Day Flood” of 1981) consisted of four teams and was held in the Disch-Falk Field parking lot. Today, the Formula SAE competition is an international competition, and is the most prestigious intercollegiate student engineering design competition in the world. It is co-hosted by Ford, GM, and Daimler Chrysler, and features more than 100 entries each year from universities around the globe, including England, Japan, Korea and Venezuela.

To compete, student members design and build a small formula-style racecar, utilizing knowledge, creativity, and ingenuity. The only design restrictions are on the car’s frame and engine. UT students design and fabricate as much of the car as possible; other parts, such as the muffler and the engine, the raw materials and software are donated by sponsors. The completed vehicle is judged on static (cost and manufacturability; engineering design; and “sales”) and dynamic events (drag race; skid pad; autocross; and endurance).

Dr. Ron Matthews
Dr. Matthews and the SAE experience impacted positively on ME students. Rudy Acevedo, BSME ’83, was enormously impressed with Dr. Matthews commitment to teaching and endless enthusiasm. He recalls, “I only took one course from Dr. Ron Matthews, but he was still my favorite. The time he spent with the students involved in SAE was truly above and beyond. You can tell he does this out of passion.”

Acevedo continued, praising Drs. Matthews and Jerold Jones and the usefulness of their teaching to his professional engineering career: “My first day on the job as an engineer, I thanked God that I had the experience I received by being involved in SAE. Dr. Jones introduced me to refrigeration and air-conditioning, and I have used that knowledge considerably in my profession.”

The skills and practical knowledge gained by participating in SAE were immensely important. James Miller, BSME ’85, states: “I probably learned more useful information from working in the machine shop than all the classes. Being in SAE gave me an opportunity to use a metal lathe and vertical mill. That was a big benefit when I started designing parts on my first job.”

**SAE Memories**

“Competing in the SAE Formula Car race [was my favorite memory]. It was still held in Austin at the time. We won the race, and I remember sharing the joy with the other SAE members.”

- **Rudy Acevedo, BSME ’83**

“When I came back to UT for engineering, many students like me were “older than average”, having started in some other career, and in part lured by the high demand for engineers in the late ‘70’s. When the SAE chapter was formed, it became much of the social life, as many of us were older, not so interested in the general student life (I had done it before), and were close in age to many of the faculty at that time.

“When we started up the SAE chapter, and wanted to build cars for competition, he [Dr. Grady Rylander] was so happy that someone wanted to use the shops that he basically gave us 24 hour access. At that time, few students at “first line” engineering schools ever touched a machine tool or tried to build anything. I am sure he looked the other way and covered up things to keep us all out of trouble...

“From my engineering time, [I remember] the founding of the Formula SAE student design competition. This started as a kind of consolation; a previous competition was cancelled. This was a very complex endeavor, which we took on rather naively, but ran for 4 years while it grew. This is now a $1 million event run by the auto companies, with over 100 competitors from around the world, and spin-off copies in England, Australia, and South Africa.”

- **Dick Morton, BSME ’83**

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**SAE Race Car**
Dr. Leonardt F. Kreisle

Leonardt Kreisle enjoyed a long and distinguished career at UT ME. He was famously supportive and involved with students, serving as faculty advisor for Pi Tau Sigma, ASME UT Student Branch and the Student Engineering Council. The long list of awards and honors he received testify to his impact on students, research, and The University of Texas. He was one of the first recipients of the College of Engineering General Dynamics Teaching Excellence Award. Four times he was awarded the Mechanical Engineering Outstanding Professor Award, and six times the Distinguished Mechanical Engineering Advisor Award. At Cornell, (when was he teaching at Cornell?) he received the Pi Tau Sigma Teaching Excellence Award in 1984, and was awarded the Student Engineering Council’s Order of Alec Award for Outstanding Contributions to the College of Engineering for more than twenty-five years. In 1986, Kreisle was recognized with the Chancellor’s Award, the campus-wide award for excellence in undergraduate teaching.77

Robert A. Felsman, BSME ‘58, summarized his greatest achievement: “Other teachers will find it difficult to merit a rating of the ‘Kreisle’ - it is a standard reserved for excellence.”76
(The Longhorn, September 1985, ME Alumni Newsletter)

The Leonardt F. Kreisle Mechanical Engineering Design Project Laboratory was dedicated in 1985. U. S. Senator Phil Graham, University of Texas System Chancellor Hans M. Mark, University of Texas President William A. Cunningham, University of Texas Provost Gerhard J. Fonken, Mechanical Engineering Chairman J. Parker Lamb, among others attended the ceremony. Senator Graham noted the importance of Dr. Kreisle’s work and his ability to stimulate creativity in his design students, and of the lasting importance of the design projects program in general.78

Academics

Introductory engineering classes were generally large with well over 100 students. By the time mechanical engineers became seniors, their classes were significantly smaller, averaging about 30 students. Undergraduates also studied in the Undergraduate Library which they dubbed the “UGLy”.64

Mechanical Engineering students of the eighties reported a variety of interests. James Miller, BSME ’85, remembers that “Internal Combustion Engines [was my favorite class]. I’m a gear head, so I couldn’t wait to take that class. It was real easy for me since I knew the subject fairly well already. I liked the subject material, not because it was easy. In second place I’d say the my HVAC class was interesting as it combined aspects of thermodynamics, heat transfer and other engineering courses into a practical use of the theoretical knowledge.” Debra Hentz preferred biomedical graphics: “I loved the topic of medicine, anatomy, bodies functioning like machines. Dr. Barr made it interesting and understandable and pointed out how much we had learned/progressed throughout the class.” Many students found Senior Design invaluable to their careers. David Lindner, BSME ’87, said, “Looking back, I would say Senior Design Project [was my favorite class]. I wouldn’t have said it then. It was a lot of work, but the most like what I do now.” Rudy Acevedo, BSME ’82 agreed, “Senior Design Class [was my favorite]. Getting four students together for a project for the whole semester, and working together to complete this helped me understand the necessity of teamwork.”67

Debra Hentz, BSME ‘89, remembers her senior design project, “...Our team’s embarrassing claim to fame was clearing out ETC the day we ran a WeedEater in a test lab and the exhaust set off the fire alarm. The most (after the fact) ironic thing is that we were the only people who didn’t hear the alarm. Apparently the alarm in the lab was not working so we continued our work until facilities busted into the room.”88

ME students of the eighties were particularly vocal when asked about favorite professors (and classes.) Rudy Acevedo was inspired by Dr. Ronald Barr, and remembers a specific incident during his schooling:

"I was taking summer school in between my sophomore and junior year. Some friends and I were walking to our class, and our professor (Dr. Ronald Barr) overheard us talking about how school was kicking our you-know-whats. Dr. Barr stopped and said to us something along the line of ‘You guys have gotten yourselves to this point at one of the finest engineering schools in the country. If you were not going to make it as an engineer, you would not have gotten this far.’ After that short speech, I realized that he was right. School was still difficult at times, but after that, I knew that I was going to graduate and become a good engineer.”89
Jerome DeLaCruz, BSME ‘85, remembers Phil Schmidt’s Thermodynamics class as his favorite. DeLaCruz was also impressed with Dr. Dale Klein, who he recalls...“took a strong interest in top students in their development – he loved to socialize and opened his home and office – always friendly and welcoming – smiling!” 93 Alice Hatfield, BSME ‘85, was also impressed with how patient and thorough Dr. Schmidt was in teaching heat transfer. 52 Rafael Moras had high praise for Professor Paul Jensen: “Dr. Jensen’s Network Flow Programming class was my favorite. His teaching style is superb.” 95 David Lindner, BSME ‘87, thought Dr. Rylander was a “great professor,” 33 as did James Miller, BSME ‘85, who remembered that it “easy to learn from him.” 34 Gary Vliet and Phil Schmidt got rave reviews from Leslie Morrill. 54

UT ME faculty impacted students’ personal lives as well as their academic development. Rafael Moras, MSME ‘83, PhDME ‘86, was very close to Dr. Bill Lesso, his PhD thesis supervisor, who referred to himself as his “adopted American dad.” Dr. Lesso was a special guest at Moras’s wedding in Monterrey, Mexico, and his generosity was remarkable. Lesso offered to handle Moras's expenses (ie., for a suit or transportation) when he began the job interview process. Moras says, “Today, I still value Dr. Lesso’s friendship and continue to seek his invaluable advice.” 94

Throughout the eighties, the number of women enrolled in the Engineering Department continued to grow steadily. Leslie Morrill, BSME ‘85 remembers why she chose to study a stereotypically male subject: “Engineering paid well. I didn’t want to rely on a husband to live comfortably. Mechanical Engineering seemed widely accepted in any industry. . . I was interested in solar energy. Had this idea that if we developed ways to harness power from the sun, there would be more peace in the world.” 85

For Debra Hentz, BSME ‘89, “[the] job market had the biggest impact [on my decision to study engineering]. [I] was most interested in biomedical engineering and chemical engineering (in the medical field). I learned that Biomedical positions were very hard to acquire and Chemical Engineers were out of favor and not finding jobs. I applied to the EE school only to find out that the class was filled and I could not start that semester. Rather than delaying, I selected ME because it offered the broadest education that would allow me to transfer to EE within a few semesters. I took my first semester ME classes and knew instantly I found my field of interest. I have never looked back or regretted my decision.” 86
The ‘Alec Heist’
(submitted by Wes Stone, Paul Philpott and Dr. Gary Vliet)

The Engineering patron saint reappeared in 1987. The torso of Alec was spotted in the Law Library, and a plan was hatched to free him by ME students Wes Stone, David Walker, Paul Philpott, Frank Guidone, and Rob Von Alten, as well as EE student Chris Flynn. The students convinced the law school librarian to let them take Alec outside on the pretense of snapping a picture of him on his birthday. When she obliged, ME students hiding in the bushes snatched Alec away, back into the hands of the engineers.

Within a few days law students filed a suit against the engineering students for the return of Alec; the law students represented themselves and the engineers retained a lawyer. Allegations of kidnapping were made. Dr. Steve Nichols remembers some of the finer points of the event: “On April 1, 1987, Dean Gloyna was served a temporary restraining order by a Deputy of the Travis County Sheriff’s Department. In the restraining order, Judge Harley Clark ordered Dean Gloyna to turn over the torso of Alec by sundown. Judge Clark enjoined all engineers from denying their knowledge of the whereabouts of Alec. To add insult to injury, the Laws were required to post a bond in the staggering amount of 99 cents.”

The case was heard by Judge Harley Clark, a former UT Engineering and Law student, who ruled in favor of the defendants (the engineering students), largely due to the fact that the law students had not passed the bar and therefore were practicing illegally. Dr. Steve Nichols, BSME ’72, recalled that after Alec was returned home to the engineers, the student bar appealed to “what they considered to be a higher court” - Judge Joseph Wapner of the television show, The People’s Court. During the height of the scandal, according to a College of Engineering Friends of Alec Pamphlet, “Mark Yudof, Dean of the Law School sent Engineering Dean Earnest Gloyna a scathing memo calling this whole affair ‘Gloynagate.’”

Since the spring of 1987, Alec has been on display in a secure glass case in the Engineering Library.

Frank Guidone, Wes Stone, ?, and Gary Vliet pose with Alec’s torso at Dr. Vliet’s house.

THIS IS MOST CONFUSING: Paul Philpott, BSME ‘88, adds:

“David Walker, member of a then-new group elite Engineering honors society, ‘The Order of Alec,’ which the inaugurating members after-the-fact learned was the name of a defunct secret group of roguish engineering students from a bygone era who - among other things - clashed with law students. Upon learning of this, and the Alec statue’s origin and its long-ago theft by law students, Dave thought that a neat way to publicize the existence of the new Order would be to link it to the Old one, and to steal the statue. He turned to... ‘Club ETC’, a secret group of roguish engineering students who learned after-the-fact that a previous similar group had once existed, but with a different name, ‘The Order of Alec.’ So here we had a new group sharing a name--but not a philosophy--with an old group, and a new group sharing that old philosophy. Their names: Paul Drake, Frank Guidone, Wes Stone, and Brett Hurty.

“David Walker conceived the plan, the ETC boys carried it out, then handed the statue back to Dave, as planned. Then things got hot and the new Order of Alec people wanted to hand the statue back to the law school, but Dave objected, and snuck the statue to the ETC boys, a great act of courage and principal.”
Life of an ME in the 1980s

Popular hangouts for mechanical engineering students centered around the Posse, Adams or Eastwoods Parks which were close to ETC II, and the mechanical engineering building. Conan’s Pizza on the drag was also a hot spot along with Amy’s Ice Cream. Other popular entertainment options were parties, football games, hanging out at the Union, spending weekend nights on 6th Street, Hamilton’s Pool, Eeyore’s Birthday Party, rock clubs like the Roxy and Cardi’s, “anything with girls and beer”, and the Catfish Parlor. Beers at Posse East on Friday afternoons were a favorite. Intramural co-ed softball, canoeing, and backpacking trips with UT Recreational Sports, riding motorcycles, and country western dancing were all options for time away from the books.97

Some popular bands of the time included Led Zeppelin, Jimi Hendrix, ZZ Top, Jerry Jeff Walker, Fabulous Thunderbirds, Rush, REO Speedwagon, Fleetwood Mac, Eagles, Boston, The Rolling Stones, Journey, and Bad Company. Students appreciated the live music scene in Austin. Stevie Ray Vaughn was a local music hero. Enjoying Austin music, (blues and folk bars), was a great way to spend an evening.98

Student organizations were still a big part of campus life. Popular student organizations for engineers were ASME, SAE, SWE, APO (Alpha Phi Omega) the National Service Fraternity, Pi Tau Sigma, and Pi Sigma Pi.

The Elevator Races100

reprinted from the 1987 edition of
The Longhorn Mechanical Engineer

The ME faculty of The University of Texas at Austin is not without distinction; numerous awards and groundbreaking research earned them a national reputation for excellence. For one glorious day in the Spring of 1987 they abandoned any semblance of reserved academians. It is anyone’s guess how they ever agreed to participate in Faculty Elevator Races.

About thirty-nine professors, including Department Chairman Jack Howell, participated in the grand event that required them to divide into three teams to race up and down the nine-story ETC building via the elevators. Over 100 students watched their progress from the first floor. Race progress was monitored by rows of lights that indicated the position of each elevator as it moved up and down the building.

Faculty Elevator Race highlights included serious race attire (ex. Dr. Gary Vliet as the “Masked Avenger”) and a sabotaged elevator (sabotaged, according to well-placed sources, by Undergraduate Advisor, Dr. Kenneth Ralls).

The race was won by the team that included Dr. Jack Howell and Dr. Kenneth Ralls, Hmm!!
ME students found work in construction, managing retail businesses, installing swimming pools, and installing greenhouses. Some worked as security guards, data entry clerks, parking lot attendants, and valet parkers. On campus, students ushered at the Frank Erwin Center, graded papers, and were technical illustrators. Graduate students could work as teaching assistants, research assistants and assistant instructors. Some students chose to be engineering co-op students and as such, held a job every other semester.\footnote{101}

Leslie Morrill, BSME ’85, worked at Texas Instruments “in H.A.R.M. Missile Manufacturing. These were part of the allied arsenal in the Gulf War.”\footnote{104} Dick Morton, BSME, ’83, remembers working “at the M.E. machine shop as an apprentice. I dropped it when I got a part-time job at TRACOR (through an old RTF professor, who had started out as an electrical engineer). I went into an advanced programs group, and used my RTF background to make presentations, technical films, etc, as well as engineering.”\footnote{105}

The eighties were certainly not without controversial political issues, including the issue of South African apartheid (represented in the form of the shanty on the West Mall)\textit{(how was it “represented” by this?)}, and the Iranian hostage situation. Rudy Acavado remembers the attitudes on campus about the Iran Hostage Crisis: “For someone from a small town (<17,000 population), and very little exposure to Middle Eastern people/culture, this was a very interesting, albeit disturbing time...My drafting professor was from Iran, and he talked one day about how his relatives still living in Iran were struggling about this...”\footnote{107} On the West Mall, U.S. involvement in El Salvador was also a hot topic of discussion.\footnote{102} Leslie Morrill remembers “You could learn about foreign issues by talking to foreign students on west mall.”\footnote{108}
Chapter 7:
1990’s and today

Ken Cockrell, BSME ’72, Space Shuttle Commander
Chapter 7: The 1990’s and today

Population Statistics

1990 Census

U.S. ... 249.4 million
Texas ... 16,986,335
Austin ... 472,020
UT ...
ME ...

The intense cultural and technological growth that was gaining momentum in the 1980’s continued in the nineties and still today. Our world continues to change rapidly and dramatically with each passing day. Among numerous other politically and culturally significant events beginning in the nineties, the Hubble Space Telescope was launched and Nelson Mandela was released from prison in South Africa. In 1991, the Soviet Union collapsed, thus ending the Cold War. Violence abounded, both internationally and at home. A political and military coalition of allies led by the United States attacked Iraq, ending Iraqi occupation of Kuwait. In 1993, the World Trade Center was bombed for the first time by terrorists. In Waco, Texas, federal agents raided the Branch Davidian compound after a 51-day standoff, resulting in the deaths of 75 people. On a positive note in 1999, the UT Tower Observation Deck was reopened to the public after twenty-four years.

The Department of Mechanical Engineering continued to move forward and received much recognition. Dr. Ken Diller became the Department’s 20th Chairman in 1990. In 1993, U.S. News and World Report ranked the department’s graduate program 11th in the nation. (is there any other info about grad programs? if so, move this there) Many faculty took on active administrative and leadership roles. Ron Matthews and Michael Bryant served as co-op advisors. Many faculty took on active administrative and leadership roles. Ron Matthews and Michael Bryant served as co-op advisors. Glenn Masada, Gary Vliet, Eric Fahrenthold, and Parker Lamb all served as transfer advisors. Janet Ellzey, Ram Manthiram and Jack Howell served as honors advisors. In 1993, the Undergraduate Advisor, Billy Koen, stepped down after four and a half years of service, and was replaced with Billy Wood, who had joined the department in 1980 in computer graphics. In the nineties the department also developed its first website, under the direction of Peggy Berry. In 1998, David Dart was hired to provide Macintosh Support, helpdesk and training services to the Mechanical Engineering staff. Under Dart’s leadership the department’s website has grown to over 2000 pages, making ME information readily accessible worldwide.

Alumni Achievement

In 1993, mechanical engineering alumnus Ken Cockrell, BSME ’72, became the first UTME alumnus to travel into space in his capacity as a NASA space shuttle commander. (Vliet asks: was he commander in both 1993 and 1996?? who is this quote: “On November 19, 1996, after successful tours as a mission specialist and pilot, Cockrell became Commander of the Columbia (STS-80). The STS-80 was the seventh and last Space shuttle mission of 1996, the 21st flight of the orbiter Columbia and the 80th flight overall in NASA’s Space Shuttle program.” The Noncommissioned Officers Association of Wright-Patterson awarded alumnus General Ken Eickmann, BSME ’67, the highest honor to be bestowed on an individual, The Order of the Sword. Eickmann was recognized by the State of Oklahoma when it declared July 11, 1995 “General Ken Eickmann Day” to honor his leadership and assistance to federal and state rescue and recovery efforts following the April 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City.
Visiting Committee

The Department’s Visiting Committee continued to provide enthusiastic support during the nineties. It invested “considerable time and expertise in providing crucial assistance and guidance in the design and fulfillment of the department’s educational programs.” With their generous help,” states Chairman Ken Diller in his Fall 1994 Annual Report, “we have made considerable progress in the application of Total Quality Methods in the department and we are now in a position of being one of the leading academic units in the country in this area. Total quality principles, techniques and practice is taught in seven of our required undergraduate courses distributed over the entire four years of the curriculum, and faculty have documented significant increases in student performance in courses in which teaching was improved by the adoption of TQM methods.”

Enrollment

During the early nineties, one of the biggest issues facing the Department of Mechanical Engineering was a huge growth in enrollment. In 1989 undergraduate enrollment was at 1133. By 1992, just three years later, undergraduate enrollment had jumped by 217 students, a total undergraduate enrollment of 1350, the highest undergraduate enrollment the department had seen before or since. This growth in enrollment began to stretch the department’s resources to the limit. One result was not being able to offer all students the full menu of courses. States Dr. Diller in his 1993-1994 Department Annual Report, “Although the objective qualifications of these students is higher than ever as assessed by entrance test scores and academic records, the large number of students is taxing our available resources, including faculty, staff, classroom space and laboratory facilities. In the present climate of ever tighter funding for higher education that is prevalent nationally and is also affecting us locally, it is not realistic to expect significant increments in any of the above resources. Thus, we are faced with the difficult exercise of making a thorough and probing evaluation of how our present resources can be used more effectively while continuing to pursue our goal of providing quality education at all levels...” Thus an initiative was put in place to reduce undergraduate enrollment to a more manageable level of about 1000 students.

curriculum, with the major result being an increased emphasis on the design process throughout the BS degree program. In our new curriculum, which became effective in the fall semester of 1998, first-year students will begin to learn about the importance of design by using some of the contemporary computer-assistance design techniques that are supplemented with simple prototype development. In the same class they also engage in 'reverse engineering' activities." 35

Curriculum
In 1990, Math 408D, “Sequence, Series and Multivariable Calculus” was added to the four year plan, (as shown in Figure 11) making a total of 133 semester hours.38 Engineering Problem Solving, ME218 was included in the 1994-96 curriculum, but was changed to ME318, Engineering Computational Methods, in 1998 and changed back to ME218 in 2000.39 Do we need all the course #s? The curriculum in the nineties emphasized technical breadth, a charge articulated in the 1995-96 Annual Report, which stated that "versatility is a primary characteristic of the contemporary practice of mechanical engineering."40 The instructional strategy included "the widespread use of modern electronic communication and related design automation techniques, along with hands-on laboratory experiences which involve extensive teamwork."41 According to the same Report, the curriculum of the nineties focused on teaching Mechanical Engineering students "to communicate effectively in both written and oral form. Industrial internships were also encouraged as a way of providing solid professional insight before graduation. The demand for the department's bachelor of science degree graduates increased dramatically during the mid-nineties. Many students received multiple job offers from employers all over the nation. The PhD program in Operations Research and Industrial Engineering was approved and added in 1995. Other graduate programs at this time were MS and PhD degree programs in Mechanical Engineering and Materials Science and Engineering, as well as an MS degree program in Manufacturing Systems Engineering."42

Major Upgrades to the ME Computer Labs37 by Peggy Berry and Sue Ponder

"Last year the Mechanical Engineering LRC Computer Labs added 17 Power Mac’s, 26 Pentium 90MHz machines, and 2 Pentium 100 MHz machines, as well as two Windows NT file servers, in response to a student questionnaire. We now have a good mix of both PC and Macintosh machines with the emphasis being slightly heavier on the PC side.

"The old LocalTalk and Thin Net Ethernet LAN’s are gone! We are now using a 10Base-T structured wiring system. We no longer have to suffer with frequent network down times and lost print jobs!

"In addition, we have set aside ETC 3.152, as our "multimedia" lab. This lab has the following equipment: (1) Two Power Mac 7600/120’s with 32MB RAM, 1.2GB Disk, zip drive, CD and floppy drive, (2) one Dell 5166 GXMT with 32MB RAM, 1.6 GB disk, zip drive, CD and floppy drive, and (3) one Epson ES1200C Scanner with both Mac and PC interfaces. The software available in the multimedia lab includes Adobe Photoshop and OmniPage Pro. We have also made changes to the management of the lab. We are now using LabMan, a lab managing software system provided by the Computation Center. This system is very similar to the one used in the SMF lab.

"The workstation lab in ETC 3.140 underwent nearly a total overhaul in 1996. The Dean provided funds for the department to purchase a new server and ten new client machines; all were IBM RS/6000 workstations. The server is a model E20 and the clients are all model 43Ps. These workstations all use the Power PC technology with 604 CPU chips. This addition brings the total workstations available for student use to 20.

"New network capability was also installed. The workstations are now accessed through new hubs and router. The network equipment will enable the computers to communicate in a more efficient way even though the nominal speed remains the same. Formerly, the workstations shared the same network backbone with the entire ETC building.

"An upgrade of the AIX operating system brought it to level 4.1.4 and provides a new user interface, the Common Desktop Environment, that is the same as most other workstations that a student might encounter. The faster and more capable machines have allowed us to offer upgrades and enhancements to our engineering packages (e.g. FIDAP, Fluent, Ansys, ProEngineer, and IDEAs) and to provide some of the “free” software packages we didn’t have space for in the past."
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<td>M E 328, Thermodynamics II, or M E 361M, Introduction to Thermodynamics of Materials</td>
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<td>M E 333T, Technical Communication</td>
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<td>M E 336, Materials Processing</td>
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<td>M E 345, Fluid Mechanics</td>
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<td>M E 145L, Fluid Mechanics Laboratory</td>
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<td>M E 339, Machine Elements</td>
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<td>M E 340K, Mechanical Engineering</td>
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<td>Measurements and Instrumentation</td>
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**Fourth Year**

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<td>ME 144L, Dynamic Systems and Controls Laboratory</td>
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<td>M E 366J, Mechanical Engineering Design Methodology</td>
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<td>Approved Electrical Systems/Digital Systems electives</td>
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<td>M E 466K, Mechanical Engineering Design Project</td>
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<td>M E 266P, Design Project Laboratory</td>
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Notably through private support, Mechanical Engineering acquired its first computer-assisted classroom. This facility allowed "a teacher to load special instructional software on a server machine so that each student could work at an individual pace and still allow the instructor to communicate with all students simultaneously. In parallel with changes in these components of our teaching program, we have expanded our prototype shop that permits students to construct physical models of their proposed designs."  

(Women in Engineering Program) In 1991 the Women in Engineering Program was established to boost female enrollment and graduation numbers in the COE. The College of Engineering’s female to male ratio was not radically different from national averages, but it was slightly behind other major Universities. According to Dean Woodson, who writes in the 1992 Annual Report, "About 15 percent of our B.S. graduates are female compared to MIT with 29 percent, and Stanford University, the University of California at Berkeley, the University of Michigan and Purdue University with 21 percent." (cite 44). Woodson continues, describing the positive impact of the Women in Engineering Program:

“Our female alumni, faculty and students helped recruit the director of the program, Lynda Spencer, and then held an ambitious week-long seminar for 72 junior high school girls in June. The young girls left with hands-on experience in engineering a robot, operating CAD software and touring both Motorola and Tandem Computer plants in Austin. They also enjoyed extensive contact with female alumni now working as professional engineers."  

(Executive Engineering Management Program) In 1997, Dr. Tess Moon and Dr. A. P. Ambler founded the Executive Engineering Management Program in response to an Engineering Foundation Advisory Council request for project management training for working engineering professionals, who have five to ten years of industrial experience and show promise for management positions. As an executive-format Option III program, it was designed to allow students to attend classes just one weekend per month and to be self-sufficient through corporate-sponsorship of their employees (what does this mean?). In response to the needs of the program, Dr. Moon volunteered to help develop a college-level program involving ME faculty and working with the Operation(s?) Research and Industrial Engineering faculty, developed five of the eight courses needed to support the program. Dr. Jonathan Bard did a lot of the initial work. Once the program was established, the faculty involved were Tony Ambler, Jonathan Bard, Paul Jensen, Tess Moon, David Morton, Elmira Popova and Al Traver.  

"Co-op" WHY is this here?? started in 1967...still going on....

The Engineering Cooperative Education Program or "Co-op" was initiated by the Engineering College for all departments in 1967. Mechanical Engineering has continuously used the Co-op both as a teaching tool for undergraduate students and as a method to form an alliance with industry. The students also make money and many secure their first job from the company they work for. Figure A shows the relative number of Mechanical Engineering Co-op students for years 1995 to 2000. Not all students are eligible for the Co-op since it has always required a preset level of performance.  

Figure A

Note somewhere: more bldg on campus (but not ME related)

Also, there are a LOT of subtitles in this chapter! can we condense?

[CEM info:] MOVE this should go in the 90s: John H. Gully acted as Deputy Director under Weldon and moved up to Director in 1993 but he soon left CEM for DARPA/TTO as Program Manager in 1994. Dr. Steven P. Nichols moved in as Acting Director in 1994 with the assistance of W. Alan Walls as Deputy Director. Dr. Robert E. Hebner was made Director in 1999. It is interesting to note that all Directors were mechanical engineers until Hebner, an electrical engineer, took the job in 1999.
Dean Herbert H. Woodson (include his dates)

Dean Herbert H. Woodson was the sixth dean of The University of Texas’ College of Engineering. Below he reflects on the state of the college shortly before handing over the position of dean to Dr. Ben Streetman: (here, we are basically skipping his works as Dean/ can we say more?) (for example, Dean Woodson was concerned with expanding a sound alumni base for the College, and using available technology to bridge social gaps and provide more opportunity for children from all social strata.

"As a top engineering college we attract highly motivated, endlessly demanding students – people who want to be better. Simultaneously we engage faculty who are exacting, relentless and spirited in their pursuit of knowledge – people who want to make the world better. The best results occur when the two mix: we create alumni.

"My priority as dean has been to assure a mix of the best students with the best faculty to produce the best alumni...

"While students, these engineers—in—learning quickly confront their own as well as a university’s inadequacies. They need to know more than we can teach in four years. To adapt to this world of high-speed change, our best professors shift emphasis from teaching to learning – preparing students for their lifelong search for new answers to new questions, without the aid of a structured classroom. By graduation, most students realize college cannot answer all questions, but it can offer a new place to look, zeal for the search and tools for the journey.

"New graduates encounter immediate demands they could hardly imagine from a classroom. They must quickly integrate the knowledge we offered in tidy packages. They must understand the history and philosophy of society, government, science and technology, know business practices and cost accounting, have strong writing and speaking skills, and be able to manage people effectively. When we do our job correctly, alumni assimilate their coursework to appreciate all aspects of human endeavor and pursue engineering careers to improve society.

"Then these bright, educated people become a national resource. They lead this country’s industry, harness technology to create jobs, educate ensuing generations of students, and carry forward the nation’s research.

"Sometimes on this long educational journey, we forget how far we’ve come…Helping these students and faculty in their quest is a great honor and has made my career enlightening, refreshing and entertaining.”

Portraits of Change
Herbert H. Woodson,
Sixth Dean of the UT College of Engineering

“Picture Austin’s new age elementary student: the child awakens to music on her computer’s CD player. She presses a button to print homework prepared the previous night. When she arrives at school her watch stores her parents’ phone numbers, formulas for the day’s math class and the times for her after – school dance, music or swim class. Her parents, freed from the duty of nagging about schedules, focus on communicating broader values of morality, manners and ethics.

“What’s wrong with this picture? It seldom occurs outside the middle and upper classes. In another part of town, a few miles from The University which helped create this idyllic arrangement, children pass crack houses to reach the school bus, leaving behind parents bearing unemployment at twice the national norm, and the neglect and abuse this abject poverty breeds.

“This expanding disparity between the technological haves and have-nots will harden as a societal pattern unless we change our national philosophy on technology’s development. Science and technology – driven economic growth must have an accompanying goal of promoting good for the majority.

“Rep. George Brown Jr.’s (D-Cal.) comments on this subject provide some thoughtful insights. continued on next page
Continued from “Portraits of Change” on previous page

“Scientific advances will not automatically produce equity. Benefits and benevolence are not serendipitous…

“There cannot be one group of people working for the good of society and another working for the good of science. In order for science to benefit society, its benefits must be widespread, not reserved for the privileged. This is everyone’s job, especially the supremely talented scientific community’s.

“Right now, our capability for science is so exquisite that it verges on magic and wizardry. But it is also subtly envisioned primarily to keep us first and strong and then to be available to those who are able to pay for it. This is a very different perspective from considering how to make the whole society constructive and capable enough to use scientific capability broadly.

“We tend to forget, however, that explorations into human behavior, learning, economics, and decision-making provide fundamental understanding that contribute to the development of a more compassionate, cooperative, and balanced society.

“Today our most serious problems are social problems for which there are no technical solutions, only human solutions.”

“I have met Rep. Brown, and we share a lifetime of observing and attempting to influence technology unknown even to our active boyhood imaginations. And while the technical foundation laid during my college education was imperative to a productive engineering career, I have spent the most rewarding time applying my problem-solving skills to policy and people issues.

“As engineers we are by definition a group of practical, applied scientists. We are also privileged to “speak mathematics,” a language transcending cultural barriers. With these two skills we are distinctly equipped to participate positively in the global environment. We must learn to tap our humanity as well.

“The College of Engineering embraces this ideal on various fronts. We paint a few examples on the following pages. In addition, after giving voice to government and academia’s view here, you’ll also find industry’s perspective through excerpts from the chair of our Engineering Foundation Advisory Council.

“Immediate access to middle class society is one of the great side benefits of the engineering profession. But isolation from the true needs of others in this human race does not enrich us. The richness comes from seeing everyone make gains. A life benefiting all of society is our profession’s greatest potential.”
Dean Ben Streetman

Ben G. Streetman became seventh Dean of the College of Engineering at The University of Texas at Austin in 1996. Dr. Streetman, who has a background in electrical and computer engineering, was the founding Director of the Microelectronics Research Center in 1984 and served as director until 1996 when he accepted the position as dean of the College of Engineering. Streetman’s teaching and research interests focus on semiconductor materials and devices. In addition to more than 270 articles, Dr. Streetman authored *Solid State Electronic Devices* (Prentice Hall, 1972, 1980, 1990, and 1995), which has enjoyed numerous publication runs and translations into Japanese, Korean, and Polish. He is committed to teaching; thirty-two students of Electrical Engineering, Materials Science, and Physics have attained their Ph.D.s under his direction. Dr. Streetman brings prestige to the office of Dean, as a member of the National Academy of Engineering, the nation’s highest honor for engineering professionals. His research interests include lasers and masers, microelectronics, semiconductors, detector, epitaxy, semiconductor materials and devices. (this is from the Dean’s web site)\(^5\)

Chairman Ken Diller

Dr. Ken Diller became the twentieth Chairman of Mechanical Engineering in 1990. As the leader of the Biomedical Group, he joined with Chemical Engineering and Electrical Engineering to research and teach in this expanding new field. By the year 2000, the Biomedical group had grown in students, faculty and research until it was becoming a department by itself. (this is awkward; when did it become a dept?)

Dr. Diller’s goals as Chairman were to enhance the reputation and prestige of the department, to facilitate development of faculty careers (especially young faculty) and to secure resources to enable the department to continue to grow in quality. Ultimately he wanted to invest in people and their success. This meant investing in faculty, students and staff. As Chairman, Diller saw the need to recruit highly qualified and diverse faculty, reduce the size of a very large undergraduate body and increase the quality overall. Diller expanded the study abroad program, reduced the undergraduate population from 1400 to 1000 and created faculty-mentoring seminars. All of these initiatives focused on “enabling excellent people to achieve their professional potential.” (no source cited here) Aside from his duties as Chairman, Dr. Diller did much for the beautification of the COE, distinguishing himself as a skilled carpenter. He constructed a beautiful display of all of the department chairman. These elegant mahogany and walnut wood boards feature photographs of the former chairman etched in metal. Diller built the endowment boards on display on the fifth floor of the ETC II building, and the faculty and staff showcases on the second floor.
Chairman Parker Lamb

Dr. J. Parker Lamb returned to UT in 1996 to become the twenty-first Chairman of Mechanical Engineering.59 This second term commenced twenty years after the conclusion of his first term as Chairman, 1970 to 1976.59 Dr. Lamb initiated several administrative changes. The largest change was a new curriculum initiative, PROCEED, (Project Centered Education) which he developed with Dr. Phil Schmidt. PROCEED was adopted by the ME Department in 2000.60 Dr. Lamb’s goals for his second tour as chair were to continue with Dr. Diller’s goals of modernizing faculty and staff morale, fill opening faculty positions and operate with limited financial support.(was this last one really a goal?) Once again, Dr. Lamb consulted with the Dean of the College and with the senior faculty in order to establish his goals. Lamb also attempted to spread administrative duties to more faculty to prepare them for future leadership positions. Lamb promoted collaborative efforts between the areas and programs in the department. His strategy was to “continually stress opportunities for improvement and minimize discussion of difficulties over which we have no control.”(no citation here) Dr. Lamb viewed the building of relationships and professional careers of the people with whom he was associated to be his greatest successes. “During both terms I am proud of some of the staff and faculty I was able to bring in, especially those who excelled at leadership. At one time both the ME and the ASE-EM chair were recruited during my three tours as Chair [in Mechanical Engineering and in Aerospace Engineering]. Many of the other recruits have become holders of endowed positions. It was an honor to represent the department, college, and university at many national and state forums, oversight committees, and boards of directors.”61
Faculty Hires


Faculty Achievements

Numerous awards were won by the Department’s faculty, bringing prestige and recognition. Dr. Phil Schmidt was named Texas Professor of the Year, placing him among the country’s best educators.\(^\text{17}\) Dr. Ilene Busch-Vishniac received the 1994 Curtis McGraw Research Award from the American Society for Engineering Education for her outstanding research record that included internationally recognized work in the modeling, analysis and design of transducers for acoustics and for automation of small-scale processes.\(^\text{18}\) Mechanical Engineering Professor, Juan Sanchez was appointed as Vice President of Research for The University of Texas.\(^\text{19}\)

In 1998, Dale Klein, professor of nuclear engineering, was promoted to Vice Chancellor for Special Engineering Programs at The University of Texas System. He was also appointed by Governor George W. Bush to serve on the Texas Radiation Advisory Board, which advises the state on all radiation issues.\(^\text{20}\) Ram Manthiram along with student Jaekook Kim broke the chemical code for lithium batteries and developed a breakthrough material and process which promises to lead to a cheaper, more environmentally friendly rechargeable battery. Some ME Faculty were entrepreneurs in the nineties, as was the case with Dr. Dennis Wilson who founded a nanoparticle synthesis company called Nanotechnologies, Inc.\(^\text{21}\)
Graphics

Through a series of NSF grants in the 1990’s, Davor Juricic and Ron Barr began transforming graphics from a 2-D drafting program to a 3-D solid modeling curriculum, which ultimately had a national influence. The seminal event was an NSF Symposium on “Modernization of the Engineering Design Graphics Curriculum,” which was held on the UT campus. For their early work in 3-D solid modeling curriculum development, Juricic and Barr received the ASEE Chester F. Carlson award in 1993 for innovation in engineering education. Numerous papers were presented on the topic at ASEE meetings, and Barr and Juricic won several Best Paper awards for their work.62

During the 1990’s, the Graphics Area experimented with several commercial CAD packages, including ME-30, AutoCAD, and SolidWorks. A low-cost rapid prototyping lab was added to the graphics curriculum in 1996. In 1998, after hosting the “7th International Conference on Engineering Computer Graphics and Descriptive Geometry,” Professor Juricic retired from active teaching, and was afforded the “Emeritus Professor” title. In 1999, Barr received the “Distinguished Service Award” from the Engineering Design Graphics Division of ASEE, the highest award that is bestowed on an engineering graphics faculty member in the United States. Barr continues as Coordinator of the Graphics Area.63 (citation should be from R. Barr)

TFS History

The thermal fluids area was enhanced by the addition of Janet Ellzy in 1990, Matt Hall in 1991 and Ofodike Ezekoye in 1993. Dr. Matt Hall was hired due to his expertise in laser diagnostics within operating engines. Since joining UT, Hall has developed several new diagnostic tools for engine research and development, and also works in the area of destruction of heavy metals in process waste streams. Dr. Elzzy brought to the Department her expertise in numerical combustion. Her research has emphasized computational modeling of combustion processes, most recently including experimental and modeling work in the areas of combustion within porous inert media and fuel reforming (for fuel cells). Dr. Ezekoye was hired due to his expertise in the area of heat transfer in combustion systems. His work has included fire research, formation and oxidation of particulate emissions, auto-ignition, and spark ignition.64

A major facility used in the combustion and engines research is the engines laboratory at the northeastern corner of the first floor of ETC (the ‘General Motors Foundation Automotive Research Laboratory’), but other experimental research has been done in labs on the seventh floor of ETC, one of which is designated the ‘General Motors Foundation Combustion Sciences Research Laboratory.’65
Dr. Matthews is the author of a chapter in the *Handbook of Mechanical Engineering* and has a combustion engines textbook in draft. UT’s body of work on fractal engine modeling was nominated twice for the ComputerWorld Awards (1996 and again in 1998), and selected for permanent archiving in the Smithsonian’s National Museum of American History Permanent Research Collection on Information, Technology, and Society. A significant product of the engines area is the long and very successful involvement of the local SAE student chapter in a variety of SAE and related competitions. This is due to the tireless efforts of Ron Matthews and Matt Hall as faculty advisors.66

Starting about 1990, the newer faculty’s interest tended toward fundamental topics in heat and mass transfer. Dr. Theodore Bergman, who joined the faculty in 1986, performed work in double diffusive heat and mass transfer, and heat transfer in electronic systems. Dr. Ken Ball, who joined the faculty in 1989 has expertise in computational methods as applied to fundamental heat and mass transfer, and directs an active laboratory on the 7th floor of ETC. 67
The Undergraduate Office 1993–2003

contributed by Billy Wood

“do we want to keep all of this? I can paraphrase quite a bit, especially the info on the Exchange Program...

“In December of 1992 Ken Diller called me to the Chairman’s office from my office on the 3rd floor of ETC. Much to my surprise Dr. Diller was interested if I would become the next Undergraduate Advisor of the Mechanical Engineering Department. Dr. Billy Koen had decided to step down at the end of the fall 1992 semester. Earlier in the year Dr. Diller had asked the staff in the chair’s complex to nominate a list of faculty they felt they could work with to be the new graduate advisor. The staff also offered to compile a list of faculty they could work with as the next undergraduate advisor. I did not know that Dr. Koen would decide shortly after that to step down. I have no idea if Dr. Diller would have thought of me otherwise, so I would say I owe the opportunity to the staff. This certainly set a good atmosphere for me when I moved to the undergraduate office on the fifth floor.

“The previous undergraduate advisor was a research faculty. Since I am a teaching specialist and not a research faculty I have had more time to devote to meeting with students...

“One of the first changes I oversaw in the Undergraduate Office was a change in advising [procedure.] At the time that I became the undergraduate advisor, the students were assigned to faculty to advise in groups of 25... Unfortunately the faculty learned to make themselves available for the first couple of days of advising and then not be available at the end of the advising period...To remedy this we organized the lobby area outside of the undergraduate office into ‘advising central’. Three desks were set up for faculty and a table was set up for Pi Tau Sigma to serve as peer advisors. With the undergraduate office there to hand out folders and to answer questions for both students and faculty alike, ‘advising central’ was born. At times it was difficult to get the faculty to volunteer for advising times but with three faculty on duty during the busiest time, the system worked well.

“In 1995 I met with two M.E. students who had questions about the technical area program. At this point in time the undergraduates were required to declare a technical area and take 6 hours of coursework from that area and the remaining three hours could either come from the area or be supporting electives. The two students wanted to know the reason they were not allowed to take courses from all the available technical areas. Why were they restricted to a single technical area? I asked them to explain. This led to a discussion of how it might be very appropriate to prepare oneself to be employed by a particular company by taking cross-disciplinary courses. For example, it is often favorable to be a Thermal/Fluids technical area student if you wanted an entry-level position with an automotive company. But wouldn’t it also be appropriate to take a course in Operations Research, a course in Thermal/Fluids, and a course in Materials Science? This certainly made sense to me. I proposed the idea to Dr. Diller. It made sense to him also. I presented the idea to the ME faculty at the next departmental faculty meeting. It was voted by the department at that point to create the General Technical Area. Since then the General Technical Area has become the most popular technical area in the department.

“I have had the opportunity to work under three chairmen...[in my] ten years of service as the undergraduate advisor.
"...In 1984 I won an outstanding teaching award in Mechanical Engineering. In 1996 I won the James Vick Excellence in Academic Advising award. I won the James Vick Excellence in Academic Advising award in 2000 for the second time. I wasn’t the first engineering faculty to win the award, but I am the first engineering faculty to win the award twice. My favorite award is the Eyes of Texas Award. This award is given in secret to people that are recognized as leading proponents of UT. The award arrived mysteriously on my desk one day. It was framed and ready for hanging. To this day I have no idea how the Ex-students Association became aware of me or who recommended me for the honor. I also won the Eastman Chemical Outstanding Teacher Award in 1994."

"In 1994 Chairman Diller called me to a meeting in his office and introduced me to Boy Henrickson from TU Delft. Mr. Henrickson was interested in sending Dutch undergraduate students to UT to study for a year, and he was also interested in some of our students coming to the Netherlands to study engineering there. This was my introduction to Engineering Study Abroad. At the meeting I met the Director of the UT Study Abroad Program, Ivy McQuiddy. Dr. Diller had studied abroad while an undergraduate at MIT. The opportunity to study abroad was a valuable experience for Dr. Diller and he wanted UT students to have access to the program. So I became the point man in engineering to get our students to participate in study abroad. The study abroad office helped my office gather materials on schools and countries we had reciprocal agreements with. It started as a trickle but I got the word out and students from assorted departments in the College of Engineering began sending a few students abroad each year. Our status as a first class University was attractive to many foreign students coming abroad, but since these programs are supposed to be in balance, we were having a hard time sending as many as we were receiving. In late 1999, Dean Armstrong in the College of Engineering received an offer to send an engineering faculty abroad to attend the 2000 Annual Conference in Madrid, Spain. He sent an email around to those of us involved in study abroad to see if there was any interest in an all expenses paid trip abroad. I received the email ten minutes before my next class. Needless to say I made time to respond before I left for class. To my surprise I was selected to go on the trip. Since I had never been abroad, I had a lot of preparation to do - starting with acquiring a passport. The trip was from April 1st to April 10th, 2000. I was a nervous wreck as we embarked on the start of the trip. It got worse. My credit card had been cancelled, and I didn’t find out until I was checking out of the hotel Tirol in Madrid to travel to Bilboa in northern Spain. Thank goodness I was traveling with Ivy. She put my hotel bill on her credit card, and I repaid her upon my return. The conference and trip were a blast. I was overwhelmed. I returned with a newfound understanding of the power of international travel. I met educators from all parts of the world and realized how much we had in common. I returned to UT with a new motivation to get engineering students to share the experience I had."

On September 10, 2001, I submitted my nomination for membership on the Global European Engineering Exchange (GE3). This is the executive committee for GE3. Ivy McQuiddy had been a member of this committee, but she was resigning her position to retire from The University. Ivy encouraged me to try to take her place on the committee. On September 11, 2001 terrorists struck New York City and Washington D.C. On September 12, 2001, I was notified that I had been selected to the executive committee and my first meeting in New York City was to be on October 25, 2001. I flew in late Thursday for the meeting and out late Friday after the meeting. I didn’t want to get in the way of rescue efforts so I made as small an impact on New York as possible."

Student Activities (move later?)

Awards by students brought prestige to the department. In 1990, Mechanical Engineering students under the leadership of Matt Cranor built and raced “Texas Native Sun,” a solar-powered vehicle, in the GM SunRayce. This first competition of its kind in the US was a 1600-mile, eleven-day race from Epcott Center, Florida, to Warren, Michigan. Texas Native Sun also competed in CalCAR (California Clean Air Race) from Sacramento to LA in 1991 where it came in second and then competed in the 1993 SunRayce USA from Arlington, TX, to Minneapolis, MN. (this is per Vliet)

In 1992 a team of UT Mechanical Engineering nuclear students won the American Nuclear Society’s Graduate Design Contest.22 Members of the Society of Automotive Engineers won third place in the 1993 Natural Gas Vehicle Challenge.23 SAE participated in many projects, including the Formula SAE competition, a Hybrid Electric Vehicle project and a high-speed Human Powered Vehicle named the Anvil.24 The Anvil, a back-to-back recumbent, two-rider HPV, designed and built by a team of ME undergraduates, placed first in the design competition which consisted of an oral report and a presentation. In the speed run, the Anvil won first place with an average speed of 38.9 mph, which was almost 10 mph faster than any other HPV in its class.25 In 1995, the department’s SAE Hybrid Electric Vehicle competed in the HEV Challenge in Detroit, Michigan and won 3 trophies and a cash prize.26 In 1996, SAE students participated in the LPGV or Liquefied Petroleum Gas Vehicle Challenge.27 Throughout the decade the ASME students participated in the Rube Goldberg Competition with many successes.

Notably in 1997, Mechanical Engineering student Jeff Gensler was selected to aid space engineers guiding the remotely controlled Sojourner Rover as it explored an area of Mars. The results of the mission were published in Science. Gensler also worked on the analysis of Sojourner’s data on Martian soil composition. 29 Mechanical engineering students also participated in conferences of the Rehabilitation Engineering Society of North America (RESNA).28
**Academics**

**This needs to be smoothed out:** Mechanical Engineering continued to attract students for a variety of reasons, some practical, some ideological, and some a combination of both. Shad Rahman, BSME ’91, studied Mechanical Engineering because he wanted “to better the world a little bit for everyone in ways that most people can’t.” *(no source cited)* Nathan Vollrath, BSME ’96, wanted to be a mechanic and his father told him he was going to college whether he liked it or not. Nathan remembers, “The degree description for ME looked most interesting, involved lots of math and not too much English or foreign language, and UT offered a full academic scholarship. My first semester at UT we freshmen were told multiple times that almost all of us would drop out before graduation. Those statements made me more determined than ever to prove them wrong.” *69 William Schneider, BSME ’93, reports simply, “I was inspired by my father who was an engineer for NASA.”*  

Natalie Vaughn, BSME ’98, wanted to lobby for engineering/environmental issues and thought a degree in engineering would help her. Edgar Figueroa, BSME ’94, saw mechanical engineering as a worthy career, and a decent living. He also aspired to the recognition of having majored in a more difficult study program.” *70 (no starting quote here...)*

Students MacGyver, friendly competitions with classmates, and family members provided the incentive to carry on. Jack Leifer, MSME ’89, PhD ’95, admired how his advisor, Ilene Busch-Vishniac was able to accomplish so much professionally, and still maintain a family life and interests outside of school. “She’s my professional role model.” *71*

Nathan Vollrath, BSME ’96, found inspiration in Dr. Phil Schmidt and Dr. Dike Ezekoye. “He [Schmidt] cared about the subject matter, cared about his students, and knew how to apply thermodynamics to daily life and keep it interesting. He was a fantastic professor. I had Dr. Dike Ezekoye for Heat Transfer. He got to know the class by first names and made it a learning experience instead of lectures. My freshman year, in the Intro to ME class, the professor brought in several recent graduates to speak and explain what they were doing as ME grads. Those people were an important link for me to comprehend that what I would learn in college was direct training for a real-world job as an engineer. It helped make the classes concrete instead of abstract.” *72*

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**Favorite Professors**

“Dr. Ron Matthews because everything he taught had to be practical and useful…”  “Dr. Matthews was a nice guy, and very supportive of student engineering pursuits and projects. He always had some positive criticism when needed.” *73*

- Shad Rahman, BSME ’91

“Ron Matthews; I use Mobile 1 oil and have had great luck on all my cars based on his advice. I remember that anti-spark plug kick he was on.” *74*

- Bill Ludlow, BSME ‘92

“Dr. Steve Nichols was our J and K professor. He helped us move from dread & fear at the beginning of the semester to productive activity to get something out of the classes and not simply get through the semester. I believe he actually cared that every student gained experience and the design concept.” *75*

- Nathan Vollrath, BSME ’96

“Had Nichols for the Senior Design project class. I remember that he just gave the impression that he ‘expected’ a lot from us at that stage in our education which was good. It was kind of a coming of age feeling.” *76*

- Bill Ludlow, BSME ‘92

“Dr. Stephen Nichols inspired my interest in business law, which eventually interested me in business and finance, which drove me to complete an MBA in Finance.” *77*

- Shad Rahman, BSME ’91

“Weldon, because he was very knowledgeable and fair towards students.” *78*

- Murat Numan, MSME ’99
The ME faculty continued to excel in the classroom, and in some cases, to foster strong bonds with their students both in and out of the classroom. Shad Rahman, BSME ’91 fondly remembers Dr. Steve Nichols, “Dr. Nichols always got excited any time the issues strayed towards the subjects of lawsuits or negotiations.” Susan Wang, BSME ’93, remembers that Billy Wood was “very down-to-earth and encouraging.” Similarly, William Schneider, BSME ’93 recalls, ‘Billy Wood was certainly the friendliest. He always made me feel at home. Gary Vliet was very welcoming as well. I loved our Dynamics/Physics 1 classes.” Kurt Lyell, BSME ’97 remembers, “John Goodenough’s laugh could brighten any hallway.” Jack Leifer, MSME ’89, PhD ’95, remembers his professors, “Busch-Vishniac was an excellent teacher who really took an interest in her students and Blackstock - I earned every point I made in his class. His blunt comments about my work set me on the right track, and forced me to learn how to study and do homework correctly. Probably Blackstock’s acoustics classes were my favorites - they were among my hardest classes ever, but I learned how to study from them.” Roger Lee, BSME ’97, enjoyed Dr. Schmerling’s personality, “Schmerling was funny. My favorite class was Kinematics and Dynamics. I liked it so much I took it twice.” Karen Thole, PhD ’92, thought, “Dr. Bogard clearly explained things and had an admirable work ethic.” Natalie Vaughn, BSME ’98 was grateful for Tess Moon’s assistance, “She always had a unique perspective on any of my personal problems. She also spent a lot of her personal time trying to help me write my resume.” 79

1990’s alums had a long list of favorite ME classes. Jeriad Zoghby, BSME ’97, named Stochastic Optimization as his: “As far as we knew, it was a new topic not being taught anywhere else in the world. The professor, Dr. Morton, was also brilliant and very down to earth.” (no citation--are these all under note 80, at end of para?) For Natalie Vaughn, BSME ’98, her favorite class was ‘J,’ and she still sees its influence in her professional life today.(what is this?) “It’s where personalistics and engineering classes finally meet. And it fit my personality great! If you didn’t want to do the technical portion of the design, there was always someone who did. If you wanted to write, do the QFD, or research have at it! It was the best of the engineering world. Now in my job, there are work packages who do the technical part of the work and I focus on the financial, scope, and schedule aspects…just like J.”80

Karen Thole, PhD ’92, enjoyed her Turbulence class. Murat Numan, MSME ’99, preferred Operational Research Models, because he was able to gain substantial practical knowledge. Nathan Vollrath enjoyed Machine Elements because it “was applicable to real engineering design.”81

I have already assimilated a LOT of these quotes into the tex. Delete some???

Favorite Professors

"Dr. Wheat. Not only her subject matter, but was a great teacher. About the nicest person you'll ever meet, too!" 82

- Javier Saucedá, BSME ‘98

"Dr. Nichols - very up front and inspiring. He gives a lot of useful ‘real world’ knowledge in his class.” 83

- Javier Saucedá, BSME ’98

"Dr. Phil Schmidt – he made Thermodynamics fun and interesting. He was very passionate about his teaching.” 84

- Bill Ludlow, BSME ’92

"Jack Howell for Thermo I and II and Paul Jensen during my MS work really seemed to care about the class." 85

- Scott Mason, BSME ’93

"Dr. Manthiram was an exceptional instructor. He always made time to make sure students understood the concepts well, and it was obvious that teaching was important to him. My favorite class was Dynamic Systems and Controls because of how different the class was. It required a different kind of thinking, that once understood, made a lot of sense.” 86

- Edgar Figueroa, BSME ’94

"Dr. Paul Jensen was my favorite. He had the ability to make complex issues extremely simple and all of his notes were prepared prior to class so that you could focus on the lecture. He is a great person and a great professor. I am very opinionated and like to argue, so Dr. Paul Jensen would wager me a quarter whenever I doubted something. I was very happy the first time I got to keep my quarter, even though I did not win his.” 87

- Jeriad Zoghby, BSME ’97
Senior Design

The Senior Design program remains one of the more significant design requirements (the capstone) for undergraduate ME students, benefiting students and the companies they design for. For Senior Design, projects that a company may not currently have the time or facilities to pursue become the top priority of a design team composed of three senior engineering students. Project work includes problem definition, patent searches, alternative designs, design solution, and cost analyses. Each team maintains close contact with the company throughout the semester, and an oral report of the team’s design solution is presented at The University of Texas at the end of the semester, concluding the project.

The Design Projects Program (Senior Design Project Program?) has worked with well over 130 national and international companies and a diverse range of topics since its inception in 1946. In the nineties, Kurt Lyell, BSME ’97, worked with the Center for Electromechanics on a design dealing with the vacuum system for a flywheel enclosure. James Knight, BSME ’96, Julie Mitchell, BSME ’96, and Nathan Vollrath, BSME ’96, researched and recommended a method for real-time data transfer from the University of Ohio to the Balcones Research Lab. William Schneider, BSME ’93, was on a team that worked with Lockheed Austin on a portable crane for cleaning/testing toxic waste sites. Shad Rahman, BSME ’91, had to redesign, “heater tube coil supports in Dow Chemical’s Ethylene Cracking Furnaces.” Edgar Figueroa, BSME ’94, remembers that his, “project involved designing an electromechanical drive for a seat in a Lincoln Mark VIII. My team even visited a Ford manufacturing plant.”

Other senior design projects included Roger Lee’s, BSME ’97, redesign of the 3M Fiber Identifier to reduce cost. Natalie Vaughn and her team worked on an ergonomic lifting aide for the manufacturing floor of their sponsor, Applied Materials. Scott Mason, BSME ’93, worked on a flywheel design for a hybrid electric vehicle, and Javier Saucedo, BSME ’98, and his team redesigned a batch of autoclave trays for Abbott labs. Charles Corey Scott, BSME ’96, worked on a project for the LCRA (who?) to “design an experimental apparatus to test the use of magnets to stop heat exchanger scale build-up...”

(MORE favorite professors)

“Rich Crawford was the best professor in the classroom. I was in his favorite “J” class (summer 1998) and we had a great time during his lectures and also at the Crown and Anchor.”

- Natalie A. Vaughn, BSME ‘98

“Dr Jack Howell inspired me to be inquisitive and persistent in scientific and engineering issues, which eventually inspired me to keep learning throughout my career and become a licensed Professional Engineer.”

- Shad Rahman, BSME ‘91

[cut some of this quote]
The Life of an ME: 1990 to Today

The University of Texas at Austin offered a wealth of social activities for its students of the 1990’s. Mechanical Engineering students enjoyed the ASME annual camping trip to Pedernales Falls, Fridays at the Park with ASME and guests from other colleges and departments and the Annual Egg-o-Tron contest in Eastwoods Park every November. ASME Burger Burns on the east patio at luncheon time were popular, and some students participated in road trips to attend ASME Regional Student Conferences.

Mechanical Engineering students lived in West Campus, the Far West Area, Intramural Fields, Hyde Park, Riverside, The Castillian, Simkins Dormitory, The French Place, Jester, and Moore-Hill. Students listed among their favorite places to go The Oasis, The Drag, Antone’s, Mount Bonnell, Crown and Anchor Pub, Chuy’s, Sailing at Lake Travis, The Hole in the Wall (no longer in business), salsa dancing at Club Palmeras and Borinuen - (neither exists anymore), Dance Across Texas, Barton Springs, La Zona Rosa, Trudy’s, Maggie Mae’s, BBQ at the Salt Lick in Driftwood, Toulouse Bar, GM Steakhouse, and the Greenbelt.104

Popular social organizations were ASME, Pi Tau Sigma, Tau Beta Pi, INFORMS, Anthropology Club, and the Sail Team. Shad Rahman, BSME ‘91, remembers involvement in the Student Engineering Council which held a spring picnic, fund raisers, gift campaign, liaisons for recruiters, and offered interaction with the University Students Association. Pi Tau Sigma sponsored informal on-campus presentations by engineers and recruiters from various companies.112

A variety of experiences at UT stood out for students. Mark Williamson, BSME ‘91, recalled “Nothing tops my entries Junior and Senior years into the ALEC soap carving contest. Looking back, I am suprised I did not have an even bigger revelation given the success I had.” 115 (WHAT??) Edgar Figueroa, BSME ‘94, remembers the crunch during finals: “One semester my friend, Danny Luna, and I had 5 final exams in two days. We spent three straight days in the fluids lab studying. The end of the semester was always a special occasion. The sense of closure and accomplishment after finishing a semester in engineering is unparalleled.” 120 Kurt Lyell, BSME ’98, also remembers an important academic accomplishment: “Finally solving a differential equation at 2:00 in the morning. It doesn’t sound so exceptional, but consider that I was 2/3 thru the semester before I finally got it. It was wonderful. I solved a four part equation that took roughly three pages to conclude.” 106 Other memories tend less toward academia. Jeriad Zoghby, BSME ’97, was surprised that UT did not reciprocate A&M’s rivalry, “This was both amazing and funny, seeing how much A&M hated UT, whereas UT just didn’t care.” (cite 109) Zoghby also recalled “Ricky Williams scoring the touchdown on A&M that set a new NCAA record and guaranteed him the Heisman trophy.”108

Austin was full of lively spots for dating students both on and off campus. Scott Mason, BSME ‘93, met his wife while at UT by helping her when she was his neighbor move into her new apartment. Charles Corey Scott, BSME ’96, has “many great memories at UT. I could not for a moment pick a single one. I met a number of incredible people and became close to several. Many moments were trying, while many were wonderful. I learned a great deal about every aspect of life, as I have since. I am such a different person from when I started, as well as since I’ve finished. UT will always have an oft-visited room in my memory.” 113

UT football games were vital to student life. Mark Williamson remembers UT’s “defeat of the A&M football team in 1990 after having lost 6 in a row during the previous years. The Drag went beyond wild.” 114

Shad Rahman, BSME ‘91, also has vivid football memories: “When the UT defense held the Aggies on a two-point conversion to win by a point after losing three years in a row.”116 Murat Numan, MSME ’99, recalled a football game in his last semester at UT: “…the person at the entrance of the football stadium let me get in free to the A&M match, because he thought that it would be shame, if I graduated without having seen an UT-A&M match.”118
In the 1990’s tuition was around $800 per semester, with an additional $400 per semester for the cost of books. This cost has climbed slightly today. Some employers of UT Mechanical Engineering students included Union Oil Company, ME Dept., Texas Dept of Health, and Balcones Research Center (later to become Pickle Research Center). On-campus jobs included Engineering internships, undergrad research assistants, engineering assistants, teaching assistants, graders, tutors at ACC, working at the Frank Erwin Center, providing analysis for expert witness firm, and basketball scorekeepers.\textsuperscript{121}

### Professional Experience

Mechanical Engineering students put their degrees to a variety of uses. Jeriad Zoghy found his coursework at UT to be directly applicable to his career: “Much of what I do is statistical analysis, algorithm development, and optimization. My program did a great job in preparing me for both industrial and academic ventures.” (no source, is this note 122?) Shad Rahman similarly recognized the relevance of his experience, “Lots of immediate application of fluid mechanics, thermodynamics, heat transfer, and solid mechanics as a refinery engineer. There was a great need for improved energy efficiency in the process industry, which requires many of the skills possessed by mechanical engineers.”\textsuperscript{122}

#### First Jobs

“During my PhD at UT I presented a paper at a conference in Hawaii. That is where I met Prof. Wittig from the University of Karlsruhe in Germany. He offered me a post-doc position.” \textsuperscript{123}

- **Karen Thole, PhD ’92**

  “Test Engineer at EG&G Automotive Research in San Antonio, TX. I found it by Networking and going door to door in San Antonio where my wife was then in her Internship after completing Medical School. I also went on to become the plant engineer at the World’s First Commercial Solar Electric Generating Systems in Barstow, CA.” \textsuperscript{124}

- **Bill Ludlow, BSME ’92**

  “I was an Operational Modeling Engineer for Advanced Micro Devices (AMD). I was starting my PhD and was interviewing for an intern position when I mentioned that I would prefer a full-time position. They agreed and I continued to work throughout my PhD for AMD, Garden.com, Fujitsu, and HEB Grocery. Garden.com and the Fujitsu plants both closed, but the experiences were wonderful.” \textsuperscript{125}

- **Jeriad Zoghy, BSME ’97**

  transition sentence? Students remained close to the issues in the 1990’s, and of course politics played an important role in student life. ...Jeriad Zoghy remembers that, “Affirmative action was a very important and controversial issue. I felt embarrassed when UT changed its admission policies. It was the second time that UT had led the charge against minority issues. I wrote letters to the paper to explain my position on the issue. Hopefully I changed a few minds.” Shad Rahman, BSME ’91, reports that, “In 1991 or 92, the course registration fee was significantly increased, perhaps by over 50% per credit hour, much to the protest and dismay of the UT student body. Many students resorted to namecalling and making uncomplimentary remarks about UT President Bill Cunningham...” Edgar Figueroa, BSME ’94, remembers, “There were a lot of demonstrations about racial issues and affirmative action. I remember Jesse Jackson spoke about the topic on campus at the West Mall once. I also remember Bill Clinton coming and spending some time at Scholtz Beer Garden when he spoke about racial issues and the economy, which was almost as bad then as now.”\textsuperscript{130} Karen Thole, PhD ’92, noted that in part, the reality of terrorism helped to shape her academic and professional goals: “Somewhat [affected by terrorism]---I was intent on helping our military and as such I work in the gas turbine research area for the Air Force.”\textsuperscript{131}

Kurt Lyell, BSME ’97, recalls the outcome of the 1995 Texas gubernatorial campaign: “The most memorable political issue while at UT was when Govenor Ann Richards lost to George W. Bush...I was disappointed, but the highlight was seeing the front page of the newspaper (probably the Daily Texan) of a new political faction: ‘Naked runners for change’ was formed that morning because of the loss of Ann Richards. The article featured a picture of the organization running (naked) through downtown Austin.”\textsuperscript{134}

Fueled largely by the vital high-tech market, the Austin economy and population boomed in the early 1990s, and some alumni remarked with amazement on the rapid growth of Austin. When asked about memories of current events in Austin and at The University in the 1990’s, Jack Leifer, MSME ’89, PhD ’95, listed the “controversy over Barton Springs, development over the Aquifer; expansion of Mopac to Circle C; moving the airport to Manor and then to Bergstrom; Clayton Williams’ comments during the governor’s race; tearing down Anna Hiss gym; Jim Bob Moffet and the building naming process.”\textsuperscript{133}
Population Statistics
2000’s Census

U.S. ... 281.4 million
Texas ... 20,851,820
Austin ... 656,562

UT ...
ME ...

ME Website, circa 2003, accessible at http://www.me.utexas.edu
The new millennium was ushered in without incident. Fears over world-wide computer failures due to projected inabilitys of computer systems to process the changing of the date as well as dire predictions of the resultant food, water and supply shortages proved to be unfounded. This was largely attributable to the preventative measures made by computer personnel worldwide during 1999. In his critically acclaimed book Discussion of the Method: Conducting the Engineer's Approach to Problem Solving, Mechanical Engineering Professor, Dr. Billy Koen examines the development and implementation of the engineering method, which is increasingly relevant in these times of uncertainty. (?) .... the reader senses that intelligence, although it may breed arrogance, does not necessarily breed certainty. In fact, the engineering method operates entirely in the arena of uncertainty as it seeks to provide a notion of the “best” result or, more accurately termed, the “optimum solution”. This “optimum solution” is determined by humans who unavoidably, due to their lack of omniscience, must operate within a system of preconceived, humanly-selected criteria which are subjectively based on currently, scientifically and politically acceptable ideas of importance and accuracy. Understand the engineer, implies Koen, and you will understand humankind.

Daily life for all Americans was altered dramatically on September 11, 2001, with the terrorist attacks on the World Trade Center in New York City, the Pentagon in Washington, D.C., and a downed plane in the countryside of Pennsylvania. Americans and people around the world mourned the loss of thousands of innocent lives, and realized that life in this new millennium would not be as it was before. Aircraft safety became an immediate concern. Metal detectors and bag searches were installed at museums, amusement parks, theaters and stadiums -- all places where people gathered in large groups for work or recreation became potential terrorist targets. The security of U.S. nuclear facilities was immediately examined. A damaging economic depression was an immediate after-effect of the terrorist attacks of September 11th. But the events of that day will continue to affect Americans and global society in far-reaching and unpredictable ways.

One member of the Mechanical Engineering faculty, Professor Dale Klein, from the Nuclear Group, was called to Washington in 2001 to head up the U.S. Defense Department’s nuclear, chemical and biological defense programs.

ME students remember September 11, 2001:

“I was on a test track and my first reaction was non-belief, a War of the Worlds explanation. The test track is isolated; it took us a while to find a TV and allow the reality of the tragedy to be accepted. We were sent home at noon to be with our families.”

- Justin Case, BSME ‘00

“I was driving to school when it all happened. I just couldn’t believe it. And then I got stuck in a biology lab in the basement of one of the buildings without TV or radio coverage. We all just wondered what was going on while we had to do lab work.”

- Nathan Rylander, BSME ‘02

“I was working at Lockheed at the time. My reaction to Sept. 11 was a renewed energy in making my designs count, making every design more useful, more efficient, and better overall, so it would make the aircraft I designed more capable of protecting our nation.”

- Kevin Shotts, projected BSME ‘04

“In school. A student had printed a picture off the Internet and was holding it up as he walked down the hall. I was shocked. (This was about 30 minutes after the first plane hit.)

- Michelle Holt, projected BSME ‘06

“I was sitting in my office at school. I remember being shocked at what I saw on TV. I was anxious to see what Bush’s reaction would be.”

- Tom Ryan, projected BSME ‘05

“I was conducting a track test at Texas World Speedway for Brendan Gaughn with the NASCAR Craftsmen Truck Series. We watched it happen on a portable TV, we were stunned then angry.”

- Randall Speir, BSME ‘00
Chairman Lamb Retires

After the fall 2000 semester, Dr. J. Parker Lamb stepped down from the Chairmanship of the Department of Mechanical Engineering, retiring from the faculty after 38 years of service to The University of Texas at Austin. Dr. Lamb had been a popular and broadly-respected Chair and had accomplished much in his term. He remains active in things "unrelated to UT." Do we need all of this? CUT this down:

The following is an excerpt from a roast of the Mechanical Engineering Department’s Executive Assistant, Jacqueline Erenigil, prepared for her retiring boss:

“Well, I could just go on & on. It’s a riot around here with Dr. Lamb, and I’m sure we’ll miss that.

A couple of funny items:
1. The Senior Staff around here still remember an incident from Dr. Lamb’s previous term as Chair (way back in 1970’s when ME was in Taylor Hall). A group of staff were all drinking coffee & chatting in the hallway. Dr. Lamb, comes along and asks in his booming voice, “Don’t you all have offices to go to?!” And he meant it.

2. Related to the previous item, this one proves if you can’t beat ‘em, join ‘em........
Nancy, Dr. Lamb’s wife, called recently to speak with her husband. Now, Dr. Lamb usually drops what he’s doing to pick up the phone when Nancy calls. Turns out, I found him chatting with one of the Senior Staff members, laughing right out loud, and he told me to just tell Nancy he’d have to call her back because he was busy gossiping (his words, verbatim).

3. If anything goes wrong with Dr. Lamb’s computer, the first words out of his mouth, in a booming voice that gets us scrambling, go something like.....
“Where the hell is David Dart.....what has he done now; my computer’s not working..... #@$!##------, that David Dart.” David’s our computer guy & we all feel sorry for him because JPL won’t ever admit user-error when it comes to his computer.

4. Speaking of technical problems....
When the staff see JPL in the Copy Room, they duck out of the way ---- "Blasted copiers; can’t we afford anything better; they never work.....WHAT’S WRONG WITH THIS THING?!"
And, oh my gosh, sharing a printer with Dr. Lamb is loads of fun: get out of the way when your print job gets printed on his letterhead paper because HE refuses to use the manual-feed feature. “HERE! as he slams the print job on your desk...this must be YOURS, I’ll just have to do mine OVER AGAIN!”

5. Kitchen Theft. We had a rash of food-thefts in our kitchen. The staff was up in arms. Dr. Lamb stepped up to the plate with a sure-fire solution: fake security cameras to scare-off the criminals, and he threatened to guard the kitchen himself if necessary.

6. Somewhat connected to the previous item...
Recently, the incoming Chair, Joe Beamant, borrowed Dr. Lamb’s office for a conference call & meeting, with Dr. Lamb’s permission. Dr. Lamb had forgotten about this arrangement & happened to arrive just after the closed-door meeting started, to find - of course - that he couldn’t get into his office. To make matters worse, we had provided coffee and cookies to Dr. Beamant’s office guests - a service never experienced by Dr. Lamb. Nevermind that we did this only because we happened to have some leftover refreshments on hand --- Dr. Lamb wondered why ‘they’ got ‘goodies’, when we never even offer to make him a fresh pot of coffee. He ended up sitting in the kitchen for about an hour or so while the meeting went on --- yet the staff thought what he was doing was making good on his threat to guard the kitchen. It worked -- our kitchen theft problem went away!

7. Coffee. You just don’t get special treatment around here ---
Dr. Lamb often has to re-heat old, cold coffee because no one will make him a fresh pot, despite his oh-so-subtle hints. What he doesn’t know is that it’s an inside-joke: we just like to see JPL so out-of-character when it comes to coffee.

8. Now the softer side....
Before his grandson was born, he said he’d probably wait a year or so to make the effort to travel out-of-state & meet the baby (gasp!). What a crusty ole guy, huh? Well, all it took was one picture of his new grandbaby, and MY GOSH......JPL was all mush. He carries around a grandbaby bragbook (although he swears “it’s just something Nancy put together, but since I have it handy....would you like to look at my grandbaby’s pictures....”). And, for a man who hardly ever spoke about his family, now he just beams with stories about his son & grandson. He’s absolutely anxious to go meet that grandbaby & spoil him, spoil him, spoil him!
Chairman Joe Beaman

Joseph J. Beaman became the twenty-second Chairman of Mechanical Engineering in 2001. He continues strong support for PROCEED, the new undergraduate curriculum initiative. (when was this talked about?) he seeks to facilitate faculty research and to build the UT Mechanical Engineering community.

Dr. Beaman earned his Bachelor's and Master's degrees in Mechanical Engineering from UT Austin. At the same time that he excelled in academics, (Joe is described as “scary smart” by people who knew him as a student) he was also active outside the classroom. As a rugby player, he competed against Undergraduate Advisor Billy Wood who was a student at A&M. He is remembered by classmates as a brilliant student, as David Hughes, BSME '72 recalls: "I was Joey’s roommate and fraternity brother... the best (moment) I remember was Joey and I were taking first semester chemistry. Finals came, and Joey decided to go out the night before final exam. He got in late and I couldn’t wake him for the exam. I went on to the exam and Joey shows up about an hour before the exam is to end. He takes the exam and aces the course. He is a brilliant man." Another colleague, Warren Waggoner, BSME ’74, remembers a more studious future chairman: "I remember how studious Joe was -- always pouring over his textbooks and could easily “block out” extraneous noise, e.g. T-Room... whereas, I needed absolute quiet and no distractions." (these two quotes are totally different...keep them in?)

Beaman went on to earn his ScD degree from MIT. He founded DTM corporation and worked as a Senior Engineer for IBM. (before returning to UT?) When asked what qualified him to be Chairman, he replied simply, “luck.”

Dr. Beaman's utmost goal, in tandem with Dean Streetman's, is to lead the Department to the number one ranked Mechanical Engineering department in the United States. Unassuming, good-natured, friendly, but extremely focused, this Chair makes it clear that his ultimate goal is the success of the department.

Among other improvements for the Department, Dr. Beaman wishes to create a cohesive community of scholars. (was it not already?) to develop future leaders in the department. (explain?) and to promote multidisciplinary research. Dr. Beaman's goals paralleled those developed by the faculty and outlined in the Department's strategic plan. Chairman Beaman sees his primary role as the executor of this plan. He recognized that the renovations to the ETC II’s second floor facilities (“Operation Phoenix”), providing a comfortable common meeting place, would improve the ME community.

Chairman Joseph J. Beaman, Jr.

“Beaman [was my favorite professor], he is smart and laid back at the same time. He makes you feel good about struggling with a problem and you can learn with him at the same time on some occasions. He also, being busy constantly, will give you undivided attention when you can catch him.”

- Carey King, BSME ’97, PhD ‘00

“He’s a very professional, but friendly guy. He’s easy to approach and express ideas to. He also seems very interested in improving the department.”

- Eric Schafer, BSME ‘00

“He was a funny, energetic, and understanding professor. He often traveled throughout the semesters to work on high-tech projects for interesting firms.”

- Wesley Brubaker, BSME ‘03

“Dr. Beaman is a great chairman who always takes the time to talk to the students and gets feedback on departmental issues and programs. The department continues to grow under his direction, and the PROCEED program will make the ME department stronger overall. I also have heard several good rugby stories from Dr. Beaman on the many occasions that he has joined the engineering organizations at Posse East.”

- Nathan Rylander, BSME ‘02
The State of the Department

In 2001, the department’s graduate program was rated tenth in the nation in the “America’s Best Graduate Schools” issue of U. S. News and World Report. Computer software had become integral to nearly every course and the Internet had established itself as an invaluable tool for students. New curricula reflected these changes along with the introduction of Project Centered Education or PROCEED into the undergraduate educational model. (this has been mentioned in passing--figure out how this best makes sense) This style education model promotes academic conditions, which focus on solving tangible problems.(this sentence is a mess--what is being said?) From the freshman to senior year, students are exposed to real engineering problems from analysis to creative design with a “just in time” education. (what does this mean?) Dr. Phil Schmidt has been the prime instigator of PROCEED. An earlier form of this type started in 1978 with Dr. Leonard F. Kreisle selecting real problems from industry to use in the Senior Design Laboratory (ME 366K). Project PROCEED, started in 2000, selects real problems for many courses, thus initiating students to current engineering needs at all levels. Some of these problems are solved with a team of engineers from industry.

Ford Motor Company was the department’s first corporate contributor to Project PROCEED. On February 19, 2001, Ford donated $7.3 million to the UT College of Engineering and the UT McCombs School of Business for a range of student programs. One of these programs was the Mechanical Engineering’s curriculum initiative, PROCEED. Another direct benefit for Mechanical Engineering was Ford funding for renovating part of the second floor area of the Engineering Teaching Center II to create a Ford Motor Company Academic and Student Life Center.

In January 2003, sweeping budget cuts were made to State of Texas operating budgets. These cuts resulted in the immediate loss of $19 million dollars to The University of Texas’ operating budget during that same fiscal year, 2001-2002. (how does cut in 2003 affect 01-02 fiscal year budget?) Additionally, further budget cuts are expected for the next fiscal year. The various colleges and departments of The University must absorb these losses in State funding. The timing of new departmental programs such as PROCEED and Operation Phoenix could not be better as the department’s alumni, friends and corporate supporters come together to provide much need financial assistance during these economically strained years.

The new millennium in the Department of Mechanical Engineering is marked by exciting directions in research. Three new areas of research are the study of micro-electric mechanical systems or MEMS, fuel cell technology and freeform fabrication. this needs to be reworded: MEMS research involves the creation of methods for the small-scale manufacturing which are used to measure temperature distribution of computer chips and carbonano tube electron
ics. Two ME faculty who are currently performing research in Micro- and Nano-Electro Mechanical Systems are Dr. Li Shi and Dr. Shaochen Chen. Dr. Li Shi’s research focuses on nano-scale heat transfer, techniques in nano-scale heat transfer analysis and development of thermoelectrics cooling devices. Dr. Chen’s research examines nano manufacturing mechanical systems. Dr. Chen has developed a small, portable (40mm long), biological detection device which has a variety of diagnostic applications. One is the rapid processing of DNA samples to diagnose malignancies.

The second exciting area of research is fuel cell technology. Fuel cells are more efficient and cleaner than conventional power sources and are attractive for a variety of applications ranging from portable electronic devices to electric vehicles to stationary power. Dr. Arumugam Manthiram of the Materials Science and Engineering group is focusing on the development of efficient, less expensive materials for fuel cells. Dr. Manthiram’s group is developing multilayered hybrid membranes, nanostructured alloy catalysts, and functionalized nanocarbon catalyst supports to enhance the performance and lower the cost of fuel cells. A third hot developing research topic in mechanical engineering is solid freeform fabrication. “Solid Freeform Fabrication, also known as desktop manufacturing, is a manufacturing technology that produces freeform solid objects directly from a computer model of the object without part-specific tooling or human intervention. One successful desktop manufacturing approach is selective laser sintering. In this approach, components are built by material addition rather than by material removal. In selective laser sintering, a directed laser beam is used to consolidate individual powder particles in selected regions. Compared to manual manufacturing methods, selective laser sintering is inherently fast. In addition, this process has the potential to produce accurate, structurally sound three-dimensional renditions of objects designed in a computer and to make such objects available to the user in minutes or hours. The benefits of this new process include greatly reduced prototyping cost and design time, and the capacity to achieve, in one operation, shapes that would otherwise require multiple operations or in some cases shapes impossible to manufacture with standard techniques.” (this very long quote is not cited) Faculty involved in this area of research are Dr. Joe Beaman, Dr. Kris Wood, and Dr. Rich Crawford.
Faculty Research (why is this handled like this here only? I think this section needs to be combined with area research stuff earlier in this chapter...)

The Department of Mechanical Engineering at the University of Texas at Austin has been widely recognized as one of the premiere research institutions in the world. The cornerstone of the UT Mechanical Engineering Department has been the excellent research talent marshaled here. Many of the faculty in the ME Department participated with faculty and engineers from other areas of the University and other institutions around the world. There were nine general areas of research in 2001 within the UT Department of Mechanical Engineering: Acoustics, Biomechanical Engineering, Computer Graphics & Engineering, Materials Science & Engineering, Mechanical Systems & Design, Manufacturing Systems Engineering, Nuclear & Radiation Engineering, Operations Research & Industrial Engineering and Thermal Fluid Systems.28

Acoustics

Acoustical principles are used to model and predict the distributed motion of any continuous medium. The broad interdisciplinary scope of acoustics and its fundamental importance to a wide range of technologies make it a unique combination of engineering and science. UT ME alumni occupy a variety of positions in government laboratories, industry, consulting firms, and universities. Research faculty include David Blackstock, Mark Hamilton, and Ron Panton.29

Biomechanical Engineering

Biomedical Engineering is the application of engineering science and technology to problems in medicine and biology, focusing on uses for the human body. Areas of application included medical devices, medical instrumentation, and research in medical physiology, materials, and pharmaceuticals. Research faculty include Ron Barr, Tess Moon, and S. V. Sreenivasan.30 In 2003, Dr. Kenneth Diller became chairman of a separate Department of Biomechanical Engineering.

Materials Science Engineering

Materials Science and Engineering involves understanding and tailoring of the relationships between the structure and processing of materials and their properties and performance. As a technical option area in Mechanical Engineering, the emphasis is on the microstructure of materials, the origin of physical and mechanical properties, and the role of processing. Applications include development of new lightweight, high strength materials for automotive and aerospace applications, minimizing corrosion of pipe in sour oil wells, analyzing failures in microelectronics packages, developing and processing new superconducting materials, and selecting a bearing material with outstanding resistance to wear. Research faculty include David Bourell, John Goodenough, Paul Ho, Desi Kolarov, Arumugam Manthiram, Llewellyn Rabenberg, Kenneth Ralls, Juan Sanchez, Michael Schmerling, Eric Taleff, and Harvel Wheat.32

Mechanical Systems and Design

The largest area of the Mechanical Engineering Department, Mechanical Systems and Design, utilizes modern analytical tools to design structures and systems associated with power plants, manufacturing machines, transport vehicles, robots, space stations, recycling, hazardous-waste management, military hardware, prosthetic devices, and even toys for children. Supporting technologies for these systems include machine tools, robotics, metrology, microelectronic systems, and human augmentation systems. Research in manufacturing processes also addresses several specific processes, including free–form fabrication with laser sintering. Research Faculty include Ted Aanstoots, Ronald Barr, Joseph Beaman, Michael Bryant, Daniel Cox, Rich Crawford, Eric Fahrenthold, Benito Fernandez–Rodriguez, Mark Hamilton, Frederic Ling,(Vliet has a ? next to this name?) Raul Longoria, Glenn Masada, Tess Moon, Steve Nichols, S. V. Sreenivasan, Delbert Tesar, Joe Thornhill, Alfred Traver, and Kris Wood.33

Manufacturing Systems Engineering

Manufacturing Systems Engineering uses a wide range of resources (personnel, information, energy, materials and facilities) to make products that satisfy customer needs. Participating academic units in the multi–disciplinary research and graduate program in Manufacturing Systems Engineering (MFG) at The University include the Departments of Electrical & Computer Engineering, Mechanical Engineering, and Chemical Engineering and the Department of Management in the College of Business Administration. Research faculty include Joseph Beaman, Michael Bryant, David Bourell, Richard Crawford,
Nuclear & Radiation Engineering

Nuclear and Radiation Engineering covers basic radiation physics, applied radiation protection, and radiation applications in industry, health care, and materials science. Research helps create a means of deep space propulsion, develop new ways of producing and using radioisotopes, and provide electrical power in a safe, efficient, and environmentally benign way. Graduate Studies in Health Physics which began in the Fall of 1998, expanded the Nuclear and Radiation Engineering Program, offering a Masters in Mechanical Engineering with an emphasis in Health Physics. Graduate courses are offered by remote distance teaching via the World Wide Web and are developed for the working professional, full–time student, or persons interested in continuing education. Research Faculty include Carl Beard, Steven Biegel, Bill Charlton, Dale Klein, Sheldon Landsberger, Arumugam Manthiram, Juan Sanchez, and Harovel Wheat.

Operations Research & Industrial Engineering

Operations Research is a mathematical science concerned with optimal decision making and modeling of deterministic and probabilistic systems. Research focuses on interdisciplinary fields of application embracing a range of quantitative techniques with components in economics, computer science, and systems theory. Research problems are as specific as improving the efficiency of a production line and as broad as developing a long–range corporate strategy involving a combination of financial, marketing, and technological concerns. Research faculty include Jon Bard, Wes Barnes, Melba Crawford, John Hasenbein, Paul Jensen, David Morton, and Elmira Popova.

Thermal/Fluid Systems

Research in this area includes any process or system involving thermal or fluid energy transfer, storage, or conversion to or from other energy forms. Current research includes combustion processes, IC engines, fire research, solar energy, thermal control in manufacturing processes, fluid mechanics, hypervelocity flows, and nano-scale thermo-mechanical manufacturing and applications. Research faculty include Ken Ball, David Blackstock, David Bogard, Mike Crawford, Ken Diller, Janet Elzey, Dike Ezekoye, Matthew Hall, John Howell, Jerold Jones, Thomas Kiehne, Dong sik Kim, J. Parker Lamb, Ron Matthews, Ron Panton, Phil Schmidt, Gary Vliet, Li Shi, Shaoch Chen, and Dennis Wilson.

Visiting Committee – Mechanical Engineering Advisory Council

In the Fall of 2002, Jerri Paul, BSME ’95, MSME & MBA ’97, made history as the first female Chairperson of the Mechanical Engineering Visiting Committee. The Department Visiting Committee continues to be a prestigious organization of distinguished engineering alumni, industry leaders and entrepreneurs. Their role is to advise the department on questions of policy, curriculum, and direction. While working at Ford Motor Company, Ms. Paul championed the ME Department’s fund-raising efforts. In particular, she has been instrumental in the development of PROCEED and the implementation of the ETC second floor renovation project.

# Mechanical Engineering
## 2002 - 2004 Catalog

### Suggested Arrangement of Courses for Eight-Semester Program

**Traditional Degree Program**

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Semester Hours</th>
<th>Spring Semester</th>
<th>Semester Hours</th>
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<td><strong>FIRST YEAR</strong></td>
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<td><strong>SECOND YEAR</strong></td>
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<td><strong>Spring Semester</strong></td>
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<td><strong>Fall Semester</strong></td>
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<tr>
<td>CH 301, <em>Principles of Chemistry I</em></td>
<td>3</td>
<td>M 408D, <em>Sequences, Series, and Multivariable Calculus</em></td>
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<tr>
<td>M 408C, <em>Differential and Integral Calculus</em></td>
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<td>ME 205, <em>Computers and Programming</em></td>
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<tr>
<td>RHE 306, <em>Rhetoric and Composition</em></td>
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<td>PHY 103M, <em>Laboratory for Physics 303K</em></td>
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<tr>
<td>Social Science or fine arts/humanities elective</td>
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<td>Texas and American government</td>
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<td><strong>TOTAL</strong></td>
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### SECOND YEAR

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<td><strong>Fall Semester</strong></td>
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<td>M 427K, <em>Advanced Calculus for Applications I</em></td>
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<td>ME 111L, <em>Materials Engineering Laboratory</em></td>
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<tr>
<td>ME 326, <em>Thermodynamics</em></td>
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<td>ME 218, <em>Engineering Computational Methods</em></td>
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<tr>
<td>PHY 303L, <em>Engineering Physics II</em></td>
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<td>ME 324, <em>Kinematics and Dynamics of Mechanical Systems</em></td>
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<tr>
<td>PHY 103N, <em>Laboratory for Physics 303L</em></td>
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<td>ME 330, <em>Fluid Mechanics</em></td>
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<td>Approved technical area elective</td>
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### THIRD YEAR

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<td><strong>Spring Semester</strong></td>
<td></td>
<td><strong>Fall Semester</strong></td>
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<tr>
<td>ME 335, <em>Probability and Statistics for Engineers</em></td>
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<td>*ME 242L, <em>Thermal-Fluid Laboratory</em></td>
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<td>ME 136L, <em>Materials Processing Laboratory</em></td>
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<td>ME 344, <em>Dynamic Systems and Controls</em></td>
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<td>ME 339, <em>Heat Transfer</em></td>
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### FOURTH YEAR

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<td><strong>Spring Semester</strong></td>
<td></td>
<td><strong>Fall Semester</strong></td>
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<td>ME 244L, <em>Dynamic Systems &amp; Controls Laboratory</em></td>
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<td>ME 266K, <em>Mechanical Engineering Design Project</em></td>
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<td>ME 366J, <em>Mechanical Engineering Design Methodology</em></td>
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<td>ME 266P, <em>Design Project Laboratory</em></td>
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<td>American History</td>
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<td>American Government</td>
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<td>Approved mathematics elective</td>
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<td><strong>TOTAL</strong></td>
<td><strong>16</strong></td>
<td>Approved technical area elective</td>
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</tbody>
</table>

*PROCEED Class*
Enrollment (and degrees?)
(this was a very long quote, I'm paraphrasing)
In the Greeting from the Chair from the 2001-2002 Department Annual Report, Dr. Beaman commented on enrollment trends and goals for the Department, focusing on female, minority, and foreign enrollment. Undergraduate enrollment had steadied overall, but with fluctuation in female and foreign student enrollment. According to Dr. Beaman, “It is the department's goal to increase and stabilize female and undergraduate minority enrollment over the next five years...It is clear that there is still more work to be done.” (cite?) Due to the economic recession, UT ME graduate programs saw increased enrollment from the start of the decade. Foreign graduate student enrollment in 2001-2002 climbed as U.S. enrollment declined. Chairman Beaman reported that one of the departmental goals in enrollment is “to achieve stability in these numbers for both U.S. and foreign students, while increasing the enrollment of U.S. students to the point of at least equal representation.” (citation? maybe n.40?)

Dr. Beaman expressed concern as well for establishing a vital research environment in the department. Part of achieving this goal was (and is) active faculty recruitment. Beaman comments on his goals in this area:

“We have outstanding faculty...We are currently in the process of recruiting faculty to some of our areas and, in doing so, are looking for better ways of implementing our faculty recruitment process. Our ultimate goal is to provide an environment to young faculty which allows them to come into our department, immediately set up their research and feel part of our mechanical engineering community which is comprised of other faculty as well as our friends in industry.”


Faculty Achievements—do we want to do this—just single out a few?
Faculty in the ME Department continued to excel both in and outside the classroom, producing papers, attending conferences, receiving patents and winning professional recognition. All have brought recognition to the department, but only a few, can be mentioned here. (I'm removing faculty name subheadings...)

In September of 2001, Dr. Steve Nichols became Director of the Murchison Chair of Free Enterprise in the UT College of Engineering. In 2002, Dr. Nichols accepted an appointment as Associate Vice President for Research at The University of Texas at Austin. In this role, Dr. Nichols oversees university-wide activities related to technology transfer, protection of intellectual property and commercialization. Previous appointments held by Dr. Nichols include Director of the Center for Electromechanics, Director of the Center for Energy and Environmental Resources, Director of UT ME Senior Design Projects Program and the Associate Chair of UT Mechanical Engineering Alumni and Industrial Relations.50

Dr. John B. Goodenough, Professor of Materials Science and Engineering was awarded the prestigious $450,000 Japan Prize,(what year?) a counterpart of the Nobel Prize, for his “original and profound achievements” in battery research. Dr. Goodenough is credited with the discovery of lithium manganese oxide, lithium cobalt oxide, and lithium iron phosphates, which facilitated the development of high energy density rechargeable batteries.51

Dr. Steve Nichols

Dr. John Goodenough

Dr. John Goodenough
Student Achievements

MOVE THIS with STUDENTS: UT Mechanical Engineering students excelled in competitions in the early 2000’s. In 2000, UT ME students won the national championship trophy in the 12th Annual National Rube Goldberg Machine Contest held at Purdue University. The UT Tower was lit orange to honor their victory. Team members were Chad Bruns, Daniel Booth, Neal Tanner, Kristen Christopherson, Nikolas Lane, John Franco, Jeff Krimmel, Justin Olsen, Edward Sutherland and Michael Bruns. The UT Mechanical Engineering Student branch of the Society of Automotive Engineers won first place for their booths in the Student Exhibit Competition for two consecutive years at the 2000 SAE World Congress and Exhibition and at the 2001 SAE World Congress and Exhibition. Also in 2000 the UT Society of Automotive Engineers won awards in the 2000 Formula 2000 SAE Competition. Justin Case and Courtney Frey presented the team’s oral presentation and took ninth place. The UT team also won the prestigious Visteon Award for Outstanding Cooling System Engineering and a check for $1500. As if that were not enough for UT SAE, they also won first place in the Ethanol Vehicle Challenge and a case award of $6000. The Ethanol Vehicle Challenge is an international intercollegiate academic competition hosted by the U.S. Department of Energy, Natural Resources of Canada and General Motors. In 2001, Dimitrios Dardalis, a mechanical engineering graduate student, patented a design for his rotating liner engine. Dustin Shaw and Jesse “J.R.” Garcia won the 2001 Undergraduate Materials Research Initiative grant from the Materials Research Society with a cash award of $1000. Neal Tanner, BSME ’01, was chosen to be a Hertz Foundation Fellow and was granted a $200,000 Graduate Fellowship Award in the applied physical sciences.

Texas Solar Radiation DataBase (TSRDB)
(http://www.me.utexas.edu/~solarlab/tsrdb.html)

The University of Texas at Austin’s Solar Energy Laboratory is home for the development of a Solar Radiation Data Resource as well as other solar energy applications. The laboratory resides within the Mechanical Engineering Department on the tenth floor of ETC, the Engineering Teaching Center, and is under the direction of Dr. Gary Vliet. It includes space and equipment for solar energy related projects and research.

The primary project of this laboratory is the development of the Texas Solar Radiation Database (TSRDB), which compiles solar radiation measurements across the State of Texas and is publicly accessible at http://www.me.utexas.edu/~solarlab/. The database web site features up-to-the-minute Austin solar radiation data, as well as the previous day’s data from 15 locations around the state of Texas, including ongoing monthly averages, daily data from 15 Texas locations, historical data from the National Solar Radiation Database (NSRDB) and links to other solar radiation and weather data.

The data for Austin goes back to 1985 and the data for the other 14 sites encompasses approximately the last six years. The sites are spread across Texas, but are more concentrated in the western part of the state where the solar resource is the highest. The data includes direct normal (beam) radiation, diffuse horizontal radiation (indirect radiation from the sun) and global horizontal radiation (the combination of direct and diffuse radiation). The data is available at 15-minute intervals and is also compiled into daily averages by month.

The purpose of developing this database is the establishment of reliable information from which a performance assessment of potential solar energy systems may be developed and a selection of the best locations for their implementation may be made.
Faculty Achievements

Dr. Ron Matthews and ME Alum, Rudy Stanglmaier, PhD ME ‘97, along with researchers from Ford Motor Company, Dr. Wen Dai, MSME ‘92 and PhD ‘95 and Dr. George Davis were awarded a 17-year patent for their work on an on-board distillation system which reduces vehicle emissions by at least fifty percent. 52

In March 2003, Dr. Kris Wood was one of only seven University faculty to be recognized for outstanding achievement by the Academy of Distinguished Teachers and was awarded the permanent designation of “Distinguished Teaching Professor.” 53

In July of 2000, Dr. Dale Klein was appointed Chairman of the Texas Radiation Advisory Board by then governor, George W. Bush. 54 In October 2001, President George W. Bush selected Klein to head up the U.S. Defense Department’s nuclear, chemical and biological defense programs (caps on these words?) as Assistant to the U.S. Secretary of Defense, Donald Rumsfeld. Klein is the “principal staff assistant and advisor to the Secretary of Defense and Deputy Secretary of Defense and the Under Secretary of Defense for Acquisition, Technology, and Logistics for all matters concerning the formulation of policy and plans for nuclear chemical, and biological weapons. He is also directly responsible to the Secretary and Deputy Secretary of Defense for matters associated with nuclear weapons safety and security, chemical weapons demilitarization, chemical and biological programs, counter proliferation of weapons of mass destruction and nuclear treaties.” (there is no source cited here; what is being quoted?) Klein’s task is to “ensure that our nuclear weapons are safe, secure and reliable; developing a strong and comprehensive chemical and biological defense program; meeting the requirements of our nuclear treaties; completing the safe destruction of our chemical weapons; and enhancing our counter proliferation efforts regarding weapons of mass destruction.” (again, no citation) Dr. Dale Klein, in his role as statesman, is an excellent example of the versatility of a degree in mechanical engineering. 55
Ken Cockrell, BSME ‘72

Ken Cockrell, BSME ’72 and MS in Aeronautical Engineering from the University of Florida, was a recipient of the UT College of Engineering’s 2000 Distinguished Engineering Graduate Award. At the time of the award, Cockrell had logged nearly 8000 flight hours as a naval aviator, pilot, and astronaut. Over 900 of those hours were in space.

Cockrell’s career began in the U.S. Naval Reserve in 1972. He was a member of the U.S. Naval Aviation Reserve Officer Candidate Program at Naval Air Station, Pensacola, Florida, where he was commissioned, and later designated a naval aviator. In 1978, Cockrell entered the U.S. Test Pilot School in Maryland. Upon graduation a year later, he remained at the Naval Air Test Center conducting flight tests on a variety of aircraft until 1982, when he reported to the Naval Station in San Diego to become a staff officer and pilot. Mr. Cockrell resigned his commission in 1987 and retired from the U.S. Naval Reserve in 1999.56

Cockrell’s career with NASA began in 1987, first as an aerospace engineer and a research pilot. In 1991 Cockrell became an astronaut and took on a wide range of technical assignments. He was responsible for everything from testing craft safety and operations, to preparing procedural manuals carried on shuttle flights.57

Already a veteran of three space flights, Mr. Cockrell commanded the crew of the STS-98 shuttle mission in Summer 2000. This shuttle spent six days docked to the International Space Station and delivered a U.S. Laboratory module to the station.58 Cockrell can be seen in the IMAX presentation, Space Station, which is a 3-Dimensional documentary of the operations of the Space Station.

Alumni Achievements

UT Mechanical Engineering alumni have excelled in areas of industry, academia, government and entrepreneurship. Their achievements are of course far too numerous to name here. Some alumni have been achieved national recognition. In addition to Ken Cockrell, Don Evans and Byron Tapley are two such alums. In the Spring of 2001, Don Evans, BSME ’69, a Houston native and successful businessman, was confirmed by the United States Senate as head of the U.S. Commerce Department.62

In 2002, Byron Tapley, BSME ’56, became the first non-NASA employee to direct a NASA mission. Tapley, who is Director of the University of Texas at Austin Center for Space Research is also the Director of the five-year Gravity Recovery and Climate Experiment, GRACE, which seeks to chart the earth’s gravitational fields to a greater degree of accuracy than ever before.53
“Operation Phoenix”
(contributed by Kelsey Evans--who?)

PARAPHRASE THIS: The Department of Mechanical Engineering has undertaken one of the most advanced renovation projects in the College’s recent history. Appropriately dubbed “Operation Phoenix,” the renovation has resulted in the new “Taylor T-Room,” an open and bright 7,000 square foot area designed to enhance the mechanical engineering community and the student body experience. Phase One of the renovation effort officially started Fall 2002, with the demolition of existing space and the enclosure of the outdoor patio. Students, faculty and staff have waited patiently for its completion, catching daily glimpses of the progress through the installed plexi-glass windows.

Until Fall 2003, the space available for students and faculty to gather in study, conference and leisure has been limited to the 2,100 square foot entrance lobby and main hall of ETC, known to many as “the cave.” With the ME community growing rapidly and the emergence of a new hands-on, team-based curriculum called PROCEED, it became obvious that the space would need to change. And so a renovation job was born...
When the Department of Mechanical Engineering moved out of Taylor Hall in 1983 into the Engineering Teaching Center (ETC), students lost the lounge area that had been so hard-won some 30 years earlier (and actually, dug out with students’ own hands. see ch.? A comfortable space for ME students to gather to study and relax was soon missed. In the late 1990’s ME began discussions with Ford Motor Company about creating a new community space in ETC, similar to the original T-Room. Ford Motor Company generously committed a grant of $1.2 million in the hopes that alumni would contribute matching money to fulfill the project. Alumni advisors, faculty and students all embraced the idea.

In addition to its role as a place for students to gather when qa study break is needed, the new T-Room also provides significant study space. It features open workspace with moveable furnishings and whiteboards for enhanced student/ faculty interaction. Quiet, carpeted individual study carrels with data-hook-ups and privacy screens are also part of the space’s amenities. To facilitate research, wireless network access is available throughout the T-Room. Technology Learning Laboratories are provided to allow for enhanced distance learning and 2-way video conference access to industry experts, corporate leaders and other university researchers.

(Why is This Important?)

This is alumni stuff (not really T-room-related) One of the most important components of ME’s strategic plan is the building and fostering of community within the department and throughout the ME alumni network. Significant efforts have been made to enhance alumni outreach through the newsletter, alumni tailgate parties, an enhanced website, the e-newsletter and more. With the onset of PROCEED, the interaction between students and faculty has increased dramatically, with groups meeting to discuss their projects and plan for upcoming research. There has been no better time to move forward with the expansion and upgrade of this community space than the last year.

Act Now!

The T-room is already complete and open—-what is this plea for funding doing in here?? Operation Phoenix, the Campaign for Mechanical Engineering, needs your support. Funds already committed by the department with the total physical renovation of the existing space in ETC II. Matching money from alumni and friends of the department will complete the renovations. There are stratified giving levels so that alumni of all ages can participate. All gifts, detailed on the following pages, may be set up as four-year pledges, beginning in 2003, and may include cash or stock gifts. In addition, alumni who wish to include the ME Department in their estate plans may do so and will be credited at the appropriate giving level.

All alumni and friends who participate in this great effort will be listed on a special Wall of Honor in the renovated T-Room. Encourage your classmates and colleagues to participate in this once in a lifetime opportunity to support the Mechanical Engineering Department.

For more information in 2003-2004, please contact Ms. Kelsey Evans at 512-471-6151 or by e-mail, room@enr.uta.edu, or visit the website at http://www.me.utexas.edu.

Giving Levels

Leaders in Mechanical Engineering
$100,000 ($25,000/year for four years)
Recognition will be in the form of individual plaques with an artist sketch of the donor, a brief vita and a “Philosophy of Engineering” statement. These plaques will be permanently displayed on the Wall of Honor.

Partners in Mechanical Engineering
$50,000 ($12,500/year for four years)
Recognition will be in the form of a plaque similar to the one described above, but without the artist sketch, and will include a brief vita and a “Philosophy of Engineering” statement. These will also hang on the Wall of Honor.

Innovators in Mechanical Engineering
$15,000 ($3,750/year for four years)
Recognition will include a prominent listing by level on the Wall of Honor with donor’s name and graduation year.

“T-2” Friends
$1,500 ($375/year for four years)
Recognition will be a listing of donors by graduation year mounted on the Wall of Honor.

T-Room Tile Project
$500 ($125/year for four years)
Alumni may choose to purchase a tile in their name, which will cover the lower portion of the Wall of Honor. Tiles may be etched with name and graduation year.
**Academics**

Mechanical engineering students spend their time in ETC, ECJ, the SAE office, the dyno lab, the chemistry building, the Union, the Life Sciences Library, the SAE garage, the ASME office, ECAC, Student Affairs Office, and the PCL. One graduate reported that he chose mechanical engineering because he thought it would be “cool” to have a respectable major. Another chose ME because of the financial security it continues to offer and because it promised a “nice blend of math and physics, without getting too involved in either.” Class sizes range from 75 to 125 students in the major courses. Smaller classes may have 35 to 50 students.\(^7\)

Students continued to benefit from the dedication of their professors. Justin Case, BSME ’00 says, “Dr. Kris Wood’s enthusiasm is utterly contagious and it is obvious his students build from him and in turn, he builds off their energy. I first had Dr. Wood during a summer semester and Austin slows down more and more with each consecutive 100 degree plus day. It never phased Dr. Wood each day he would bring a box full of toys each with a unique mechanism that he blended into his lecture. For three hours straight we would be enthralled by his mastery of teaching and the knowledge he shared. I also had the honor of learning Design from Dr. Wood and he taught a special design class for our Formula SAE efforts.” Kevin Shotts, future BSME ‘04 was also inspired by Dr. Wood, “Dr. Kris Wood inspired me to become a designer and showed me the path to becoming a better designer.”\(^7\)

Nathan Rylander, BSME ‘02, had a number of favorite professors: “I had the pleasure to work under Dr. Ellzey for my senior design project. She is a very dedicated faculty member who enjoys the challenges that academic engineering brings . . . Dr. Nichols is the best professor in the Mechanical Engineering Department, and was the perfect complement to the senior design class. He makes the issues we discuss relevant to our future engineering careers. He also fosters creativity and brings out the best in students . . . Dr. Sreenivasan is one of the smartest people I have run across.”\(^7\)

**Inspiration & Favorites**

“Dr. Beaman and Dr. Ezekoye show respect and understanding towards students”\(^7\)

- Wesley Brubaker, BSME ‘03

“Dr. David Morton. Because he simplified difficulty of subjects and is very specialized in his fields.”\(^7\)

- Peraphol Nithichaval, MS ORIE ‘02

“Actually, he was never my professor, but Mr. Wood (he was the ME Undergrad Advisor) was my favorite ME faculty member...always took a GENUINE interest in the students.”\(^7\)

- Ronald K. LaNiear, BSME ‘00

“The professors here (Beaman, Crawford, Sreenivasan and Longoria), also, as with all good sons, my mom inspires me.”\(^7\)

- Carey King, BSME ‘97, PhD ‘00

“Alan Kulweiki is a huge inspiration in my life.”\(^7\)

- Randall Speir, BSME ‘02

“Glynda Groth-Putnam of the Office of Student Life.”\(^8\)

- Wesley Brubaker, BSME ‘03
Dr. Steve Nichols was also named by Randall Speir, BSME '02, as a significant influence:

"Dr. Nichols was like a second father. He always had high expectations and you just wanted to make him proud. But even if you fell short, as long as you did your best; followed sound practices; and took responsibility for your mistakes he let you know that you were well on your way to being a good engineer. He instilled a sense of pride and responsibility in us as Longhorn Engineers that I try to live up to everyday, both professionally and personally." 81

Dr. Ron Matthews is another favorite of students, alumni, and faculty and staff alike. Eric Schafer, BSME '00 recalls,

"Dr. Matthews is a great professor that has done so much for the ME students. The FSAE is a great opportunity to learn about engineering. His lectures are to the point and straightforward, and all of the information has obvious meaning and value. There is no fluff with Dr. Matthews." Says Justin Case, BSME '00, "Dr. Matthews is an incredible professor who has given engineering students the opportunity to solve automotive problems that challenge the entire industry right now. Without Dr. Matthews I would have never gained the insight into practical application of the engineering skills I learned in the classroom. By opening his lab to students and allowing us to try out ideas on actual vehicles, he provides a service like no other. Dr. Matthews also taught Automotive Engineering classes and labs that afforded students like myself an opportunity to learn as much about automobiles as we could absorb. Some universities have Automotive Engineering departments, Dr. Matthews is the University of Texas at Austin Automotive Engineering Department."

"Dr. Matthews was the first professor I ever shared a pitcher of beer with!," remembers Randall Speir, BSME '02. "(Hell, I'm sure the professors are just as frustrated with us as we are with the homework!) Dr. Matthews was the most influential person in my career path at UT Austin. The older I get the more I realize how lucky I was to have shared in his efforts to create a unique learning experience through the student chapter of SAE. He is the biggest reason I will give back to the Department." 82

Eric Schafer, BSME '00, said his favorite class was, Machine Elements with Dr. Kris Wood because it was "so fundamental and so much to learn that could be easily applied to design." Several other students named this course as outstanding as well. Carey King, BSME '97, PhD '00, enjoyed, "Modeling: because you finally got to use some math and try to predict and design for things to work like you want. You start realizing how parts of systems can finally work together and it's kind of a culmination of all previous classes." For Ronald LaNiece, BSME '00, it was "ME 466K! An excruciating experience, but worthwhile. Prof. Nichols was the head of the class. My teammates and I worked on a device for BAE Systems in Austin on developing the heat transfer portion of a chemical agent detecting device."84 Thermodynamics was very popular as well among ME's. Peraphol Nithichaval, MS ORIE '02, named Stochastic Optimization because of its relevance to "real-world problems."86 Nathan Rylander recalls "I liked Dynamic Systems and Controls along with the senior design class ("K"). Both classes allowed for a lot of creativity in either the systems analysis or design process." 90

Favorite Professor 92

"As a third year student, I have had my share of good professors, but none stands out like Dr. Bill Guy. I took the last third of Calculus with him and enjoyed his lecture style so much that I decided to take his classes for Differential Equations and Matrices. Dr. Guy is the only math professor I have had at The University, and he has provided me with many memorable moments. This past semester, Kristyn Jackson (ME '05), Elizabeth Ryall, and I thought it would be fun to keep a running tally of the bowties Dr. Guy chose to wear. After the semester was over, we concluded that the plain brown and the brown with gold swirls inside were his favorites, both having been worn nine times. Overall, he wore an assortment of nine different bowties.

"Dr. Guy likes to tell a story and anyone who has had him comes to expect them. You know a story is coming when he sits on the edge of the desk 'Mr. Rogers' style, clears his throat, and starts out ‘Well...’ The best part of his storytelling comes when he integrates stories into his explanations of the material...

"Dr. Guy is also full of sayings that can be repeated anywhere and still be pegged as his alone. For instance, Dr. Guy has a habit of asking, “Are you with me?” after explaining a new concept. And when it is time to illustrate what a dummy variable is, he actually talks to the variable on the board and says, “You’re a dummy variable.” Sounds kooky, but I will never forget which variables are dummies and which are not. When teaching a new concept....

"Dr. Guy is an amazing teacher who emphasizes the teaching over the grading...Dr. Guy has been teaching for a long time and has impacted a lot of people, including my dad, my brother, and me. He is also a legend in the engineering and mathematical departments, and has helped shape the outstanding reputation of the University of Texas."

- Jonathan Rylander, projected BSME '05

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Social Life -- combine this with earlier stuff!

Students of the 2000’s reported that they participated in a variety of social activities. ASME’s “Friday in the Park” was popular along with the newly created “Back to School Bash.” Organizational meetings for engineering societies and National Engineers’ Week were popular with mechanical engineering students. Outside of engineering-related activities students participated in Longhorn Offroad Club events, went to football and basketball games, enjoyed Austin’s Eeyore’s Birthday Party tradition along with Spam-O-Rama. Favorite pastimes continued to be parties, Sixth Street, live music, concerts, rock climbing, kayaking, mountain biking, and Texas Relays Weekend. 93

UT mechanical engineering students find living arrangements all over Austin, in apartments and rented houses, as well as in on-campus dorms.

Social organizations popular with Mechanical Engineering students included the Society of Automotive Engineers, ASME, SEC, LeaderShape, Tau Beta Pi (engineering honors society), Pi Tau Sigma (ME honor society, Archery Club, and Thai Association of Austin. Mechanical Engineers also were involved in NSBE, SHPE, Pi – engineering organizations promoting minorities. They also participated in the Intramural Council, seven students who would help make decisions on grievances in intramural sports, and the Distinguished Speakers Committee which helped bring speakers to UT.96

Living costs of the 2000’s were approximately $300 month/rent; $50 month/utilities; $125 month/food, $1200 semester tuition and fees, $350 semester/books. About $900 a month total. Ronald LaNier, BSME ’00, recounts his strategy for making ends meet, “It was reported in some UT literature for an in-state resident it cost about $12,000 per semester, including housing, books, food, tuition, travel, etc. For me, I was a bargain shopper, had roommates and actively searched for organizations that served food at their meetings.”98

Family members play a large role in the motivation of mechanical engineering students and help them stick with the rigorous program. Ronald K. LaNier, BSME ’00, recalls his inspiration, “My mother [inspires me]…and those who have come before me at The University, especially minorities at a time when they were either not wanted or not permitted to attend The University.” For Nathan Rylander, BSME ’02, his grandfather provides a great source of pride and inspiration, “My grandfather continues to be an inspiration to me in every facet of life. He is a former chairman for the ME department, and has served on the faculty for over 50 years. I was also inspired by the UT quarterback Major Applewhite as he represents the determination and drive to be the best he can be, but doesn’t lose perspective on what’s important in life.” For Tom Ryan, future BSME ’05, it’s his dad. Other students find inspiration in the challenge presented by the work itself. Peraphol Nithichaval, MS ORIE ’02 reported inspiration stemming from, “Complication in and benefits from my field of interest.”72


Memories of Alec

“I met him a couple of times. He seemed a little old-fashioned to me, especially with his dress. You could call him “stiff” I suppose, but such are many an old engineer. I wouldn’t fault him for that.” 100

- Carey King, BSME ‘97, PhD ‘00

Fond Memories

“I would say one of my fondest was 1) when I graduated (I felt sad to leave but satisfied to have completed a rigorous, respected program), 2) the UT-Austin NSBE chapter bringing home the 1998 NSBE Distinguished Chapter of the Year Award and 3) the unveiling of the MLK Statue on the East Mall. The most vivid was that Gov. Bush was not present at the MLK ceremony. I believe it symbolized the paradox of The University.

“It was during the year Ricky Williams won the Heisman Trophy. After we had upset the Nebraska Cornhuskers in Lincoln, NE, everyone headed for the Drag. Upon all the reveling, a Austin city bus was stuck on the Drag in front of the Co-Op…the driver wouldn’t dare move for fear of running over someone. With haste, I climbed the immobile bus and stood atop it with others…celebrating history—ending a football undefeated streak and witnessing racial utopia at UT like it never ever dreamed of!” 101

- Ronald K. LaNier, BSME ’00
LaNiear remembers, “I’d seen tuition rise when I started in Fall 1995 from $800 to $900 to my last semester in Fall 2000 to $1200, and at one time in between, it was at the highest for me at $1600 (all excluding books). . . I bought an athletic sports pass probably 2 or 3 times (~$60), MLK statue fee of $1, International Student fee of $1, Rec Center fee ~$20, UGL computer lab fee, 14 hour fee, clinic fee that was in SSB fee, etc. Books had cost me about $500 at one time before I learned about bartering and trading!” 102

Some mechanical engineering students found jobs as engineering technicians, electronics instructors, math/science tutors, lab TA’s, cashiers, and as retail salespeople. Students reported working at Barnes and Noble, as webmasters for SAE, as network Administrators for Ad agencies, as assistants for the Equal Opportunity in Engineering Program, in co-op jobs and as interns for Applied Research Labs. 103

Internships were valuable because they could lead to employment after graduation. Justin Case, BSME ’00, relates his experience, “Ford Motor Company was gracious enough to hire 1200 interns during the summer of 2000. I think 120 of them were from The University. UT students ran the social aspects of the Ford Intern Program in the town of Ann Arbor that summer. Somehow I received an offer for employment and after having such a great time here how could I refuse?” For some students campus organizations such as the Equal Opportunity in Engineering or EOE, played a significant role. Says Ronald K. LaNiear, BSME ’00, “I’ve been interning with Halliburton for 3 summers. I was asked to be hired on into Piping Engineering after I graduated by the Chief Technical Engineer in Piping. I attribute NSBE and EOE to getting it though. I say EOE b/c when I was a freshman, I was on a student panel discussion for the National Association for Minority Engineering Program Administrators (NAMEPA) in San Antonio. And I say NSBE because I was facilitating a NSBE general meeting when an attendant from Halliburton was at that very NAMEPA meeting in San Antonio about 3 years ago. She remembered me and asked for my resume for my first internship!” Randall Speir, BSME ’02, used the internet to perform an online job search. Carey King, BSME ’97, PhD ’00, landed his first professional job after meeting the president of a start-up company at his friend’s wedding party. Kevin Shotts, future BSME ’04, benefited from an ASME plant trip to Lockheed, “I left my resume and when I got back to Austin, I had a message to call Lockheed. They gave me an interview over the phone and an offer in the mail the very next week. I design fighter aircraft that fly missions during the war.” 104

**Fond Memories**

“The football games were by far the most vivid memories: especially UT vs. A&M 1998 when Ricky Williams broke the all-time rushing record. Also UT vs. Nebraska at home.” 106

- Nathan Rylander, BSME ’02

“Staying up for days with little to no sleep working on SAE projects and “K”! Also, working down in the Machine Shop. And of course, any time I was in Billy Wood’s office!!” 107

- Randall Speir, BSME ’02

“Fondest memory: finishing my K presentation followed by the praises of Dr. Nichols, the TA’s, and the sponsor.” 108

- Eric Schafer, BSME ’00

“Ricky Williams breaking the all-time NCAA rushing record at the A&M football game in 1999.” 109

- Wesley Brubaker, BSME ’03

“The Mechanical Engineering Department was much more than a great educational institution. It was a privilege to attend the university where Chris’ father and grandfather were professors. Their helpful guidance and experience were great assets to us in our educational experience. Despite the endless hours attending lectures, studying, or working in the computer lab, we found time to make lifelong friendships. Our common career aspirations brought us together at freshman orientation and enabled us to share the journey of mechanical engineering undergraduate studies. We continued to pursue Masters degrees in mechanical engineering and were married by our advising professor, Dr. Ken Diller. We are currently enrolled in the biomedical engineering Ph.D. program and look forward to several more enjoyable years at UT.” 111

- Christopher (BSME ’00 and MSME ’02) and Nichole Rylander (BSME ’00 and MSME ’02)
“Two of my good friends here at Ford and I managed to get on the television show Junkyard Wars. The three of us had been interns at Ford together and we really hit it off.

“For the first show we were very nervous and a little overwhelmed. They took away all of our watches and used gaffers tape to cover up my Longhorn stickers. The challenge was to build a Swamp Buggy Racer, our design called for a 4-wheel drive chassis, V-8 motor, 39 inch tires and no body work. Which is a great start but the devil is in the details. Our expert, Eddie Chesser, was incredible and his experience really pulled us through. We managed to collect all of the big pieces after quite a lot of sweat and blood. None of the systems worked together; the radiator leaked, there were no controls, the power steering didn’t work, after pulling five different Chevrolet starter motors we found one that fit our engine. Somehow we welded pieces together and plugged up holes and put a gas pedal on the thing.

“On race day our prospects didn’t look so good, our transfer case was at a funny angle. A product of mounting the engine mid way down the frame. Off the starting line, we broke the rear drive shaft. We had actually been worried about the front one as it was cut too short. We managed to use only front wheel drive and in the end it made things more fair. The other team only had two wheel drive from their design. I drove last and managed the fastest time but only because we were able to make adjustments to the buggy between runs. Specifically we adjusted the belt tension on the power steering pump to give us controllable steering. I wish we had been able to move the fenders to a more useful location but loss of vision was only temporary.

“After winning the first episode we came back to build Submarines. Which was actually an easier task than swamp buggies. I was especially happy because we were using a VW Beetle as the basis for our sub and I owned a 1969 Beetle when I was sixteen. We were more familiar with how the show worked. We were more relaxed and more ourselves. Unfortunately the air motor we built broke, the design was sound but it required welding new cams onto engine. With time being as important as it is we did not remove the camshafts from the engine. This led to a bad cam profile that ultimately ripped the valve keeper off the valve and led to complete engine destruction during the testing of the motor. We ended up running our compressed nitrogen through a hydraulic pump, again this was probably more fair because our air motor might have been powerful enough to allow us to cheat. The submarines were to be raced in a 100 yard dash, starting from rest at the bottom.

“The air motor might have allowed us to simply drag across the bottom. As it was the opposing team had a great simple design. They used a large propane tank and two electric trolling motors.

“The day of the race was a Sunday and hectic. There were two dive teams, a rescue team and a film team. They were all being paid triple time and the show’s director was very anxious to get everything done quickly. The water at the test pool was 64 degrees and everyone who went in it was anxious to get done quickly. Only the experts were allowed to dive and drive, owing the inherent dangers of operating a small submarine that had been built by four people in ten hours. In the first heat the opposing submarine put down a clean run and set the standard. Our sub never really got off the bottom and we used the time between runs to remove ballast. In the second heat our expert made a brave move and overfilled the ballast tank with nitrogen in an attempt to raise the sub. This allowed nitrogen to flood the cockpit and raised the sub off the bottom. He quickly ran out of air and used his emergency air to continue onward. Using the nitrogen to run the motor and float sub quickly exhausted what was left of the tank. Our spirits and hopes for the finals sank with the sub. The race was called and the opposing team, the Custom Cruisers, had won. We were not too sore about it, we knew the outcome would come down to luck, ours had simply not lasted as long as the Custom Cruisers. We wished them luck against the other team that had already secured a position in the finals.

“Even though we did not win the entire season, the people of Ford have treated us like winners just the same.”
In Conclusion---Dr. Beaman is going to write a post-script...do we need this?

Engineering education at The University of Texas at Austin arose to remedy the lack of technical expertise in the State of Texas by providing educational opportunities to Texans and to southerners. Texas in the post-bellum Civil War years based its economy almost exclusively on ranching and agriculture and found itself relying on the technical expertise of those educated in the North. In a bid for self-sufficiency and to satisfy the growing technological needs of the state, Texans sought to improve their educational opportunities through the establishment of The University of Texas. The University has clearly achieved this goal and as a world-class institution offers a wide range of educational opportunities.

The Department of Mechanical Engineering at The University of Texas at Austin has grown from a handful of courses in 1903 into a thriving department which offers extensive research opportunities to faculty and students. The Department has spawned both statesman and astronaut, minister and novelist, prepares students for engineering on both large and small scales, both equally as powerful as the other. Truly, a degree in mechanical engineering offers a career security and versatility like no other, allowing the graduate to both help himself and mankind as a whole.
NOTES TO CHAPTER ONE


6. Ibid., 559.

7. Ibid., 557.

8. Ibid., 558.

9. Ibid., 553.

10. Ibid., 602.

11. Ibid., 602.

12. Ibid., 602.


15. Ibid., 566.

16. Ibid., 566.

17. Ibid., 567.

18. Ibid., 567.

19. Ibid., 567.

20. Ibid., 567.

21. Ibid., 637.

22. McCaslin and Gloya, Commitment to Excellence, 9.

23. Taylor, Fifty Years on Forty Acres, 3.

24. Ibid., 6-8.

25. Ibid., 13.

26. Ibid., 92.

27. Ibid., 12.

28. Ibid., 28.

29. Ibid., 13.

30. Ibid., 13.

31. Ibid., 21.
32. Ibid., 24.
33. Ibid., 25.
34. Ibid., 25.
35. Ibid., 25.
36. Ibid., 37.
37. Ibid., 39.
38. Ibid., 40-41.
39. Ibid., 41.
40. Ibid., 41.
41. Ibid., 48.
42. Ibid., 55.
43. Ibid., 59.
44. Ibid., 66.
45. Ibid., 93.
46. Ibid., 72.
47. Ibid., 73.
48. Ibid., 79.
49. Ibid., 81.
50. Ibid., 93.
51. Ibid., 242.
52. McCaslin and Gloyna, *Commitment to Excellence*, 10.
53. Ibid., 10.
54. Ibid., 11.
55. Ibid., 11.
56. Ibid., 11.
57. Ibid., 11.
58. Ibid., 12.
59. Ibid., 13.
60. Ibid., 17.
61. Ibid., 17.
62. Ibid., 17.
63. Ibid., 18.
64. Ibid., 18-19.


66. California Museum of Photograph [online], accessed 11 May 2003; available from [http://www.cmp.ucr.edu/cameras/Kodak_Box.html](http://www.cmp.ucr.edu/cameras/Kodak_Box.html)


68. WCBN 88.3 FM Ann Arbor [online], accessed 11 May 2003, available from [http://www.wcbn.org/history/wcbntime.html](http://www.wcbn.org/history/wcbntime.html)


74. Texas House Concurrent Resolution #21 [online], accessed 11 May 2003, available from http://www.capitol.state.tx.us/lfo/75R/billtext/HC000211.IHTM


76. Ibid., 12.


78. Humphrey and Crawford, Austin, 12.

79. Ibid., 12.

80. Ibid., 12.


83. Humphrey and Crawford, Austin, 12.

84. Ibid., 13.


86. Humphrey and Crawford, Austin, 13.

87. McCaslin and Gloyna, Commitment to Excellence, 17.


91. Humphrey and Crawford, Austin, 13.

92. Ibid., 13.


94. McCaslin and Gloyna, Commitment to Excellence, 13.


96. McCaslin and Gloyna, Commitment to Excellence, 13.

97. Taylor, Fifty, 274.

98. McCaslin and Gloyna, Commitment to Excellence, 17.

99. Ibid., 17.

100. Ibid., 185.

101. Ibid., 18.


NOTES TO CHAPTER TWO


4. The University of Texas at Austin, 1913 Cactus Yearbook, p. 14.

5. Richard B. McCaslin and Dean Earnest F. Gloyna, P.E., Commitment to Excellence: One Hundred Years of Engineering Education at The University of Texas at Austin (Texas: The Whitley Company printed for the Engineering Foundation of the College of Engineering, The University of Texas at Austin, 1986), 10.


7. W. R. Woolrich, Men of Ingenuity: From Beneath the Orange Tower (Texas: The Printing Division of The University of Texas, The Engineering Foundation of the College of Engineering, The University of Texas, 1964), 149.

8. Woolrich, Men of Ingenuity, 148.

9. Ibid., 148.

10. Ibid., 148.

11. Ibid., 149.

12. Ibid., 149.

13. Ibid., 149.

14. Ibid., 149.


18. Information provided by Leonardt Ferdinand Kreisle, March 27, 2002.

19. McCaslin and Gloyna, Commitment to Excellence, 14.

20. Information provided by Dr. Leonardt Ferdinand Kreisle, professor emeritus of mechanical engineering, March 27, 2002.


22. Taylor, Fifty Years on Forty Acres, 266.

23. Information provided by Dr. Leonardt Ferdinand Kreisle, professor emeritus of mechanical engineering, March 27, 2002.
24. Taylor, Fifty Years on Forty Acres, 234.

25. Information provided by Dr. Leonardt Ferdinand Kreisle, professor emeritus of mechanical engineering, March 27, 2002.

26. Ibid.

27. Ibid.

28. The University of Texas at Austin [online], (B. Hall, 1905) accessed on 17 May 2003, available at http://www.utexas.edu/tours/nowthen/20/11_B_Hall_1905.html


30. Information provided by Leonardt Ferdinand Kreisle, March 27, 2002.

31. Taylor, Fifty Years on Forty Acres, 181.

32. Ibid., 201-203.

33. Ibid., 202.

34. Ibid., 202-203.


36. Taylor, Fifty Years on Forty Acres, 201.

37. Ibid., 203.

38. Ibid., 203.

39. Ibid., 203.

40. Ibid., 203.


44. Humphrey and Crawford, Austin, 14.

45. Ibid., 14.


56. Woolrich, Men of Ingenuity, 149.

57. McCaslin and Gloyna, Commitment to Excellence, 19.

58. Woolrich, Men of Ingenuity, 148.


60. Woolrich, Men of Ingenuity, 148.

61. Ibid., 148.

62. Ibid., 148.

63. Patricia Bliss Cox and Calvin Edward Cox, Jr., James Milton Taylor Family, 165.

64. McCaslin and Gloyna, Commitment to Excellence, 22.

65. Woolrich, Men of Ingenuity, 149.

66. Woolrich, Men of Ingenuity, 148.

67. Woolrich, Men of Ingenuity, 149.

68. Texas Student Publications: University of Texas Student Media Group [online] (Texas), accessed 12 May 2003, available at http://www.tsp.utexas.edu/


NOTES TO CHAPTER THREE


5. University of Texas at Austin, University of Texas Catalogue, 1910-11, “Catalogue 1910-1911, Main University, Austin, Department of Medicine, Galveston, Bulletin of The University of Texas, No. 140, Official Series, No. 54,” March 8, 1911, 193.


7. Richard B. McCaslin and Dean Earnest F. Gloyna, P.E., Commitment to Excellence: One Hundred Years of Engineering Education at The University of Texas at Austin (Texas: The Whitley Company printed for the Engineering Foundation of the College of Engineering, The University of Texas at Austin, 1986), 195.


9. Dr. Grady Rylander’s personal files.


11. Dr. Grady Rylander’s personal files.

12. Ibid.

13. University of Texas at Austin, University of Texas Catalogue, 1913-14, “Catalogue 1913-1914, Main University, Austin, Department of Medicine, Galveston, Bulletin of The University of Texas, Number 312, Official Series No. 96,” January 20, 1914, 289.


15. Woolrich, Men of Ingenuity, 149.

16. University of Texas at Austin, University of Texas Catalogue, 1915-16, “Catalogue 1915-1916, Including Announcements For 1916-1917, Main University, Austin, Department of Medicine, Galveston, Bulletin of The University of Texas, 1916, No. 13,” March 1, 1916, 222.

17. Woolrich, Men of Ingenuity, 149.


19. Ibid., 24.

20. Woolrich, Men of Ingenuity, 150.

21. Ibid., 150.

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22. University of Texas at Austin, *University of Texas Catalogue, 1913-14*, “Catalogue 1913-14, Main University, Austin, Department of Medicine, Galveston, Bulletin of The University of Texas, Number 312, Official Series, No. 96,” January 20, 1914, 289, 290.

23. The University of Texas at Austin, *University of Texas Catalogue, 1910-11*, “Catalogue, 1910-1911, Main University, Austin, Department of Medicine, Galveston, Bulletin of The University of Texas, No. 140, Official Series, No. 54,” March 8, 1911, 193.

24. The University of Texas at Austin, *University of Texas Catalogue, 1915-16*, “Catalogue 1915-1916, Including Announcements For 1916-1917, Main University, Austin, Department of Medicine, Galveston, Bulletin of The University of Texas, 1916: No. 13,” March 1, 1916, 225.

25. Ibid., 222.

26. Dr. Gary Vliet’s personal files.


28. Ibid., 203.

29. Ibid., 203.


31. Ibid., 191.


33. McCaslin and Gloyna, *Commitment to Excellence*, 192.


35. Ibid., 204.


37. Woolrich, *Men of Ingenuity*, following page 110, Figure 7.

38. McCaslin and Gloyna, *Commitment to Excellence*, 192.

39. Ibid., 192.

40. Ibid., 192.

41. Ibid., 27.


43. McCaslin and Gloyna, *Commitment to Excellence*, 27.

44. Ibid., 27.

45. Ibid., 24.


50. Ibid., 203.


52. Ibid., 191.


54. Ibid., 203.

55. Ibid., 204.

56. Ibid., 204.

57. McCaslin and Gloyna, *Commitment to Excellence*, 192.


59. Ibid., 204.

60. Industrial Designer’s Society of America [online], 100 Years of Design, accessed on 20 May 2003, available at http://www.idsa.org/whatis/100yr/gemonitortop.htm


69. Ibid., 14.

70. Ibid., 14.

71. Ibid., 14.

72. Ibid., 14.

73. City of Austin [online], *A Brief History of Austin’s Floods*, accessed on 20 May 2003, available at http://www.ci.austin.tx.us/watershed/floodhistory.htm

75. Humphrey and Crawford, Austin, 15.

76. Ibid., 15.

77. Ibid., 15.

78. Ibid., 15.

79. McCaslin and Gloyna, Commitment to Excellence, 195.

80. Woolrich, Men of Ingenuity, 127.

81. Ibid., 149.

82. Ibid., 149.

83. Ibid., 149.

84. Tau Beta Pi [online], Texas Alpha Chapter, accessed 20 May 2003, available at http://marconi.me.utexas.edu/~tbp/

85. Woolrich, Men of Ingenuity, 149.

86. Ibid., 150.

87. Ibid., 150.

88. Ibid., 149.

89. Ibid., 149, 151.

90. Ibid., 149.

91. Ibid., 149, 150.


94. University of Texas at Austin, Center for American History [online], “We’re Texas”: UT Student Traditions Past & Present, accessed on 20 May 2003, available from http://www.cah.utexas.edu/exhibits/TraditionsExhibit/page2.html


10. Woolrich, Men of Ingenuity, 150.


12. Ibid., 151.

13. Ibid., 151.


15. Ibid., 15.

16. From the records of Dr. Gary Vliet, professor of mechanical engineering, 22 May 2003.

17. The University of Texas at Austin, VIP database.

18. From the records of Dr. Gary Vliet, professor of mechanical engineering, 22 May 2003.

19. Ibid.

20. Woolrich, Men of Ingenuity, 151.

21. Ibid.

22. Nancy Neff, “Six years after his death, University of Texas at Austin professor continues to safeguard campus history”, On Campus, 28 November 2001, 4.
23. University of Texas at Austin, 1919-1929: University of Texas Bulletin, Catalogue of the University of Texas, Registrar’s Office, 237.

24. Woolrich, Men of Ingenuity, 150.

25. University of Texas at Austin, University of Texas Catalogue, 1920-21, “Catalogue of The University of Texas, 1920-1921, With Announcements For 1921-1922, University of Texas Bulletin, No. 2125,” May 1, 1921, 237.


25c. Ibid., 272.


27. University of Texas at Austin, University of Texas Catalogue, 1927-28, “Catalogue of The University of Texas, 1927-1928, With Announcements For 1928-1929, Main University, Medical Branch, college of Mines and Metallurgy, University of Texas Bulletin, No. 2817,” May 1, 1928, 238, 249, 250.


29. McCaslin and Gloyna, Commitment to Excellence, 249.

30. University of Texas at Austin, University of Texas Catalogue, 1926-27, “Catalogue of The University of Texas, 1926-1927 With Announcements For 1927-1928, University of Texas Bulletin, No. 2717,” May 1, 1927, 266.

31. The University of Texas at Austin, University of Texas Catalogue, 1920-21, “Catalogue of The University of Texas, 1920-1921, With Announcements For 1921-1922, University of Texas Bulletin, No. 2125,” May 1, 1921, 224.

32. Ibid., 237.

33. The University of Texas at Austin, University of Texas Catalogue, 1927-28, “Catalogue of The University of Texas, 1927-1928, With Announcements For 1928-1929, Main University, Medical Branch, College of Mines and Metallurgy, University of Texas Bulletin, No. 2817,” May 1, 1928, 238, 249, 250.

34. The University of Texas at Austin, University of Texas Catalogue, 1929-30, “Catalogue Number Part I: General Information, Main University, 1929-1930, With Announcements For 1930-1931, The University of Texas Bulletin, No. 3013,” April 1, 1930, 354, 359, 360.

35. From the records of Dr. Gary Vliet, professor of mechanical engineering.

36. From the records of Dr. Leonardt Ferdinand Kreisle, professor emeritus of mechanical engineering, 26 March, 2002.


40. James W. Winfrey, BSME ’29, contributed posthumously, 23 April 1999.

41. T. U. Taylor, Fifty, 204.

42. Ibid., 204.
43. Ibid., 204.

44. Ibid., 204.


48. Humphrey and Crawford, Austin, 15.

49. Ibid., 15.

50. Ibid., 15.

51. Ibid., 15.

52. Ibid., 15.

53. Ibid., 15.


55. Woolrich, Men of Ingenuity, 149.

56. Ibid., 150.

57. University of Texas at Austin, University of Texas Catalogue, 1927-28, “Catalogue of The University of Texas 1927-1928 With Announcements For 1928-1929, Main University, Medical Branch, College of Mines and Metallurgy, University of Texas Bulletin, No. 2817,” May 1, 1928, 251.

58. Woolrich, Men of Ingenuity, 152.

59. McCaslin and Gloyna, Commitment to Excellence, 147.

60. Woolrich, Men of Ingenuity, 152.

61. Ibid., 151.

62. McCaslin and Gloyna, Commitment to Excellence, 151.

63. Ibid., 151.

64. Ibid., 151.

65. Ibid., 151.

66. Ibid., 151.

67. Ibid., 151.

68. Ibid., 151.

69. Ibid., 151.
70. Ibid., 151.


73. PBS.org [online], Animation, accessed on 22 May 2003, available at http://www.pbs.org/itvs/animateddogs/animation_1.html


75. City of Big Lake, Texas [online], Santa Rita #1 --- Big Lake, Texas, accessed on 22 May 2003, available at http://www.biglake.tx.com/santarita.html


78. LULAC.org [online], History of LULAC, accessed on 22 May 2003, available at http://www.lulac.org/Historical%20Files/Resources/History.html


NOTES TO CHAPTER FIVE


6. Richard B. McCaslin and Dean Earnest F. Gloyna, P.E., Commitment to Excellence: One Hundred Years of Engineering Education at The University of Texas at Austin (Texas: The Whitley Company printed for the Engineering Foundation of the College of Engineering, The University of Texas at Austin, 1986), 37.

7. Ibid., 37.

9. Ibid., 35.

10. Ibid., 35.

11. Ibid., 35.

12. Ibid., 35.

13. Ibid., 35.


15. Ibid., 37.

16. Ibid., 37.

17. Ibid., 37.


20. Woolrich, Men of Ingenuity, 153.

21. Ibid., 152.

22. McCaslin and Gloyna, Commitment to Excellence, 194.


25. McCaslin and Gloyna, Commitment to Excellence, 37.


29. Woolrich, Odyssey, 58.

30. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John M. Scott, BSME ’40.

31. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Lueddecke, BSME ’40.
32. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James Malone, BSME ‘40.


34. Woolrich, Men of Ingenuity, 152.

35. Taken from former UT Mechanical Engineering Chairman, Dr. Grady Rylander, Jr.’s personal notes.

36. McCaslin and Gloyna, Commitment to Excellence, 249.

37. Taken from former UT Mechanical Engineering Chairman, Dr. Grady Rylander, Jr.’s personal notes.

38. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. D. Hicks, BSME ‘34; administered in 2002-2003.

39. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John M. Scott, BSME ‘40; administered in 2002-2003.

40. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James Malone, BSME ‘40.

41. McCaslin and Gloyna, Commitment to Excellence, 204.

42. From the Notes of Dr. Gary Vliet, UT Mechanical Engineering Professor and Faculty Advisor for Pi Tau Sigma.

43. Ibid.

44. Ibid.

45. Ibid.

46. From the notes of UT Mechanical Engineering Professor Emeritus, Dr. Leonardt F. Kreisle, 25, March, 2002.

47. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John M. Scott, BSME ‘40; administered in 2002-2003.

48. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Gerald Gustafson, BSME ‘40; administered in 2002-2003.

49. The University of Texas at Austin, VIP database.

50. Woolrich, Men of Ingenuity, 151.

51. The University of Texas at Austin, VIP database.

52. Woolrich, Men of Ingenuity, 151.


54. Ibid.

55. Nancy Neff, “Six years after his death, University of Texas at Austin professor continues to safeguard campus history”, On Campus, 28 November 2001, 4.

56. Ibid.
57. Ibid.

58. Ibid.

59. Ibid.

60. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James Malone, BSME ‘40.

61. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Luedecke, BSME ‘40; administered in 2002-2003.

62. Taken from 1930’s survey answers completed by UT Mechanical Engineering graduate, John M. Scott, BSME ‘40.

63. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Gerald Gustafson, BSME ‘40; administered in 2002-2003.

64. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James Malone, BSME ‘40.

65. Taken from former UT Mechanical Engineering Chairman, Dr. Grady Rylander, Jr.’s personal notes.

66. From the answers compiled from the UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and administered in 2002-2003.

67. Ibid.

68. McCaslin and Gloyna, Commitment to Excellence, 36.

69. Ibid., 36.

70. From the answers compiled from the UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and administered in 2002-2003.

71. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Luedecke, BSME ‘40; administered in 2002-2003.

72. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. D. Hicks, BSME ‘34; administered in 2002-2003.

73. From the answers compiled from the UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and administered in 2002-2003.

74. Ibid.

75. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. D. Hicks, BSME ‘34; administered in 2002-2003.

76. Ibid.

77. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John M. Scott, BSME ‘40; administered in 2002-2003.

78. Ibid.

79. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. D. Hicks, BSME ‘34; administered in 2002-2003.

80. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. D. Hicks, BSME ‘34; administered in 2002-2003.
81. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Ludecke, BSME ‘40; administered in 2002-2003.

82. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. D. Hicks, BSME ’34; administered in 2002-2003.

83. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John M. Scott, BSME ’40; administered in 2002-2003.


85. McCaslin and Gloyna, Commitment to Excellence, 38.

86. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. D. Hicks, BSME ’34; administered in 2002-2003.

87. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John M. Scott, BSME ’40; administered in 2002-2003.

88. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Gerald Gustafson, BSME ’40; administered in 2002-2003.

89. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Ludecke, BSME ’40; administered in 2002-2003.

90. McCaslin and Gloyna, Commitment to Excellence, 86.

91. Ibid., 86.


96. Ibid., Humphrey and Crawford., Austin, 15.

97. Ibid., 15.

98. Ibid., 15.

99. Ibid., 15.

100. Ibid., 15.

101. Ibid., 15.

102. Ibid., 15.

103. Ibid., 15.

104. Ibid., 10.
105. McCaslin and Gloyna, *Commitment to Excellence*, 249.


111. McCaslin and Gloyna, *Commitment to Excellence*, 37.

112. Ibid., 39.


114. Ibid.


116. Ibid., 153.

117. Ibid., 153.

118. Ibid., 153.

119. Ibid., 153.

120. Ibid., 153.

121. Ibid., 153.

122. Ibid., 153.

123. Radio’s War of the Worlds Broadcast (1938) [online], accessed on 28 May 2003, available at http://members.aol.com/jeff1070/wotw.html


129. Ibid.
130. Ibid.


133. University of Texas at Austin, College of Engineering [online], *1930-1939*, accessed on 22 May 2003, available at http://www.engr.utexas.edu/history/decades/1930.htm

NOTES TO CHAPTER SIX


4. University of Texas at Austin [pamphlet courtesy of William O. Grimes, BSME ‘43], *The University of Texas 34th Annual Exposition and Power Show*, 7 May 1943, 14.

5. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Osborne Grimes, BSME ‘43; administered in 2002-2003.

6. From notes taken by Joanna Hofer at the UT College of Engineering’s Sixty Year Reunion, War Year Panel, 19 October 2002.

7. Ibid.

8. Ibid.

9. Ibid.

10. Ibid.

11. Ibid.

12. Ibid.


15. Ibid.

16. Ibid.


19. Ibid., 155.

20. Ibid., 155,156.

21. Ibid., 159.

22. Ibid., 159.

23. Ibid., 158.

24. Ibid., 156.

25. Ibid., 157.

26. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Charles R. Frederick, BSME ’44; administered in 2002-2003.

27. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, W. W. McGinnis, BSME ’40; administered in 2002-2003.

28. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Henry Grady Rylander, Jr., BSME ’43, MSME ’52; administered in 2002-2003.


30. Ibid., 153.154.


32. McCaslin and Gloyna, *Commitment to Excellence*, 147.

33. Ibid., 148.

34. Personal notes of UT Mechanical Engineering professor, Dr. Gary Vliet, Spring 2003.

35. Ibid.

36. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Osborne Grimes, BSME ’43; administered in 2002-2003.


38. University of Texas at Austin [pamphlet courtesy of William O. Grimes, BSME ’43], *The University of Texas 34th Annual Exposition and Power Show, 7 May 1943*, 3.

39. Ibid., 2.

40. Ibid., 11, 14-17.

41. Ibid., 11.

42. Ibid., 14.

43. Ibid., 15.

44. Ibid., 15.
45. Ibid., 15.
46. Ibid., 16.
47. Ibid., 16.
48. Ibid., 15.
49. Ibid., 16.
50. Ibid., 17.
51. Ibid., 17.

52. Taken from UT ME 1940’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.
53. Ibid.

54. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Osborne Grimes, BSME ’43; administered in 2002-2003.
55. Ibid.

56. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ed Galle, BSME ’50; administered in 2002-2003.
57. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ike Kibbe, BSME ’41; administered in 2002-2003.
58. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ed Galle, BSME ’50; administered in 2002-2003.
59. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Osborne Grimes, BSME ’43; administered in 2002-2003.
60. Taken from UT ME 1940’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.
61. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Osborne Grimes, BSME ’43; administered in 2002-2003.
62. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, W. W. McGinnis, BSME ’40; administered in 2002-2003.
63. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Douglass Lee Brazell, BSME ’48; administered in 2002-2003.
64. Ibid.
65. Ibid.

66. Woolrich, Men of Ingenuity, 188-89.
67. Taken from UT ME 1940’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.
68. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, P. Barry Niland, BSME ’40; administered in 2002-2003.
69. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Douglass Lee Brazell, BSME ’48; administered in 2002-2003.
70. Ibid.

71. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ike Kibbe, BSME ’41; administered in 2002-2003.

72. Taken from UT ME 1940’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

73. Ibid.

74. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Osborne Grimes, BSME ’43; administered in 2002-2003.

75. Taken from the personal notes of former UT ME Chairman, Dr. H. Grady Rylander, Jr., Spring 2003.

76. Taken from UT ME 1940’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

77. Ibid.

78. Woolrich, Men of Ingenuity, 153.


80. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Frank Burguss Pugsley, BSME ’42; administered in 2002-2003.

81. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Terrell Small, BSME ’42; administered in 2002-2003.

82. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Cal Porcher, BSME ’48; administered in 2002-2003.

83. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Osborne Grimes, BSME ’43; administered in 2002-2003.

84. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Dr. Werner Goldsmith, BSME ’44; administered in 2002-2003.

85. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ed Galle, BSME ’50; administered in 2002-2003.

86. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Crook, BSME ’50; administered in 2002-2003.

87. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Dr. Werner Goldsmith, BSME ’44; administered in 2002-2003.

88. Taken from UT ME 1940’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

89. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill P. Robertson, BSME ’42; administered in 2002-2003.

90. Taken from the personal notes of UT Mechanical Engineering Professor Emeritus, Dr. Leonardt F. Kreisle, 24 March, 2002.

91. Woolrich, Men of Ingenuity, 154.

92. Woolrich, Men of Ingenuity, 152.

93. Taken from UT ME 1940’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.
94. Taken from UT ME 1930’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ike Kibbe, BSME ’41; administered in 2002-2003.

95. Ibid.

96. Taken from the personal notes of UT Mechanical Engineering Professor Emeritus, Dr. Leonard F. Kreisle, 25 March, 2002.

97. Taken from UT ME 1940’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Joseph Wier, BSME ‘42; administered in 2002-2003.


101. Ibid., 16.

102. Ibid., 16.

103. Ibid., 16.

104. Ibid., 16.

105. Ibid., 16.

106. Ibid., 16.

107. Ibid., 16.


109. McCaslin and Gloyna, Commitment to Excellence, 249.

110. Ibid., 249.

111. University of Texas at Austin, College of Engineering [online], 1940-1949, accessed on 22 May 2003, available at http://www. engr.utexas.edu/history/decades/1940.htm

112. McCaslin and Gloyna, Commitment to Excellence, 249.

113. Woolrich, Men of Ingenuity, 153, 155.


120. University of Texas at Austin, College of Engineering [online], 1940-1949, accessed on 22 May 2003, available at http://www.engr.utexas.edu/history/decades/1940.htm


122. Ibid.


124. The Handbook of Texas Online [online], Texas City Disaster, accessed on 1 June 2003, available from http://www.tsha.utexas.edu/handbook/online/articles/view/TT/lyt1.html


NOTES TO CHAPTER SEVEN


4. Richard B. McCaslin and Dean Earnest F. Gloyna, P.E., Commitment to Excellence: One Hundred Years of Engineering Education at The University of Texas at Austin (Texas: The Whitley Company printed for the Engineering Foundation of the College of Engineering, The University of Texas at Austin, 1986), 58.

5. McCaslin and Gloyna, Commitment to Excellence, 63.

6. Ibid., 148.

7. Ibid., 148.

8. Ibid., 59.

9. Ibid., 52.

10. Ibid., 52.

11. Ibid., 55.


15. Ibid., 73.

16. Ibid., 172-173.

17. Taken from the personal notes of Dr. H. Grady Rylander, Jr.


19. Ibid., 60.

20. Ibid., 60-61.

21. Ibid., 51.

22. Ibid., 52.

23. Ibid., 52.

24. The University of Texas at Austin, VIP database.

25. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mary Jo Ross Knobelsdorf, BSME ‘52, administered in 2002-2003.


27. Taken from the personal notes of Dr. H. Grady Rylander, Jr.


29. Ibid., 8.

30. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, George Helland, BSME ‘59; administered in 2002-2003.

31. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Emil Friberg, BSME ‘58; administered in 2002-2003.

32. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. C. Paulette, BSME ‘59; administered in 2002-2003.

33. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Emil Friberg, BSME ‘58; administered in 2002-2003.

34. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John C. Knobelsdorf, BSME ‘52; administered in 2002-2003.

35. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. C. Paulette, BSME ‘59; administered in 2002-2003.
36. Taken from the personal notes of Dr. H. Grady Rylander, Jr.


38. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Nat Shapiro, BSME ’57; administered in 2002-2003.

39. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James R. Partin, BSME ’58, MSME ’60, PhD ’65; administered in 2002-2003.

40. McCaslin and Gloyna, *Commitment to Excellence*, 42.

41. Ibid., 43.

42. Ibid., 43.

43. Ibid., 66.

44. Ibid., 64.

45. Ibid., 68.

46. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, George Helland, BSME ’59; administered in 2002-2003.

47. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David Gris, BSME ’58, administered in 2002-2003.

48. Ibid.

49. McCaslin and Gloyna, *Commitment to Excellence*, 69.

50. Ibid., 48.

51. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Raul Saenz, BSME ’58; administered in 2002-2003.

52. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Nat Shapiro, BSME ’57; administered in 2002-2003.

53. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Spears, BSME ’58; administered in 2002-2003.

54. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. C. Paulette, BSME ’59; administered in 2002-2003.

55. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Emil Friberg, BSME ’58; administered in 2002-2003.

56. Taken from UT ME 1950’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

57. Ibid.

58. Ibid.

59. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John C. Knobelsdorf, BSME ’52; administered in 2002-2003.
60. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James R. Partin, BSME ‘58, MSME ‘60, PhD ‘65; administered in 2002-2003.

61. Ibid.

62. Ibid.

63. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Keys Curry, BSME ‘58, administered in 2002-2003.

64. Taken from the personal notes of Dr. H. Grady Rylander, Jr.

65. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David Gris, BSME ‘58, administered in 2002-2003.

66. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James R. Partin, BSME ‘58, MSME ‘60, PhD ‘65; administered in 2002-2003.

67. Taken from UT ME 1950’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

68. Ibid.

69. Ibid.

70. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Spears, BSME ‘58; administered in 2002-2003.

71. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Nat Shapiro, BSME ‘57; administered in 2002-2003.

72. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, R. C. Paulette, BSME ‘59; administered in 2002-2003.

73. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Emil Friberg, BSME ‘58; administered in 2002-2003.

74. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mary Jo Ross Knobelsdorf, BSME ‘52; administered in 2002-2003.

75. Taken from UT ME 1950’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

76. Ibid.

77. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Spears, BSME ‘58; administered in 2002-2003.

78. Taken from UT ME 1950’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

79. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Emil Friberg, BSME ‘58; administered in 2002-2003.

80. The Fifties Web - Your Retro 50s, 60s and 70s Source [online], Fifties - Pop History, accessed on 8 June 2003, available at http://www.fiftiesweb.com/pop/inventions.htm

81. Ibid.

82. Ibid.

83. Ibid.

84. Ibid.
85. Ibid.
86. Ibid.
87. Ibid.
88. Ibid.
89. Ibid.
90. Ibid.
91. Ibid.
92. Ibid.

93. The Fifties Web - Your Retro 50s, 60s and 70s Source [online], *Fifties - Famous People in Entertainment*, accessed on 8 June 2003, available at http://www.fiftiesweb.com/pop/famous-people.htm


98. McCaslin and Gloyna, *Commitment to Excellence*, 58.

99. Ibid., 249.

100. The University of Texas at Austin, VIP database.

101. University of Texas at Austin, Department of Mechanical Engineering [online], History and Traditions, accessed on 8 June 2003, available from http://www.me.utexas.edu/visitor/troom.shtml

102. McCaslin and Gloyna, *Commitment to Excellence*, 250.

103. The University of Texas at Austin, VIP database.

104. McCaslin and Gloyna, *Commitment to Excellence*, 55.


106. University of Texas at Austin, Department of Mechanical Engineering [online], History and Traditions, accessed on 8 June 2003, available from http://www.me.utexas.edu/visitor/troom.shtml


108. Ibid., 58.

109. Ibid., 69.

111. BBC NEWS UK EDITION [online], Timeline: Soviet Union, accessed on 8 June 2003, available from http://news.bbc.co.uk/1/hi/world/europe/1112551.stm

112. The University of South Dakota [online], Twentieth Century: The Rosenburgs, accessed on 8 June 2003, available from http://www.usd.edu/honors/HWB/hwb_v/rosenburgs.html


116. Taken from UT ME 1950’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mary Jo Ross Knobelsdorf, BSME ’52, administered in 2002-2003.

NOTES TO CHAPTER EIGHT


4. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jay L. Poth, BSME ’62; administered in 2002-2003.


9. Ibid.


15. Ibid., 94.

16. Ibid., 85.

17. Ibid., 75.

18. Taken from the personal notes of Dr. H. Grady Rylander, Jr.

19. McCaslin and Gloyna, Commitment to Excellence, 75.

20. Ibid., 103.

21. Ibid., 68.

22. Ibid., 68.

23. Ibid., 84.

24. Ibid., 84.

25. Ibid., 83.

26. Ibid., 82.

27. Ibid., 82.

28. Ibid., 83.

29. Ibid., 94.

30. Taken from the personal notes of Dr. H. Grady Rylander, Jr.

31. W. R. Woolrich, Men of Ingenuity: From Beneath the Orange Tower (Texas: The Printing Division of The University of Texas, The Engineering Foundation of the College of Engineering, The University of Texas, 1964), 155 and from the notes of Dr. Grady Rylander and Dr. Gary Vliet.

32. McCaslin and Gloyna, Commitment to Excellence, 250.

33. Ibid., 86.

34. Ibid., 86.

35. Taken from the personal notes of Dr. H. Grady Rylander, Jr.

36. Rase and Cunningham, Chemical Engineering at the University of Texas, 128.

37. Taken from UT Mechanical Engineering Chairman’s surveys developed by Joanna Hofer and administered to William R. Upthegrove in Spring 2003.
38. McCaslin and Gloyna, *Commitment to Excellence*, 85.

39. Ibid., 95.

40. Ibid., 95.

41. Ibid., 89.

42. Ibid., 89.

43. Ibid., 89.

44. Ibid., 91.

45. Ibid., 91.

46. Taken from the personal notes of Dr. H. Grady Rylander, Jr.

47. McCaslin and Gloyna, *Commitment to Excellence*, 86.

48. Ibid., 98.

49. Taken from the personal notes of Dr. Gary Vliet, Spring 2003.


52. McCaslin and Gloyna, *Commitment to Excellence*, 98.

53. Ibid., 73-74.

54. Ibid., 98.

55. Taken from the personal notes of Dr. H. Grady Rylander, Jr., Spring 2003.

56. Taken from an interview with Dr. Billy Koen conducted in June 2003.

57. McCaslin and Gloyna, *Commitment to Excellence*, 81.

58. Ibid., 81.

59. Ibid., 81.

60. Taken from the personal notes of Dr. Gary Vliet, Spring 2003.


62. Taken from the personal notes of Dr. Gary Vliet, Spring 2003.

63. McCaslin and Gloyna, *Commitment to Excellence*, 100.

64. Ibid., 100.

65. Taken from UT ME 1960’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

66. Ibid.

67. Ibid.
68. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Sockalingam Kannapan, MSME ’70, administered in 2002-2003.

69. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mark Williams, MSME ’62, administered in 2002-2003.

70. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Sockalingam Kannapan, MSME ’70, administered in 2002-2003.

71. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mark Finley, BSME ’63, administered in 2002-2003.

72. Taken from UT ME 1960’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

73. Ibid.

74. Ibid.

75. Ibid.

76. Ibid.

77. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mark Finley, BSME ’63, administered in 2002-2003.

78. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Michael Easton, BSME ’69, administered in 2002-2003.

79. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ruell F. Solberg, Jr., MSME ’62, administered in 2002-2003.

80. Taken from UT ME 1960’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

81. Ibid.

82. Ibid.

83. Ibid.

84. Taken from the personal notes of Dr. H. Grady Rylander, Jr., Spring 2003.

85. Taken from the personal notes of Dr. Gary Vliet, Spring 2003.

86. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Sockalingam Kannapan, MSME ’70, administered in 2002-2003.

87. Taken from UT ME 1960’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

88. Ibid.

89. Ibid.

90. Ibid.

91. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ruell F. Solberg, Jr., MSME ’62, administered in 2002-2003.

92. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mike McShane, MSME ’68, administered in 2002-2003.
93. Taken from UT ME 1960’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Gary Watt, BSME ’70, administered in 2002-2003.

94. Taken from UT ME 1960’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

95. Ibid.

96. McCaslin and Gloyna, Commitment to Excellence, 194.

97. Rase and Cunningham, Chemical Engineering at the University of Texas, 128.

98. Ibid., 128.

99. Ibid., 128.


110. Humphrey and Crawford, Austin, 16.

111. Ibid., 16.


113. Humphrey and Crawford, Austin, 16.

114. Ibid., 16.

115. Ibid., 16.

117. McCaslin and Gloyna, P.E., Commitment to Excellence, 250.

118. Ibid., 260.

119. Ibid., 250.

120. Ibid., 73.

121. Ibid., 250.

122. Ibid., 88.

123. Ibid., 100.

124. University of Texas at Austin, College of Engineering [online], Alumni, accessed on June 10, 2003, available from http://www.engr.utexas.edu/alumni/distgrads/AllDG.cfm

125. Ibid.


127. McCaslin and Gloyna, Commitment to Excellence, 100.

128. Ibid., 99.

129. Ibid., 88, 262.

130. Ibid., 92.

131. Ibid., 94.

132. W. R. Woolrich, Men of Ingenuity: From Beneath the Orange Tower (Texas: The Printing Division of The University of Texas, The Engineering Foundation of the College of Engineering, The University of Texas, 1964), 155 and from the notes of Dr. Grady Rylander and Dr. Gary Vliet.


147. Ibid., 128.


151. Ibid.

152. Ibid.


NOTES TO CHAPTER NINE


203
4. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Gary Finch, BSME ’73; administered in 2002-2003.


8. Richard B. McCaslin and Dean Earnest F. Gloyna, P.E., Commitment to Excellence: One Hundred Years of Engineering Education at The University of Texas at Austin (Texas: The Whitley Company printed for the Engineering Foundation of the College of Engineering, The University of Texas at Austin, 1986), 108.


10. Ibid., 106.

11. Ibid., 106.

12. Ibid., 106.

13. Ibid., 107.


15. Ibid., 110.

16. Ibid., 111-112.

17. Ibid., 270-272.

18. Taken from the personal notes of Dr. H. Grady Rylander, Jr., Spring 2003.

19. Taken from the UT Mechanical Engineering Chairman’s survey, developed by Joanna Hofer and completed by Dr. J. Parker Lamb in Spring 2003.

20. McCaslin and Gloyna, Commitment to Excellence, 151.

21. Taken from the UT Mechanical Engineering Chairman’s survey, developed by Joanna Hofer and completed by Dr. J. Parker Lamb in Spring 2003.


23. Ibid., 107.

24. Ibid., 135.

25. Ibid., 127.

26. Ibid., 126.

27. Ibid., 129.

28. Ibid., 129.

29. Ibid., 129.

30. Ibid., 130.

32. Ibid.

33. McCaslin and Gloyna, *Commitment to Excellence*, 132.

34. Ibid., 132.

35. Ibid., 135-136.

36. Ibid., 136.

37. Ibid., 136.

38. Ibid., 122-123.

39. Ibid., 123.


41. Taken from the personal notes of Dr. H. Grady Rylander, Jr., Spring 2003.

42. Taken from the personal notes of Dr. Ron Barr, Spring 2003.

43. Taken from the personal notes of Dr. Gary Vliet, Spring 2003.

44. Taken from the personal notes of Dr. Bill Lesso, Spring 2003.

45. Taken from the UT Mechanical Engineering Chairman’s survey, developed by Joanna Hofer and completed by Dr. H. G. Rylander, Jr. in Spring 2003.

46. McCaslin and Gloyna, *Commitment to Excellence*, 135.

47. Ibid., 135.

48. Taken from the personal notes of Dr. H. Grady Rylander, Jr., Spring 2003.

49. Ibid.

50. Ibid.

51. Ibid.

52. Ibid.

53. Ibid.

54. Ibid.

55. Ibid.


57. Taken from the personal notes of Dr. H. Grady Rylander, Jr., Spring 2003.

58. Ibid.

59. Ibid.

60. McCaslin and Gloyna, *Commitment to Excellence*, 115.
61. Taken from the personal notes of Dr. H. Grady Rylander, Jr., Spring 2003.

62. Taken from the personal notes of Dr. Gary Vliet, Spring 2003.

63. McCaslin and Gloyna, *Commitment to Excellence*, 141.

64. Ibid., 141.

65. Taken from the personal notes of Dr. Gary Vliet, Spring 2003.

66. Ibid.

67. Ibid.

68. Taken from the personal notes of Dr. H. Grady Rylander, Jr., Spring 2003.

69. Ibid.

70. Ibid.

71. Ibid.

72. McCaslin and Gloyna, *Commitment to Excellence*, 173.


74. Ibid., 20-22; McCaslin and Gloyna, *Commitment to Excellence*, 173-174.

75. McCaslin and Gloyna, *Commitment to Excellence*, 173.

76. Ibid., 173.

77. Ibid., 173.

78. Ibid., 141.

79. Ibid., 176.

80. Taken from UT ME 1970’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

81. Ibid.

82. Ibid.

83. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Linda Woosley, BSME ’79; administered in 2002-2003.

84. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David Hughes, BSME ’72; administered in 2002-2003.

85. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rick Relyea, BSME ’70; administered in 2002-2003.

86. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ken Cockrell, BSME ’72; administered in 2002-2003.

87. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Gary Finch, BSME ’73; administered in 2002-2003.
88. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Linda Woosley, BSME ’79; administered in 2002-2003.

89. Taken from UT ME 1970’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

90. Ibid.

91. Ibid.

92. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Joe Beaman, BSME ’72; administered in 2002-2003.

93. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Linda Woosley, BSME ’79; administered in 2002-2003.

94. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John Casstevens, BSME ’74; administered in 2002-2003.

95. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Elliott Short, BSME ’73; administered in 2002-2003.

96. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ken Cockrell, BSME ’72; administered in 2002-2003.

97. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John Casstevens, BSME ’74; administered in 2002-2003.

98. Ibid.

99. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Gary Finch, BSME ’73; administered in 2002-2003.

100. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John Casstevens, BSME ’74; administered in 2002-2003.

101. Taken from the personal notes of Dr. Gary Vliet, Spring 2003.

102. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David Hughes, BSME ’72; administered in 2002-2003.

103. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ted Aanstoos, BSME ’80; administered in 2002-2003.

104. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John Casstevens, BSME ’74; administered in 2002-2003.

105. Taken from UT ME 1970’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

106. Ibid.

107. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David Hughes, BSME ’72; administered in 2002-2003.

108. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Warren Waggoner, BSME ’74; administered in 2002-2003.

109. Taken from UT ME 1970’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

110. Contributed by Gary Vliet, with input from Parker Lamb, Jean Sanford and Don Berry, circa 2003.

111. Taken from UT ME 1970’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.
112. Ibid.

113. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David Hughes, BSME ’72; administered in 2002-2003.

114. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ted Aanstoos, BSME ’80; administered in 2002-2003.

115. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John Casstevens, BSME ’74; administered in 2002-2003.

116. Ibid.

117. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ken Cockrell, BSME ’72; administered in 2002-2003.

118. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Joe Beaman, BSME ’72; administered in 2002-2003.

119. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John Casstevens, BSME ’74; administered in 2002-2003.

120. Taken from UT ME 1970’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

121. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Linda Woosley, BSME ’79; administered in 2002-2003.

122. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rick Relyea, BSME ’70; administered in 2002-2003.

123. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ken Cockrell, BSME ’72; administered in 2002-2003.

124. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Warren Waggoner, BSME ’74; administered in 2002-2003.

125. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ted Aanstoos, BSME ’80; administered in 2002-2003.

126. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Ken Cockrell, BSME ’72; administered in 2002-2003.

127. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Gary Finch, BSME ’73; administered in 2002-2003.

128. Taken from UT ME 1970’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, John Casstevens, BSME ’74; administered in 2002-2003.

129. McCaslin and Gloyea, Commitment to Excellence, 194.


131. Humphrey and Crawford, Austin, 16.

132. Ibid., 17.

133. Ibid., 17.

134. Ibid., 17.
135. Ibid., 17.
136. Ibid., 17.
137. Ibid., 17.
140. Ohio Health [online], Computed tomographic scan (CT, CAT), accessed on 11 June 2003, available at http://www.ohiohealth.com/healthreference/healthtopics/testprocedures.htm#Computed
144. Humphrey and Crawford, Austin, 16.
148. McCaslin and Gloyna, Commitment to Excellence, 250.
149. University of Texas at Austin, College of Engineering [online], List of Distinguished Graduates (D), accessed on 11 June 2003, available at http://www.engr.utexas.edu/development/dist_graduates.cfm#D
151. Ibid.
153. McCaslin and Gloyna, Commitment to Excellence, 250.
154. University of Texas at Austin, College of Engineering [online], List of Distinguished Graduates (H), accessed on 11 June 2003, available at http://www.engr.utexas.edu/development/dist_graduates.cfm#H
155. University of Texas at Austin, College of Engineering [online], List of Distinguished Graduates (M), accessed on 11 June 2003, available at http://www.engr.utexas.edu/development/dist_graduates.cfm#M
156. University of Texas at Austin, Define Database, accessed on 11 June 2003.


NOTES TO CHAPTER TEN


4. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David D. Lindner, BSME ’87; administered in 2002-2003.

6. Richard B. McCaslin and Dean Earnest F. Gloyna, P.E., Commitment to Excellence: One Hundred Years of Engineering Education at The University of Texas at Austin (Texas: The Whitley Company printed for the Engineering Foundation of the College of Engineering, The University of Texas at Austin, 1986), 123.

7. McCaslin and Gloyna, Commitment to Excellence, 123, 154.

8. Ibid.

9. From Dr. Grady Rylander’s personal notes, circa 1983.

10. Ibid.

11. Ibid.

12. McCaslin and Gloyna, Commitment to Excellence, 143.

13. UT Department of Mechanical Engineering, Report of the Department of Mechanical Engineering for the Academic Year 1982-83, p. 20, 23.


15. Ibid., 130.

16. Ibid., 130.

17. Ibid., 131.


19. From Dr. Grady Rylander’s personal notes, circa 1983.

20. Ibid.


22. From Dr. Grady Rylander’s personal notes, circa 1983.

23. Ibid.

24. Ibid.

25. Ibid.

26. Ibid.

27. McCaslin and Gloyna, Commitment to Excellence, 146.

28. Ibid., 183.


31. From Dr. Grady Rylander’s personal notes, circa 2003.

32. Ibid.
33. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David D. Lindner, BSME ’87; administered in 2002-2003.

34. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James Miller, BSME ’85; administered in 2002-2003.


36. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Brian Pillittere, BSME ’86; administered in 2002-2003.

37. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rudy Acevedo, BSME ’83; administered in 2002-2003.

38. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James Miller, BSME ’85; administered in 2002-2003.

39. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Dick Morton, BSME ’83; administered in 2002-2003.

40. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Alice Hatfield, BSME ’85; administered in 2002-2003.

41. McCaslin and Gloyna, Commitment to Excellence, 108.

42. Taken from the UT Mechanical Engineering Chairman’s survey, developed by Joanna Hofer and completed by Dr. John R. Howell in Spring 2003.

43. Ibid.

44. Ibid.

45. Ibid.

46. Contributed by Dr. Ron Barr, Spring 2003.

47. Contributed by Dr. Gary Vliet, Spring 2003.

48. Ibid.

49. Ibid.

50. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rudy Acevedo, BSME ’83; administered in 2002-2003.

51. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jerome DeLaCruz, BSME ’85; administered in 2002-2003.

52. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Alice Hatfield, BSME ’85; administered in 2002-2003.

53. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jerome DeLaCruz, BSME ’85; administered in 2002-2003.

54. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Leslie Morrill, BSME ’85; administered in 2002-2003.

56. Contributed by Dr. Ron Matthews, Spring 2002.

57. Ibid.

58. Ibid.

59. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rudy Acevedo, BSME ‘83; administered in 2002-2003.

60. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, James Miller, BSME ‘85; administered in 2002-2003.

61. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Dick Morton, BSME ‘83; administered in 2002-2003.

62. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rudy Acevedo, BSME ‘83; administered in 2002-2003.

63. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rudy Acevedo, BSME ‘83; administered in 2002-2003.

64. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Dick Morton, BSME ‘83; administered in 2002-2003.

65. McCaslin and Gloyna, Commitment to Excellence, 141.

66. Ibid., 176.

67. Ibid., 141, 176.

68. Ibid., 141, 176.

69. Ibid., 177.

70. Ibid., 141.

71. Ibid., 176.

72. Ibid., 141.

73. Ibid., 142.

74. Ibid., 142, 177.

75. From Dr. Grady Rylander’s personal notes, circa 2003.

76. UT Department of Mechanical Engineering, The Longhorn: ME Alumni Newsletter, September 1985, p. 3.


78. From Dr. Leonardt Kreisle’s personal notes, circa 2002.


80. Taken from the personal notes of Dr. Steve Nichols, circa 1987.

81. UT College of Engineering, Alec: Alexander Frederick Claire, Patron Saint, College of Engineering [development pamphlet], p. 8.
82. Submitted by Paul Philpott, BSME ’88.

83. Taken from the personal notes of Dr. Steve Nichols, circa 1987.

84. Taken from UT ME 1980’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

85. Ibid.

86. Ibid.

87. Ibid.

88. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Debra Hentz, BSME ’89; administered in 2002-2003.

89. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Alice Hatfield, BSME ’85; administered in 2002-2003.

90. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Debra Hentz, BSME ’89; administered in 2002-2003.

91. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jerome DeLaCruz, BSME ’85; administered in 2002-2003.

92. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, David Lindner, BSME ’87; administered in 2002-2003.

93. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jerome DeLaCruz, BSME ’85; administered in 2002-2003.

94. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rafael Moras, MSME ’83, PhDME ’86; administered in 2002-2003.

95. Ibid.

96. Taken from UT ME 1980’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

97. Ibid.

98. Ibid.

99. Ibid.


101. Taken from UT ME 1980’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

102. Ibid.

103. Ibid.

104. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Leslie Morrill, BSME ’85; administered in 2002-2003.

105. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Dick Morton, BSME ’83; administered in 2002-2003.

106. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Alice Hatfield, BSME ’85; administered in 2002-2003.
107. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Rudy Acevedo, BSME ‘83; administered in 2002-2003.

108. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Leslie Morrill, BSME ‘85; administered in 2002-2003.

109. The University of Texas at Austin, Mechanical Engineering Department [online], Alec and ME, accessed on 11 June 2003, available from http://www.me.utexas.edu/visitor/alec.shtml


119. Humphrey and Crawford, Austin, 17.

120. Ibid., 17.

121. Ibid., 17.

122. Ibid., 17.

123., Ibid., 17.

124. The University of Texas at Austin, Society of Automotive Engineers [online], UT SAE History, accessed on 11 June 2003, available from http://www.me.utexas.edu/~sae/history.html

125. University of Texas at Austin, College of Engineering [online], Alumni, accessed on 11 June 2003, available from http://www.engr.utexas.edu/alumni/distgrads/AllDG.cfm

126. The University of Texas at Austin, Mechanical Engineering Department [online], History of the M.E. Building, accessed on 11 June 2003, available from http://www.me.utexas.edu/visitor/building.shtml


128. University of Texas at Austin, College of Engineering [online], Alumni, accessed on 11 June 2003, available from http://www.engr.utexas.edu/alumni/distgrads/AllDG.cfm

129. Ibid.
130. The University of Texas at Austin, Department of Mechanical Engineering, Department Records.

131. University of Texas at Austin, College of Engineering [online], Alumni, accessed on 11 June 2003, available from http://www.engr.utexas.edu/alumni/distgrads/AllDG.cfm


145. UT Department of Mechanical Engineering, Annual Reports: 1979, 80, 82, 86, 87, 88, and 89.

146. Ibid.

147. Taken from UT ME 1980’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jerome DeLaCruz, BSME ‘85; administered in 2002-2003.

NOTES TO CHAPTER ELEVEN


4. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Schneider, BSME ’93; administered in 2002-2003.


12. UT Department of Mechanical Engineering, Spring 1993, Mechanical Engineering Newsletter, “Message from the Chairman”, vol. 1; 1.


14. Ibid. 4.

15. Information provided by Peggy Berry, Manager and Supervisor of UT Mechanical Engineering Information Technology, Summer 2003.

16. Information provided by David Dart, UT Mechanical Engineering Webmaster and Head of Computer Support for Faculty and Staff, Summer 2003.


35. Ibid., 1.


39. Ibid.


41. Ibid., 1.

42. Ibid., 1.


44. Ibid., 7.


48. UT Mechanical Engineering, Internal Records.


51. University of Texas at Austin, College of Engineering [online], *Dean's Page*, accessed on 13 July 2003, available at [http://www.engr.utexas.edu/admin/dean/deanspage.cfm](http://www.engr.utexas.edu/admin/dean/deanspage.cfm)


53. Interview with Dr. Ken Diller, Spring 2003.

54. Taken from the UT Mechanical Engineering Chairman’s survey, developed by Joanna Hofer and completed by Dr. Ken Diller in Spring 2003.


56. Herman Fresh; Institutional Research Analyst, MS; University of Texas at Austin Office of Institutional Research.

57. University of Texas at Austin, DEFINE Database, accessed on 11 June 2003.


60. Taken from the UT Mechanical Engineering Chairman’s survey, developed by Joanna Hofer and completed by Dr. J. Parker Lamb in Spring 2003.

61. Ibid.


63. Ibid.

64. Contributed by Dr. Gary Vliet, Spring 2003.

65. Ibid.

66. Ibid.

67. Ibid.


69. Taken from UT ME 1990’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

70. Ibid.

71. Ibid.

72. Ibid.

73. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Shad Rahman, BSME ‘91; administered in 2002-2003.

74. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Ludlow, BSME ‘92; administered in 2002-2003.
75. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Nathan Vollrath, BSME ‘96; administered in 2002-2003.

76. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Ludlow, BSME ‘92; administered in 2002-2003.

77. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Shad Rahman, BSME ‘91; administered in 2002-2003.

78. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Murat Numan, BSME ‘99; administered in 2002-2003.

79. Taken from UT ME 1990’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

80. Ibid.

81. Ibid.

82. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Javier Sauceda, BSME ’98; administered in 2002-2003.

83. Ibid.

84. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Ludlow, BSME ‘92; administered in 2002-2003.

85. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Scott Mason, BSME ‘93; administered in 2002-2003.

86. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Edgar Figueroa, BSME ‘94; administered in 2002-2003.

87. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jeriad Zoghby, BSME ‘97; administered in 2002-2003.


89. Ibid.

90. Taken from UT ME 1990’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

91. Ibid.

92. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Susan Wang, BSME ‘93; administered in 2002-2003.

93. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Natalie A. Vaughn, BSME ‘98; administered in 2002-2003.

94. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Shad Rahman, BSME ‘91; administered in 2002-2003.

95. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Roger Lee, BSME ‘93; administered in 2002-2003.

96. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Natalie A. Vaughn, BSME ‘98; administered in 2002-2003.

97. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Scott Mason, BSME ‘93; administered in 2002-2003.
98. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Javier Sauceda, BSME ’98; administered in 2002-2003.

99. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Charles Corey Scott, BSME ’96; administered in 2002-2003.

100. Taken from UT ME 1990’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

101. Ibid.

102. Ibid.

103. Ibid.

104. Ibid.

105. Ibid.

106. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Kurt Lyell, BSME ’98; administered in 2002-2003.

107. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Karen Thole, PhD ’92; administered in 2002-2003.

108. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jeriad Zoghby, BSME ’97; administered in 2002-2003.

109. Ibid.

110. Taken from UT ME 1990’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

111. Ibid.

112. Ibid.

113. Ibid.

114. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mark Williamson, BSME ’91; administered in 2002-2003.

115. Ibid.

116. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Shad Rahman, BSME ’91; administered in 2002-2003.

117. Ibid.

118. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Murat Numan, BSME ’99; administered in 2002-2003.

119. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, William Schneider, BSME ’93; administered in 2002-2003.

120. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Edgar Figueroa, BSME ’94; administered in 2002-2003.

121. Taken from UT ME 1990’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

122. Ibid.
123. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Karen Thole, PhD ‘92; administered in 2002-2003.

124. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Bill Ludlow, BSME ‘92; administered in 2002-2003.

125. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jeriad Zoghby, BSME ‘97; administered in 2002-2003.

126. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jack Leifer, MSME ‘89, PHD ‘95; administered in 2002-2003.

127. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Scott Mason, BSME ’93; administered in 2002-2003.

128. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Shad Rahman, BSME ‘91; administered in 2002-2003.

129. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Mark Williamson, BSME ‘91; administered in 2002-2003.

130. Taken from UT ME 1990’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

131. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Karen Thole, PhD ‘92; administered in 2002-2003.

132. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Shad Rahman, BSME ‘91; administered in 2002-2003.

133. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Jack Leifer, MSME ‘89, PhD ‘95; administered in 2002-2003.

134. Taken from UT ME 1990’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Kurt Lyell, BSME ‘97; administered in 2002-2003.

135. Taken from UT ME 1990’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.


137. Ibid.


146. Ibid.

147. Ibid.


149. Ibid.


152. Ibid.


154. Humphrey and Crawford, Austin, 17.

155. Ibid., 17.


157. Humphrey and Crawford, Austin, 17.

158. Ibid., 17.


161. UT Department of Mechanical Engineering, Spring 1993, Mechanical Engineering Newsletter, “Message from the Chairman”, vol. 1; 1.

162. University of Texas at Austin, College of Engineering [online], Alumni, accessed on 17 June 2003, available from http://www.engr.utexas.edu/alumni/distgrads/AllDG.cfm

163. UT Mechanical Engineering Department Records.


165. University of Texas at Austin, College of Engineering [online], Alumni, accessed on 17 June 2003, available from http://www.engr.utexas.edu/alumni/distgrads/AllDG.cfm

166. Ibid.

167. Ibid.

168. Ibid.
169. Ibid.
170. Ibid.


173. University of Texas at Austin, College of Engineering [online], Alumni, accessed on 17 June 2003, available from http://www.engr.utexas.edu/alumni/distgrads/AllDG.cfm


NOTES TO CHAPTER TWELVE


5. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Eric Schafer, BSME ’00; administered in 2002-2003.

6. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Justin Case, BSME ’00; administered in 2002-2003.

7. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Justin Case, BSME ’00; administered in 2002-2003.

8. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Wesley Brubaker, BSME ’03; administered in 2002-2003.

9. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Nathan Rylander, BSME ’02; administered in 2002-2003.

10. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Kevin Shotts, BSME ’04; administered in 2002-2003.

11. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Michelle Holt, BSME ’06; administered in 2002-2003.

12. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Tom Ryan, BSME ’05; administered in 2002-2003.


14. Taken from a roast speech prepared by then UT ME Executive Assistant, Miriam Jacqueline Erenghi, for January 15, 2001.

15. UT Mechanical Engineering, Internal records.
16. Taken from the UT Mechanical Engineering Chairman’s survey, developed by Joanna Hofer and completed by Dr. Joe Beaman in Spring 2003.


18. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Carey King, BSME ’97, PhD ’00s; administered in 2002-2003.

19. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Eric Schafer, BSME ’00; administered in 2002-2003.

20. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Wesley Brubaker, BSME ’03; administered in 2002-2003.

21. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering graduate, Nathan Rylander, BSME ’02; administered in 2002-2003.


24. Interview with Dr. Li Shi, Summer 2003.

25. Interview with Dr. Shaochen Chen, Summer 2003.

26. Interview with Dr. Arumugam Manthiram, Summer 2003.


30. Ibid., 17.

31. Ibid., 17.

32. Ibid., 18.

33. Ibid., 18.

34. Ibid., 18.

35. Ibid., 18.

36. Ibid., 19.

37. Ibid., 19.


41. Ibid., 1.

43. UT Department of Mechanical Engineering, ME ALUM, Summer 2000, “ME Students Win Rube Goldberg Competition”, p. 23.

44. UT Department of Mechanical Engineering, ME ALUM, Summer 2000 “Honeywell Student Booth Competition”, p. 23. and UT Department of Mechanical Engineering, ME ALUM, Fall 2001, “UT SAE Team Repeats as National Champs”, p. 17.

45. UT Department of Mechanical Engineering, ME ALUM, “UT Society of Automotive Engineers Wins Award at the 2000 Formula SAE Competition”, p. 24.


50. UT Department of Mechanical Engineering, ME ALUM, Fall 2002, “Steve Nichols, BSME ’72, Associate Vice President for Research”, p. 11.


54. UT Department of Mechanical Engineering, ME ALUM, Fall 2001, “Faculty News: July 31, 2000”, p. 17.

55. UT Department of Mechanical Engineering, ME ALUM, Fall 2002, “ME Professor, Dr. Dale Klein, Becomes Assistant to the U.S. Secretary of Defense”, p. 7.


57. Ibid., 8.

58. Ibid., 8.


60. The University of Texas at Austin, Department of Mechanical Engineering Undergraduate Office.

61. The University of Texas at Austin, Department of Mechanical Engineering Undergraduate Office.


63. UT Department of Mechanical Engineering, ME ALUM, Fall 2002, “GRACE Notes”, 9.

64. Herman Fresh; Institutional Research Analyst, MS; University of Texas at Austin Office of Institutional Research.

65. Contributed by Kelsey Evans, Development Associate in the UT College of Engineering, Summer 2003.

66. Ibid.

67. Ibid.
68. Ibid.
69. Ibid.
70. Ibid.
71. Taken from UT ME 2000’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.
72. Ibid.
73. Ibid.
74. Ibid.
75. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Wesley Brubaker, BSME ’03; administered in 2002-2003.
76. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Peraphol Nitichaval, MS ORIE ’02; administered in 2002-2003.
77. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Ronald K. LaNier, BSME ’00; administered in 2002-2003.
78. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Carey King, BSME ’97, PhD. 00; administered in 2002-2003.
79. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Randall Speir, BSME ’02; administered in 2002-2003.
80. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Wesley Brubaker, BSME ’03; administered in 2002-2003.
81. Taken from UT ME 2000’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.
82. Ibid.
83. Ibid.
84. Ibid.
85. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Carey King, BSME ’97, PhD. 00; administered in 2002-2003.
86. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Peraphol Nitichaval, MS ORIE ’02; administered in 2002-2003.
87. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Kevin Shotts, BSME ’04; administered in 2002-2003.
88. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Justin Case, BSME ’00; administered in 2002-2003.
89. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Wesley Brubaker, BSME ’03; administered in 2002-2003.
90. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Nathan Rylander, BSME ’02; administered in 2002-2003.
91. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Tom Ryan, BSME ’05; administered in 2002-2003.

93. Taken from UT ME 2000’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

94. Ibid.

95. Ibid.

96. Ibid.

97. Ibid.

98. Ibid.

99. Ibid.

100. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Carey King, BSME ’97, PhD ’00; administered in 2002-2003.

101. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Ronald K. LaNlear, BSME ’00; administered in 2002-2003.

102. Taken from UT ME 2000’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

103. Ibid.

104. Ibid.

105. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Justin Case, BSME ‘00; administered in 2002-2003.

106. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Nathan Rylander, BSME ‘02; administered in 2002-2003.

107. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Randall Speir, BSME ‘02; administered in 2002-2003.

108. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Eric Schafer, BSME ‘00; administered in 2002-2003.

109. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering student, Wesley Brubaker, BSME ‘03; administered in 2002-2003.

110. Taken from UT ME 2000’s surveys developed by Joanna Hofer and Cel Vela; administered in 2002-2003.

111. Taken from UT ME 2000’s survey developed by Joanna Hofer and Cel Vela and completed by UT Mechanical Engineering students, Christopher (BSME ’00 and MSME ’02) and Nichole Rylander (BSME ’00 and MSME ’02; administered in 2002-2003.

112. University of Texas at Austin, College of Engineering [online], accessed on 19 June 2003, available at http://www.engr.utexas.edu/about/traditions/alec.cfm

113. Texas Governor’s Office [online], Governor Rick Perry, accessed on 12 June 2003, available at http://www.governor.state.tx.us/about


138. UT Department of Mechanical Engineering, ME ALUM, Summer 2000 “Honeywell Student Booth Competition”, 23.


141. UT Department of Mechanical Engineering, ME ALUM, Fall 2002, “ME Professor, Dr. Dale Klein, Becomes Assistant to the U.S. Secretary of Defense”, p. 7.

142. UT Department of Mechanical Engineering, ME ALUM, Fall 2002, “GRACE Notes”, 9.

143. UT Department of Mechanical Engineering, ME ALUM, Fall 2002, “Steve Nichols, BSME ‘72, Associate Vice President for Research”, 11.

144. UT Department of Mechanical Engineering, ME ALUM, Fall 2002, “Applied Materials Gives $500,000”, 12.

145. UT Department of Mechanical Engineering, ME ALUM, Fall 2002, “Keys Curry, BSME ‘58, 2001 College of Engineering Distinguished Graduate”, 12.


147. UT Mechanical Engineering, ME ALUM, Fall 2002, “Students News;” 27.


151. University of Texas at Austin, DEFINE Database, accessed on 11 June 2003.


Appendix A

Deans, UT College of Engineering

1) Thomas U. Taylor 1906-1936
2) Willis R. Woolrich 1936-1958
3) Byron E. Short (Acting Dean) 1948-1949
4) William W. Hagerty 1958-1963
5) John J. McKetta, Jr. 1963-1969
7) Herbert H. Woodson 1986-1996
8) Ben G. Streetman 1996-present

Chairmen, UT Mechanical Engineering

1) Forrest E. Cardullo 1914-1915
2) Thomas U. Taylor 1915-1916
3) Hal C. Weaver 1916-1918
4) James A. Correll 1918-1919
5) Hal C. Weaver 1919-1929
6) Alex Vallance 1929-1930
7) Howard E. Degler 1930-1945
8) Byron E. Short 1945-1947
9) Myron L. Begeman 1947-1949
10) Venton L. Doughtie 1949-1951
11) Byron E. Short 1952-1953
12) Myron L. Begeman 1953-1957
13) Venton L. Doughtie 1957-1962
14) Harry L. Kent, Jr. 1962-1963
15) Carl Gatlin 1963-1964
18) H. Grady Rylander, Jr. 1976-1986
22) Joseph J. Beaman, Jr. 2001-
Appendix B:

Mechanical Engineering Faculty

A

Theodore A. Aanstooes  
(1999-) Senior Lecturer

Naeem M. Abdurrahman  
(1993-2000) Assistant Professor

H. Norman Abramson  
(1983-1998) Adjunct Professor

Olusegun A. Adeyemi  
(1985-1986) Lecturer

Ali Adl  
(1979-1980) Specialist

John J. Allan, III  
(1968-1977) Associate Professor

Michael P. Alley  
(1989-1994) Lecturer

Iraj Amirkabirian  
(1985-1986) Lecturer

Billy H. Amstead  
(1946-1981) Professor  
(1959-1969) Assistant Dean, College of Engineering  
(1969-1970) Acting Dean, College of Engineering  
(1970-1975) President, The University of Texas Permian Basin  
(1981) Professor Emeritus

Lelanne B. Anderson  
(1982-1983) Specialist

Gardner D. Atkinson  
(1973) Assistant Professor

Don Artieschoufsky  
(1995-) Specialist

Margaret R. Baker  
(1972-1988) Associate Professor  
(1988) Associate Professor Emeritus

Kenneth S. Ball  
(1989-1994) Assistant Professor  
(1994-2000) Associate Professor  
(2000-) Professor

Jonathan F. Bard  
(1984-1987) Assistant Professor  
(1987-1992) Associate Professor  
(1992-) Professor

J. Wesley Barnes  
(1974-1980) Assistant Professor  
(1980-1985) Associate Professor  
(1985-) Professor

Ronald E. Barr  
(1978-1983) Assistant Professor  
(1983-1990) Associate Professor  
(1990-) Professor

Luis H. Bartlett  
(1943-1946) Associate Professor

Thomas L. Bauer  
(1978-1980) Assistant Professor  
(1981-2000) Assistant Director, Nuclear Engineering Teaching Lab

Joseph J. Beaman  
(1979-1985) Assistant Professor  
(1985-1989) Associate Professor  
(1989-) Professor  
(2001-) Chairman

Carl A. Beard  
(1998-1999) Adjunct Assistant Professor  
(1999-2001) Assistant Professor  
(2002-2003) Adjunct Assistant Professor

Carl W. Bechtold  
(1979-1980) Specialist

Myron L. Begeman  
(1932-1971) Professor  
(1947-1949) Chairman  
(1953-1957) Chairman  
(1965) Professor Emeritus

B

Rinaldo A. Bacon  
(1939-1968) Professor
Charles S. Beightler  
(1961-1986) Professor  
(1986) Professor Emeritus

Leonard R. Benson  
(1937-1964) Assistant Professor  
(1964) Professor Emeritus

Theodore L. Bergman  
(1985–1990) Assistant Professor  
(1990-1996) Associate Professor

Don T. Berry  
(1989-1990) Lecturer

Rakesh Bhatia  
(2000-2003) Adjunct Assistant Professor

Steven R. Biegalski  
(2002-) Assistant Professor

David T. Blackstock  
(1981-1987) Senior Lecturer  
(1987-2001) Professor  
(2001) Professor Emeritus

David G. Bogard  
(1982-1988) Assistant Professor  
(1988-1999) Associate Professor  
(1999-) Professor

John R. Borchardt  

David L. Bourell  
(1979-1985) Assistant Professor  
(1985-1991) Associate Professor  
(1991-) Professor

James M. Bright  
(1973) Professor

Howard E. Brown  
(1941-1980) Associate Professor  
(1984) Associate Professor Emeritus

Michael D. Bryant  
(1988-1995) Associate Professor  
(1995-) Professor

Glenn C. Buchan  
(1972-1973) Assistant Professor

Eric H. Bucknall  
(1956-1966) Professor

Gregory D. Buckner  
(1998-1999) Lecturer

Arthur Burr  
(1984-1986) Visiting Professor  
(1986-1993) Adjunct Professor

Ilene J. Busch-Vishniac  
(1982-1986) Assistant Professor  
(1986-1991) Associate Professor  
(1998-1999) Adjunct Professor

Richard P. Bywaters  
(1976-1977) Lecturer

C

Charles J. Campbell  
(1974-1975) Assistant Instructor

Matthew I. Campbell  
(2000-) Assistant Professor

Forrest E. Cardullo  
(1914-1916) Professor  
(1914–1915) Chairman, School of Mechanical Engineering

Rodolfo Carrera  
(1987-1991) Lecturer

William J. Carter  
(1943-1977) Professor  
(1977) Professor Emeritus

William S. Charlton  
(2000-2003) Assistant Professor

Shaochen Chen  
(2002-) Assistant Professor

Harvey D. Christensen  
(1979-1980) Visiting Professor

Lyle G. Clark  
(1960-) Professor  
Professor, Aerospace Engineering and Engineering Mechanics

Jerome B. Cohen  
(1979) Visiting Professor

Morris Cohen  
(1986) Visiting Professor

Cliff M. Collins  
(1972-1975) Instructor  
(1975-1984) Specialist  
(1976-1977) Assistant to the Dean
Thomas J. Connolly  
(2000-2001)  Lecturer

Ivy D. Cook, Jr.  
(1990-1991)  Visiting Associate Professor

James A. Correll  
(1918-1919)  Acting Chairman, School of Mechanical Engineering

Thomas H. Courtney  
(1968-1974)  Associate Professor
(1974-1975)  Professor

Daniel J. Cox  
(1998-2002)  Lecturer

Melba M. (Hanson) Crawford  
(1980-1981)  Instructor  
(1981-1986)  Assistant Professor  
(1986-1991)  Associate Professor  
(1991-)  Professor

Michael E. Crawford  
(1980-1986)  Assistant Professor  
(1986-1993)  Associate Professor  
(1993-)  Professor

Richard H. Crawford  
(1990-1995)  Assistant Professor  
(1995-2002)  Associate Professor  
(2002-)  Professor

David A. Cutherell  
(1994-2002)  Lecturer

Jacob P. Denhartog  
(1977)  Visiting Professor

Kenneth R. Diller  
(1973-1979)  Assistant Professor  
(1979-1984)  Associate Professor  
(1984-2001)  Professor  
(1990-1996)  ME Chairman  
(2003-)  Biomedical Department Chairman

Ali H. Dogru  
(1974-1975)  Assistant Professor

Venton L. Doughtie  
(1929-)  Professor  
(1949-1951)  Chairman  
(1957-1962)  Chairman  
(1967)  Professor Emeritus

Samuel Doughty  
(1978)  Adjunct Associate Professor

Ernest L. Draper, Jr.  
(1969-1979)  Associate Professor  
(1973-1978)  Director, Nuclear Reactor Teaching Lab

William D. Driscoll  
(1974-1975)  Assistant Professor

Wilbur L. Dublin, Jr.  
(1973-1990)  Lecturer

E

Robert C. Eberhart  
(1975-1976)  Associate Professor  
(1983-1984)  Adjunct Associate Professor

Carl J. Eckhardt, Jr.  
(1926-)  Professor  
(1931-1973)  Director of Physical Plant  
(1973)  Professor Emeritus

Thomas A. Edmunds  
(1988)  Assistant Instructor  
(1989)  Lecturer

Keyanoush Efatpenah  
(2000)  Lecturer

Barry S. Eldred  
(1979)  Assistant Instructor  
(1979)  Assistant Professor

Zwy Eliezer  
(1974-1979)  Assistant Professor  
(1979-1984)  Associate Professor  
(1984-1999)  Professor  
(1999)  Professor Emeritus
Janet L. Elzey
(1990-1996) Assistant Professor
(1996-2002) Associate Professor
(2002-) Professor

Salah E. Elmaghrraby
(1979) Visiting Professor

Ofodike A. Ezekoye
(1993-1998) Assistant Professor
(1998-) Associate Professor

F

Eric P. Fahrenthold
(1984-1990) Assistant Professor
(1990-1998) Associate Professor
(1998-) Professor

Thomas A. Feo
(1986-1991) Assistant Professor
(1991-1995) Associate Professor

Benito Fernandez-Rodriguez
(1990-1996) Assistant Professor
(1996-) Associate Professor

Paulo Ferreira
(2001-) Assistant Professor

Morris E. Fine
(1987-1989) Visiting Professor

Hal L. Fitzpatrick
(1981-1982) Specialist

Bobbie L. Foote
(1974-1975) Visiting Associate Professor

John W. Fowler
(1991-1995) Adjunct Assistant Professor

Henry G. Franklin
(1988-1995) Specialist

Robert A. Freeman
(1986-1987) Lecturer
(1987-1994) Assistant Professor

G

Stephen J. Gage
(1965-1973) Associate Professor

Richard E. Garrett
(1977) Visiting Professor

Carl Gatlin
(1963-1964) Chairman

Lakhi N. Goenka
(1986) Assistant Instructor
(1986-1987) Specialist
(1987-1988) Lecturer

Allen L. Goldman
(1974-1975) Assistant Instructor
(1975-1976) Instructor

Olivier Goldschmidt
(1989-1994) Assistant Professor
(1994-1996) Adjunct Assistant Professor

John B. Goodenough
(1986-) Professor

G. Brad Grant
(1977-1978) Specialist

James H. Grant
(1997-1998) Specialist

David E. Greene
(1982) Assistant Professor
(1982-1984) Lecturer

Malcolm E. Greenway
(1978-1979) Assistant Professor

Marcel E. Gres
(1977-1978) Specialist

William K. Griffis
(1946-1951) Assistant Professor

Lisa A. Grosskopf
(1980-1986) Specialist

George Gruber
(1968-1971) Professor

H

William J. Hadden Jr.
(1979-1981) Assistant Professor

Mr. Haddad
(Dates uncertain)
Nuclear Faculty

Matthew J. Hall
(1990) Lecturer
(1991-1997) Assistant Professor
(1997-2003) Associate Professor
(2003-) Professor
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark F. Hamilton</td>
<td>Assistant Professor</td>
<td>(1985-1989)</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>(1989-1993)</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>(1993-)</td>
</tr>
<tr>
<td>John J. Hasenbein</td>
<td>Assistant Professor</td>
<td>(1998-)</td>
</tr>
<tr>
<td>Anthony J. Healey</td>
<td>Associate Professor</td>
<td>(1972-1975)</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>(1975-1981)</td>
</tr>
<tr>
<td>Robert A. Helfinstine</td>
<td>Assistant Professor</td>
<td>(1972-1974)</td>
</tr>
<tr>
<td>Nolan E. Hertel</td>
<td>Assistant Professor</td>
<td>(1979-1985)</td>
</tr>
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<td>Associate Professor</td>
<td>(1985-1993)</td>
</tr>
<tr>
<td>Anthony L. Hines</td>
<td>Instructor</td>
<td>(1972-1973)</td>
</tr>
<tr>
<td>Paul S. Ho</td>
<td>Professor</td>
<td>(1991-)</td>
</tr>
<tr>
<td>Lawrence L. Hobrock</td>
<td>Assistant Professor</td>
<td>(1972-1974)</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>(1974-1978)</td>
</tr>
<tr>
<td>James R. Holmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>James R. Holmes, Sr.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>John R. Howell</td>
<td>Visiting Professor</td>
<td>(1978-1979)</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>(1979-)</td>
</tr>
<tr>
<td></td>
<td>Chairman</td>
<td>(1986-1990)</td>
</tr>
<tr>
<td></td>
<td>Director, Center for Energy Studies</td>
<td>(1989-1991)</td>
</tr>
<tr>
<td></td>
<td>Associate Dean for Research, College of Engineering</td>
<td>(1996-1999)</td>
</tr>
<tr>
<td>Bruce D. Hunn</td>
<td>Lecturer</td>
<td>(1988)</td>
</tr>
<tr>
<td>Paul A. Jensen</td>
<td>Assistant Professor</td>
<td>(1967-1975)</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>(1975-1982)</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>(1982-2003)</td>
</tr>
<tr>
<td></td>
<td>Professor Emeritus</td>
<td>(2003)</td>
</tr>
<tr>
<td>Jerold W. Jones</td>
<td>Assistant Professor</td>
<td>(1973-1976)</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>(1976-1983)</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>(1983-2003)</td>
</tr>
<tr>
<td></td>
<td>Professor Emeritus</td>
<td>(2003)</td>
</tr>
<tr>
<td>Davor Juricic</td>
<td>Professor</td>
<td>(1978-1998)</td>
</tr>
<tr>
<td></td>
<td>Professor Emeritus</td>
<td>(1998)</td>
</tr>
<tr>
<td>Robert E. Keith</td>
<td>Visiting Associate Professor</td>
<td>(1980-1982)</td>
</tr>
<tr>
<td></td>
<td>Lecturer</td>
<td>(1982-1989)</td>
</tr>
<tr>
<td>Stuart D. Kellogg</td>
<td>Assistant Professor</td>
<td>(1985-1987)</td>
</tr>
<tr>
<td>Robert P. Kelso</td>
<td>Visiting Associate Professor</td>
<td>(1985-1986)</td>
</tr>
<tr>
<td>Harry L. Kent, Jr.</td>
<td>Professor</td>
<td>(1938-1974)</td>
</tr>
<tr>
<td></td>
<td>Acting Chairman</td>
<td>(1962-1963)</td>
</tr>
<tr>
<td></td>
<td>Professor Emeritus</td>
<td>(1974)</td>
</tr>
<tr>
<td>Nahid Khazenie</td>
<td>Lecturer</td>
<td>(1987-1989)</td>
</tr>
<tr>
<td>Thomas M. Kiehne</td>
<td>Adjunct Associate Professor</td>
<td>(1991-1995)</td>
</tr>
<tr>
<td></td>
<td>Senior Lecturer</td>
<td>(1998-)</td>
</tr>
<tr>
<td>Dongsik Kim</td>
<td>Assistant Professor</td>
<td>(1998-2000)</td>
</tr>
<tr>
<td>Kyoungjin Kim</td>
<td>Lecturer</td>
<td>(1999-2002)</td>
</tr>
<tr>
<td>William D. Kingery</td>
<td>Visiting Professor</td>
<td>(1979)</td>
</tr>
</tbody>
</table>
Dale E. **Klein**  
(1977-1982) Assistant Professor  
(1982-1990) Associate Professor  
(1990-) Professor  
(1981-1989) Director, Nuclear Engineering Teaching Lab  
(1986-1988) Deputy Director, Center of Energy Studies  
(1988-1996) Associate Dean for Research  
(1995-1996) Executive Director, Bureau of Engineering Resources  
(1996-2002) Executive Director, Plutonium National Resource Center  
(1996-2002) Vice Chancellor, UT System for Special Engineering Programs

Georgia-Ann Klutke  
(1989-1994) Assistant Professor  
(1994-1996) Associate Professor

David P. Knobles  
(1996-2003) Lecturer

Billy V. Koen  
(1967-1971) Assistant Professor  
(1971-1982) Associate Professor  
(1974-1976) Director, Bureau of Engineering Teaching  
(1982-) Professor

Desiderio Kovar  
(1997-2003) Assistant Professor  
(2003-) Associate Professor

Lew Kowarski  
(1968-1970) Professor

Leonard F. Kreisle  
(1943-1992) Professor  
(1993-) Professor Emeritus

Dorothy J. Krueger  
(1977-1983) Specialist

Thomas J. Krueger  
(1988-90) Specialist  
(1994-) Specialist

Erhan Kutunoglu  
(2002-) Assistant Professor

J. Parker **Lamb**  
(1962-1963) Assistant Professor, Aerospace Engineering and Engineering Mechanics  
(1963-1967) Assistant Professor, ME  
(1967-1970) Associate Professor, ME  
(1970-2001) Professor, Mechanical Engineering  
(1976-1981) Associate Dean of Academic Affairs, College of Engineering  
(1996-2001) Chairman  
(2001) Professor Emeritus

Brian J. **Landsberger**  
(1998-1999) Lecturer

Sheldon Landsberger  
(1997-) Professor  
(2002-) Director, Nuclear Engineering Teaching Lab

Leon S. Lasdon  
(1977-1983) Professor

Jack Lenhart  
(1975-1977) Professor, *(Drawing)*  
(1977) Professor Emeritus

William G. Lesso  
(1967-) Associate Professor to Professor  
(1972-1996) Professor  
(1996) Professor Emeritus  
(1979-1981) Assistant Dean, College of Engineering

Frederick F. Ling  
(1992-2002) Professor  
(2003-) Professor Emeritus

Ronald L. Linton  
(1978-1985) Specialist  
(1985-1990) Lecturer

Wayne E. Long  
(1951-1978) Professor  
(1971-1978) Professor Emeritus

Raul G. Longoria  
(1991-1997) Assistant Professor  
(1997-) Associate Professor

F. C. Lai  
(2001) Visiting Associate Professor
Kathleen S. Mackie  
(1997-1999) Lecturer

Stephen Malkin  
(1972-1974) Assistant Professor

Arunugam Manthiram  
(1991-1996) Assistant Professor  
(1996-2000) Associate Professor  
(2000-) Professor

Harris L. Marcus  
(1975-1995) Professor  
(1995) Professor Emeritus

Kurt M. Marshek  
(1981-1985) Associate Professor  
(1986-1999) Professor  
(1999) Professor Emeritus

Glenn Y. Masada  
(1980-1986) Assistant Professor  
(1986-1992) Associate Professor  
(1992-) Professor

Houshang Masudi  
(1987-1990) Lecturer

Ronald D. Matthews  
(1980-1985) Assistant Professor  
(1985-1993) Associate Professor  
(1993-) Professor

Wade J. McCarty  
(1980-1984) Specialist

Noel C. McGuire  
(1975-1977) Associate Professor  
(1977) Professor Emeritus

Moises Medina  
(1985-1988) Specialist

George D. Meegan  
(2001-) Lecturer

Anil Mitra  
(1978-1981) Assistant Professor

Tessie J. Moon  
(1989-1995) Assistant Professor  
(1995-2003) Associate Professor  
(2003-) Professor

Ora Christine Moore  
(1993-2001) Lecturer  
(2001-) Senior Lecturer

Juan C. Morales  
(1997-1998) Assistant Instructor  
(1998-1999) Lecturer

Charles A. Morgan, Jr.  
(1985) Lecturer

David P. Morton  
(1995-2000) Assistant Professor  
(2000-) Associate Professor

Bernard Most  
(1973-1974) Assistant Professor

Behrooz Motazed  
(1972-1973) Assistant Instructor/Professor

Thomas G. Muir, Jr.  
(1977-1979) Lecturer

David A. Nelson  
(1998-1999) Lecturer

George L. Nemhauser  
(1979) Visiting Professor

Richard R. Neptune  
(2001-) Assistant Professor

James L. Nevins, Jr.  
(1977) Visiting Professor

Dong Nguyen  
(Dates uncertain - 1960’s era)  
Nuclear faculty

Steven P. Nichols  
(1976-1981) Assistant Professor  
(1982-1991) Lecturer  
(1991-1996) Senior Lecturer  
(1996-) Associate Professor  
(1988-1991) Deputy Director, Center for Energy Studies  
Associate Chair of Alumni and Industrial Relations  
(1994-1998) Acting Director, Center for Electromechanics
Oberkampf  
(1970-1976) Assistant Professor  
(1976-1979) Associate Professor

John R. O’Dell  
(1978-1982) Assistant Instructor  
(1985-1987) Lecturer

Panton  
(1971-1976) Associate Professor  
(1976-) Professor

Theodore A. Parish  
(1975-1978) Assistant Professor

Virginia K. Parsons  
(1977-1978) Specialist

Henry M. Paynter  
(1984-1986) Visiting Professor  
(1987-1988) Adjunct Professor

Charles E. Perkins  
(1977-1995) Specialist

Noel D. Perreira  
(1977-1984) Assistant Professor

Raymond W. Persky  
(1972-1973) Instructor

Allan G. Pierson  
(1977) Visiting Professor

Marcos M. Pimenta  
(1983-1985) Visiting Associate Professor

Mostafa Pirnia  
(1981-) Specialist

Elmira Popova  
(1995-) Assistant Professor

Acacio M. Portanova  
(1984-1985) Assistant Instructor  
(1985) Specialist

Siddharth B. Pratap  
(1997-) Senior Lecturer

Mitchell W. Pryor  
(2002-) Lecturer

Rabenberg  
(1983-1989) Assistant Professor  
(1989-) Associate Professor

Kenneth M. Ralls  
(1967-1969) Assistant Professor  
(1969-1976) Associate Professor  
(1976-) Professor

Cecil H. Ramage  
(1976) Assistant Instructor  
(1978-1979) Assistant Professor

Kenneth C. Rathbun  
(1957-1961) Associate Professor

Walter S. Reed  
(1973-1978) Assistant Professor  
(1978-1989) Associate Professor

Douglas D. Reynolds  
(1972-1973) Assistant Professor

Charles Roberts  
(1997-1999) Lecturer

Ricardo C. Rodriguez  
(1990-1992) Specialist

Charles Roman  
(1982-1984) Specialist

Abraham Rosen  
(1979-1980) Visiting Professor  
(1992) Visiting Professor

Christopher A. Rotz  
(1977-1985) Assistant Professor

John J. Rousseau  
(1995-1999) Lecturer  
(1999-) Senior Lecturer

Herbert A. Rundell  
(1957-1961) Assistant Professor

H. Grady Rylander, Jr.  
(1947-1953) Assistant Professor  
(1953-1968) Associate Professor  
(1968-1997) Professor  
(1997-) Professor Emeritus  
(1976-1986) Chairman
Juan M. Sanchez  
(1989-) Professor  
(1995-1998) Associate Vice President for Research  
(1998-1999) Interim Vice President for Research  
(1999-) Vice President for Research

Warren F. Savage  
(1977) Visiting Professor

Ronald M. Sawey  
(1979) Assistant Professor

Jack A. Scanlan  
(1947-1967) Associate Professor

Arthur R. Schleicher Jr.  
(1980-1985) Specialist

Michael A. Schmerling  
(1977-1981) Instructor  
(1981-) Lecturer

Philip S. Schmidt  
(1970-1975) Assistant Professor  
(1975-1981) Associate Professor  
(1981-) Professor

Glendon D. Self  
(1978-1979) Visiting Professor

Kevin D. Seppi  
(1994-1995) Lecturer

Chiyyarah Shanmugam

Robert E. Shannon  
(1979) Visiting Professor

Li Shi  
(2002-) Assistant Professor

Byron E. Short  
(1926-1973) Professor  
(1945-1947) Chairman  
(1948-1949) Acting Dean, College of Engineering  
(1952-1953) Chairman  
(1973) Professor Emeritus

Robert D. Slonneger  
(1948-1954) Assistant Professor

Craig C. Smith  
(1973-1979) Assistant Professor  
(1979-1980) Associate Professor

Spurgeon E. Smith  
(1978) Specialist

S. V. Sreenivasan  
(1994-2000) Assistant Professor  
(2000-) Associate Professor

Horace E. Staph  
(1944-1960) Assistant Professor

John P. Stark  
(1963-) Assistant Professor  
(1973-1997) Professor  
(1997-) Professor Emeritus

David B. Stevens  
(1984) Specialist

Alexander Takvorian  
(1992-1993) Assistant Instructor  
(1995) Lecturer

Eric M. Taleff  
(1995-1998) Assistant Professor in ASE  
(1998-2001) Assistant Professor in ME  
(2001-) Associate Professor

Valerie Tardif  
(1995-2002) Assistant Professor

T. U. Taylor  
(1895-1906) Director, School of Mechanical Engineering  
(1906-1936) Dean, College of Engineering  
(1915-1916) Chairman, School of Mechanical Engineering

Delbert Tesar  
(1985-) Professor

David C. Thompson  
(2000-2001) Assistant Instructor  
(2001-2002) Lecturer

Iverson G. Thompson III  
(1978-1979) Assistant Professor

Richard J. Thornhill  
(1981-1982) Adjunct Assistant Professor  
(1983-1987) Lecturer  
(1987-2000) Associate Professor

George B. Thurston  
(1968-1998) Professor  
(1998-) Professor Emeritus

John K. Tien  
(1979) Visiting Professor  
(1989-1992) Professor
Louis E. Torfason
(1989-1991) Visiting Professor

Alfred E. Traver
(1978-1981) Visiting Associate Professor
(1981-1987) Assistant Professor
(1987-1994) Lecturer
(1994-) Senior Lecturer

Burnett F. Treat
(1924-1958) Associate Professor

Laurette S. Tuckerman
(1986-1987) Lecturer

U

Gary K. Underhill
(1973-1977) Assistant Professor

William R. Upthegrove
(1964-1970) Professor
(1964-1970) Chairman

Alfredo H. Urdaneta
(1979-1980) Assistant Professor

U

Alex Vallance
(1921-1938) Associate Professor
(1929-1930) Acting Chairman

John H. Vanston, Jr.
(1972-1973) Instructor
(1973-1978) Assistant Professor
(1973-1975) Associate Director, Energy Resources Program
(1975-1977) Deputy Director, Energy Resources Program

Philip L. Varghese
(1983-1988) Assistant Professor
(1988-1989) Associate Professor

Gary C. Vliet
(1971-1979) Associate Professor
(1979-) Professor

W

Gerald R. Wagner
(1968-1973) Assistant Professor
(1973-1978) Associate Professor

Roger S. Walker
(1973) Assistant Professor

Russell A. Walker
(1983-1986) Specialist

Laneda M. Wall
(1986-2001) Specialist

Hugh Alan Walls
(1963-) Assistant Professor
(-1973) Associate Professor
(1973-1990) Professor
(1990) Professor Emeritus
(1973-1976) Assistant Provost
(1976-1979) Associate Director, Office of Analysis and Planning
(1979-1986) Director, Planning Services
(1986-1989) Special Assistant to Provost

Erik P. Wassen
(2000-2002) Lecturer

John R. Watt
(1943-1972) Associate Professor

Hal C. Weaver
(1910-1929) Instructor, Electrical Engineering
Professor, Mechanical Engineering
(1916-1918) Chairman, School of Mechanical Engineering
(1919-1920) Chairman, School of Mechanical Engineering
(1920-1929) Chairman, Department of Mechanical Engineering

Bernard W. Wehring
(1989-2000) Professor
(1989-1999) Director, Nuclear Engineering Teaching Lab

Terry S. Welch
(1992-1994) Specialist

William F. Weldon
(1982-1985) Technical Director, Center for Electromechanics
(1985-1993) Director, Center for Electromechanics
(1986-2000) Professor
(2000-) Professor Emeritus

Dick Welty
(Dates uncertain 1950’s era)

Harovel G. Wheat
(1986-1992) Assistant Professor
(1992-) Associate Professor

Kirk L. Wiggins
(1973-1974) Assistant Instructor
(1977-1978) Assistant Professor
Dennis E. Wilson
(1976-1977) Assistant Instructor
(1980-1986) Assistant Professor
(1986-) Associate Professor

James R. Wilson
(1979-1980) Instructor
(1980-1985) Assistant Professor

John G. Wilson
(1997-1999) Visiting Associate Professor

Preston Wilson
(2003-) Assistant Professor

Billy H. Wood
(1980-) Specialist
Undergraduate Advisor
Director of Alumni Relations

Kristin L. Wood
(1989-1994) Assistant Professor
(1994-2000) Associate Professor
(2000-) Professor

Willis R. Woolrich
(1936-1958) Professor
(1966-1977) Professor
(1936-1958) Dean, College of Engineering
(1966) Professor Emeritus

Martin A. Wortman
(1994) Visiting Associate Professor

Y

Yiming Yao
(1985-1986) Assistant Instructor
(1986) Lecturer

Z

Nino Zahrastnik
(1984-1987) Specialist

Clyde Dale Zinn
(1972-1977) Assistant Professor
Appendix C

UT Mechanical Engineering
Graduate and Undergraduate Advisors

ME Undergraduate Advisors

Harry Kent - 1974
Wilbur (Bud) Dublin
Ken Ralls 1981-1988
Billy Koen 1988-1992
Billy Wood 1992-

ME Graduate Advisors

J. Parker Lamb 1964
Gary Vliet 1979-1986
Jerry Jones 1986-1988
Paul Jensen 1988-1990?
Ron Barr -1997
David Bogard 1997-
Appendix D

Machine Shop

For many years up to the computer age starting in the 1980’s, most of the mechanical engineering laboratories involved student use of real machines, test equipment and analog instrumentation. If a student missed a laboratory, it was very easy for the professor to catch him on the next exam. The exams required actual experience with the machine. Since no videos existed to fall back on, attendance was necessary. Usually the laboratory machines functioned properly but occasionally a machine or instrument would malfunction to the point of needing repair. If this happened, the students were expected to assist the shop in the repair. This practice resulted in some good, some unique and some potentially dangerous results.

In the planning of the “new” engineering building (construction completed in 1904) a laboratory for steam engineering and a machine shop were included. The first course in Shop Practice in this new building was equipped for students in Electrical Engineering with machine tools and the necessary small tools for bench work and machine work on iron. Mechanical Engineering students used this shop from 1913 to 1929 when Mechanical Engineering moved to the second floor of Taylor Hall. Mr. Fred Morris, laboratory mechanician, from about 1903 until his retirement in 1948, assisted in this work. Mr. M. S. Bowen acted as Superintendent of Shops until he resigned in 1931. This new second unit of Taylor Hall included machine and pattern shops and a foundry equipped to melt and pour brass, iron and steel.

During the start of WWII in 1942, the thermodynamics laboratory was offered during the two weeks between Summer School and the Fall semester. Ed Samfield (a student) was given the task of installing pressure gages on the old reciprocating steam engine. Having never installed pressure gages on a steam engine, he took the engine pipe’s gage and loosely attached it to the steam pipe. When the steam valve was opened, steam pressure was sent to the engine. There was then a loud pop sending the pressure gage flying up to the laboratory ceiling followed by a loud hiss of high pressure steam escaping. Fortunately, no one was hurt but the episode did provide some excitement for the students.

For many years all ME Students had to take a shop course which included machining, welding and foundry. Before the end of the semester, most students learned how to operate the machine tools but the welding and foundry were something else. Most students could not make a good arc weld after the lecture even though movies make it look so easy. First, the students would strike the arc mound and end-up with lots of sparks. Then they would go out due to separation or the rod was stuck. The professor with his gradebook would stand over the student, observe and then quietly walk away. The foundry was just as difficult. After putting the pattern in the sand and carefully packing the mold, removal of the pattern was the prime time for the professor to grade the student. As the top half of the mold was removed and the pattern removed many times the sand of the top half would partially fall out leaving a ruined mold as the professor again walked away while putting a mark in the gradebook.

All branches of engineering plus the Art Department used the Mechanical Engineering Shop and Foundry until the new Engineering Science Building opened in 1964 complete with the Central Machine Shop in the basement. Since this new building had a nuclear accelerator in it, the shop was used by the Physics Department in addition to all of the engineering departments. The Shop also did specialty work for researchers throughout The University. Wayne Long was the administrator with the aide of Howard Webb and Ralph Von Stein. The Central Machine Shop retained its control over the smaller original machine shop located in Taylor Hall.

The Central Machine Shop, also called the College of Engineering Machine Shop, was operated from 1969-70 under the management of a committee. W. H. Hartwig was the chairman and the committee members were E. A. Ripperger, R. R. Ensminger, H. Mattock, D. G. Swanson and D. L. Sikes. Mechanical Engineering had its own shop during this period with no employees in the Central Machine Shop. Initially, charges were $5 per hour but were soon increased to $6 per hour for use of the shop and one machinist. In 1975, the College of Engineering Machine Shop was not self-sustaining as planned; therefore, Dean Glyna discontinued support from the Bureau of Engineering Research and transferred equipment, materials and accounts to the ME Department for continued operation. The supervisor position occupied by David Sikes at this time was terminated. J. Parker Lamb assumed responsibility for the shop and immediately increased the charge rate to $7.50 per hour. As of July 1, 1975, Howard Webb was designated as supervisor of this shop now operating under the ME Department. Webb retired in 1976 and his position was filled by Hank Franklin.
When the M.E. Department moved into ETC II in 1983, they had a new machine shop with new machine tools and a select group of machinists. Hank Franklin was the supervisor. The new shop also contained a new but limited foundry, welding shop and instrument shop as well as the new computer-controlled machine tools. A final statement for the Central Machine Shop was issued by ME Chairman H. G. Rylander in 1984 showing net value of all assets at $200,410. With the closing of the ME Shop in Taylor Hall, this moved most of the department’s campus activity to the new ETC II building. During the period from 1983 through the next 18 years, the shop stayed in the same space and continued to operate the small foundry on a limited basis with aluminum as the principal metal poured.

Dr. Ken Diller, as Chairman of the Department of Mechanical Engineering, established a new position, Technical Staff Assistant IV, and hired Felix Garcia in 1992 as Undergraduate Laboratory Manager. Felix vacated the position in 2000. Several other changes were made under Dr. Diller. Don Artieschoufsky was promoted to Machine Shop Supervisor in 1994. Scientific Instrument Maker Morland Benningfield (Bennie) retired in 1994. Curtis Johnson, Scientific Instrument Maker II, was hired to fill the position vacated by Morland Benningfield. Danny Jares, Scientific Instrument Maker II, was hired to fill the position vacated by Don Artieschoufsky.

Don Artieschoufsky had been hired in 1986 as an Instrument Maker II to work alongside two other Instrument Makers, John Pedracine and Morland Benningfield and the Store Clerk, Jon Bolander. Two Electronic Technicians were added prior to Artieschoufsky’s arrival; John Spurgeon in 1971 and Sam Holt in 1979. Don Artieschoufsky came to the department from Baker-Hughes where he had been employed for the previous 4-1/2 years as a machinist producing tooling for the oil industry. Don’s first job duties at UT were split between producing parts for research and managing the undergraduate materials labs. In 1994, Don became Mechanical Engineering Machine Shop Supervisor. Artieschoufsky has received several awards since his arrival at UT. In 1990, he received the College of Engineering Staff Excellence Award. In 1995, he was a recipient of the Mechanical Engineering Staff Excellence Award. In the summer of 1999, Artieschoufsky was recognized for support of the Senior Design Projects. In May of 2001, Don won the Mechanical Engineering Staff Excellence Award for a second time. In 2002, he was a winner of the College of Engineering’s Staff Excellence Award.

John Spurgeon retired in 1999 due to health issues then returned part-time in 1999 performing contract work until he passed away in 2000. The Laboratory Manager Position became open again in 2000 when Felix Garcia left. James Sanders filled this position in 2000 when he moved over to ME after 16 years in Aerospace Engineering. In 2001 Fred Rothauser was hired to replace John Spurgeon as an electronics technician (Technical Staff Assistant IV).

In the late nineties, the Machine Shop added to its existing equipment. In 1999 new CNC machine tools were installed as well as six new Willies Microcut Lathes. These six lathes were installed to facilitate the increased number of students in the Student Certification Program and to provide safer and more accurate and reliable equipment. From 1994 to July 2001 more than 1000 students have been certified to operate the machines.

Machining off the Forty Acres

In 1977 J. Neils Thompson designated 1720 square feet at the north end of building 24 (Civil Engineering Structures Research Laboratory) at the Balcones Research Center for common use by the Research Machine Shop and the Civil Engineering Structures Research Laboratory. The original machine tools assigned to the space were a large boring mill and planer. Operation of this Research Machine Shop was under the direction of Grady Rylander. Additional shop facilities available to Mechanical Engineering were obtained in 1985 with the opening of the new Electromechanics and Energy Research Building at the Balcones Research Center (later named the J. J. Pickle Research Campus). In 1997-98, manufacturing research at this facility included high current welding, rapid powder consolidation and electrospayed coatings.


contributed by Don Artieschoufsky

May 1, 1986 – Don Artieschoufsky hired as Instrument Maker II

The shop at that time included Hank Franklin, Supervisor, along with two other Instrument Makers, John Pedracine and Morland Benningfield, Stores Clerk Jon Bolander, and two electronic technicians, Sam Holt and John Spurgeon.

1986 - Hank Franklin, Shop Supervisor is teaching ME 350 (Machine Tool Operation for Engineers) along with Certification Classes for Mechanical Engineering students.

July 16, 1992 – Dr. Diller (then chair) requests establishment of a Technical Staff Assistant IV position to work as the Undergraduate Lab Manager.

Sept. 1992 – Felix Garcia is hired as the Undergraduate Lab Manager (Technical Staff Assistant IV) Don Artieschoufsky begins working full-time in the machine shop.
March 1994 – Larry M. Hoes, BSME 1970, Vice President of Engineering for Cooper Oil Tool Division of Cooper Industries, donates several pieces of old equipment to the Department. The proceeds from the sale of the old equipment are used to purchase four new Bridgeport Milling Machines with Digital Readouts for the student shop.

May 1994 - Morland Benningfield (Bennie) retires.

June 1994 – Curtis Johnson is hired to replace Bennie and begins working in the shop as a Scientific Instrument Maker II. He had previously worked for I.B.M.

June 1994 – Hank Franklin retires as Supervisor – continues to teach ME 350.


August 1994 – Danny Jares is hired to replace Don Artieschoufsky and begins working in the shop as a Scientific Instrument Maker II. Prior to working for Mechanical Engineering, Jares worked for the UT Physics Department.

December 1994 – Illness forces Hank Franklin to retire from teaching ME 350.

Spring Semester 1995 – Dr. Al Traver takes over the teaching duties for ME 350.

Fall Semester 1995 – Don Artieschoufsky begins teaching ME 350.

August 1996 – Hank Franklin passes away.

February 1999 – Six new Willis Microcut Lathes are purchased for use in the Student Machine Shop replacing the six Profit Master lathes that were in use from 1983 – 1999.

August 1999 – John Spurgeon retires due to health issues.

September 1999 – John Spurgeon returns part-time performing contract work.

May 2000 – John Spurgeon passes away.

August 2000 – Lab Manager Position vacated by Felix Garcia.

October 2000 – James Sanders hired for Lab Manager position as a Technical Staff Assistant V. James Sanders previously worked 16 years at Aerospace Engineering in a similar position.

April 2001 – Fred Rothhauser is hired as electronics technician (Technical Staff Assistant V).

January 2002 - Sam Holt retires after 22 and 1/2 years of service to The University of Texas.

April 2002 – Tho Huynh is hired as electronics technician (Technical Staff Assistant V).

June 2003 – The number of students certified to work in the Student Shop reaches 1291. This only includes students certified over the nine-year period since Don Artieschoufsky became supervisor in July 1994.
Appendix E

Administrative Personnel

Executive Assistants at The University of Texas at Austin Department of Mechanical Engineering

Mary Sue Parks  (1930s)  EA for Chairman Howard Degler
Mrs. Tew  (1930s)  EA for Chairman Howard Degler
Alpha P. Gonzalez  (1972-1989)  EA for Chairman H. Grady Rylander
Liza G. Scarborough  (2002-)  EA for Chairman Joe Beaman

The listing presented on the following page is a listing obtained from the UT Office of Human Resources which were accessed online through DEFINE. This listing starts from the year 1972 and continues to the present (2003). This is only a listing of Academic Staff. A comprehensive list of research staff is not available.

Current research staff in the department are:
Cindy Pfughof  (1986-)
Betty Wilson  (1996-)
Janie Terrell  (1996-)
Jo Ann Smith  (1996-)
Michele Lejeune  (2000-)

It is known that there was an increase made in the number of staff positions under Chairman John R. Howell and Chairman J. Parker Lamb. Prior to 1972, it is very difficult to establish a listing of staff employed by the department other than through mentions made by alumni in the compilation of this history.

Administrative assistance has been sought by the department from its earliest days. With the rise of the department’s usage and dependence on computers, administrative assistants have been required to acquire a broad range of specialized skills. Many of the administrative staff of the department in 2003 hold undergraduate university degrees. Some hold masters degrees. Administrative staff of 2003 are expected to understand and provide compliance with a massive array of University rules and regulations. These staff, in turn, help to minimize the time spent by faculty on administrative requirements. True professionals, the administrative staff manage the department’s budget, provide scheduling of classes, advise students, maintain a computer network, maintain equipment, produce publications, and maintain a wide variety of departmental records. These employees take care of the business aspects of the department allowing the faculty to concentrate on teaching and research.
1970's

Ruth A. Acker (1979)
Patricia Adams (1973-1974)
April M. Allen (1974-1975)
Richard M. Alles (1977)
Jane S. Andrus (1973-1975)
Wendy J. Anner (1975)
Carlos M. Arias, Jr (1972-1983)
Sherry R. Bell (1976)
Morland Benningfield (1977-1993)
Ralph W. Blake (1977)
Edward J. Bloomer (1973-1979)
Anna V. Brown (1978)
Joseph A. Burack (1977-1978)
Karen P. H. Buxton (1972)
Lonita C. Capshaw (1976)
Reynaldo H. Cortez (1979)
Susan D. Cohen (1976)
Patsy L. Crozier (1976)
Melinda L. Cuff (1977)
Beverly J. Deal (1976)
Margaret E. Deinken (1974)
Donald V. Dunn (1979)
Peggy Ann S. Edwards (1973)
Kathy P. Feder (1974)
Julie B. Finn (1974)
Henry G. Franklin (1974-1993)
Alpha P. Gonzalez (1972-1989) – EA
Chester J. Hagan (1972-1973)
Mary L. Hibbs (1972-1974)
Mary Lou B. Hibbs (1973)
Sam H. Holt, III (1979-2001)
Patricia T. Hummel (1978-1982)
Travis A. Hurd (1977)
Rebecca Jill Johnson (1972-1973)
Cynthia G. Johnston (1978)
Linda D. Jones (1976)
Rudolf M. Kantu (1977-1978)
Paticia D. Kleinert (1977-1999)
Doris M. Knox (1979)
Antoinette F. Lambert (1972)
David A. Langston (1979)
Barbara M. Leschber (1975)
Richard A. Lehnick (1978-1979)
Sandra J. McGaughy (1973)
Fred A. Meredith (1977)
Marcia R. Morrison (1979)
Janet C. Nichol (1974)
Marianna Obrien (1973)
Suzi E. Patterson (1973)
John P. Pedrácine (1972-)
Lyn J. Peters (1978)
Andrzej H. Pradzynski (1977-1978)
Virginia M. Priebe (1975-1977)
Edwin W. Raschke (1977-1978)
Carolyn C. Rensch (1979-1985)
Cecile T. Riha (1972)
William E. Rister (1973)

1980's

Don R. Artieschoufsky (1986-)
Peggy B. Berry (1980-)
Jon C. Bolander (1981-)
Lucy M. Delagarza (1988)
Carol E. Doud (1987-1996)
Marilyn L. Glessner (1986)
M. Jane R. Goss (1988)
Freddie M. Green (1986)
Mark W. Hoover (1984-1985)
Peggy L. Johnson (1985-1987)
Camille T. Melendez (1986-1987)
Mary E. Norman (1989)
Martha E. Pannell (1984-1985)
Julia C. Raman (1988-)
Mary E. Rivera (1980)
Rosa E. Tucker (1985)
Ramona P. Vanloan (1981)
Sherry W. Weisinger (1989-1990)
Elona G. Williams (1986)
Kyung B. Yim (1980)

1990’s

Kimberly M. Antell (1996-1997)
Pathrience C. Abroms (1998-1999)
Yolanda C. Aldaco (1999)
Tara C. Avelhne (1999-2000)
Kelly Barbic (1994)

Academic Staff*

Carliss A. Rosello (1977-1978)
William H. Rumsey, Jr (1972-1976)
Jean W. Sanford (1973-1989)
Frances S. Schmidt (1972-1973)
Billie J. Shelton (1975-1988)
John R. Spurgeon (1972-1998)
Sandra J. Stollenwerk (1976-1980)
Catherine C. Taggart (1974)
Iris S. Thompson (1973-1975)
Bobby B. Tomlin (1977-1978)
Nancy M. Villarreal (1975)
Ralph B. Vonstein (1972-1975)
Pamela H. Waller (1976)
Howard A. Webb (1972-1976)
Judy N. Williams (1973)
Norman W. Williams (1976-1990)
Kathryn M. Worley (1979-)

Carole J. Campbell (1990-1996)
Tara L. Comstock (1999)
Sheree L. Courney (1996)
Charles David Dart (1998-)
Michele D. Eiben (1998)
Miriam Jacqueline Erenstil (1996-2001) - EA
Linda D. Fay (1990)
Claudia Estella Fierro (1999)
Rosalie D. Foster (1997-)
Renee A. Graham (1990)
Linda J. Halliday (1996-1997)
Mary J. Harmon (1996-1997)
Rebecca M. Harrison-Ray (1998-)
George A. Hermes (1992)
Rose Nelda Hernandez (1997-2001)
Danny R. Jares (1994-)
Curtis W. Johnson (1994-)
Kerri J. Kusmierek (1991)
Kay P. Leatherman (1990-1991)
Vicki Y. Lehmier (1990-1995)
Tanya L. Martin (1997-1999)
Julie A. Mercer (1997)
Debbie E. Mullins (1994-99)
Kellie L. Newcomer (1996)
Susan Pedregon (1999-)
Susan M. Ponder (1991-)
Margaret J. Randow (1996-1997)
Pamela Rutherford (1999)
Agapita S. Sanchez (1999-2000)
Mary A. Sanchez (1996-1997)
Elodia Sandyval (1993-1995)
Robert G. Schuessler (1993)
Ruth B. Schwab (1997-)
Alfred J. Smith (1990)
Carol L. Spence (1994-1996)
Paul J. Streckfus (1996)
Katherine C. Webb (1999)
Diana M. Ziegler (1999-)
Lisa Vera (1998-1999)
Academic Staff continued*

2000’s
Desiree A. Abram (2000-2002)
Betty A. Boecker (2000-2001)
Gretchen E. Dare (2002-)
Stephanie D. Dauphin (2003-)
Lisa M. Dedear (2000)
Danielle S. Fournier (2000-)
Tho N. Huynh (2002-)
Terrie L. Preusse (2000-)
James T. Sanders (2000-)
Liza G. Scarborough (2002-) – EA
Michael A. Schmerling (2001)
Deanna M. Stewart (2001-)
Dena L. Wagner (2002-)

*NOTE: Administrative staff at The University of Texas at Austin are classified in part by the kind of funding which pays their salaries. Academic Staff are staff who are paid from departmental funds, i.e. state funds. Research Staff are staff who are paid from research funds. Since research staff can work for any faculty who has research funds and research expenditures are not tracked in detail by the department, a complete record of research staff is extremely difficult to establish. For this reason, only academic staff, or staff who are paid by the department as opposed to the faculty are reported here.
Appendix F: Areas and Concentrations

The Department of Mechanical Engineering has several areas and concentrations. They are:

**Acoustics**

**Biomechanical Engineering**

**Engineering Computer Graphics**

**Manufacturing & Decision Systems Engineering**

**Materials Science**

**Mechanical Systems & Design**

**Nuclear & Radiation Engineering**

**Operations Research & Industrial Engineering**

**Thermal Fluid Systems**
Acoustics in the 1930s and 1940s

Acoustics appeared as an academic field of interest at Texas as early as the 1930s. C. Paul Boner, Physics Department, studied auditoriums and sound studios, organ pipes, and other musical instruments, and Lloyd A. Jeffress, Psychology Department, began a long series of contributions on hearing. Boner and Jeffress were good friends. When the Physics faculty became depleted because of war work during World War II, Jeffress taught freshman physics. Boner, and several other Texas people, were recruited to work in the Harvard Underwater Sound Laboratory (HUSL); Boner served as Associate Director.

At the end of the war HUSL closed, and about a dozen of its personnel relocated to the University of Texas, including Boner, who resumed his faculty position in Physics, and Robert B. Watson, Claude W. Horton, and (a little later) A. Wilson Nolle, who became new faculty members in Physics. In 1945 Boner established the Defense Research Laboratory (DRL) and staffed it with many who had been at HUSL during the war. Although DRL’s early focus was on radar and aeronautics, under the leadership of Richard N. Lane an underwater acoustics program was started. The first contract was on acoustical mine mechanisms. The underwater acoustics program grew rapidly, becoming the dominant part of the Laboratory by the late 1950s.

Located in some old buildings near the Texas Memorial Museum, DRL was the source of many jobs and research projects for students. It was funded entirely by the federal government, mainly Navy contracts. Although not part of any department, it maintained strong ties to Physics and Engineering. In 1967 DRL moved to Balcones Research Center (now Pickle Research Campus) and in 1968 changed its name to Applied Research Laboratories (ARL:UT).

Acoustics in Engineering

Except for Jeffress, acoustics at Texas before the war and just after was associated with physics. However, development of the underwater acoustics work at DRL began to bring Engineering into the picture. Frank W. McBee and Marcel Gres began working at DRL when they were Mechanical Engineering graduate students and also Instructors. Elmer L. Hixson joined the Laboratory in 1954 at the same time he became Assistant Professor in Electrical Engineering.

Although Physics faculty members Horton, Nolle, and Watson maintained an ongoing interest in acoustics, the Department’s growth was in other areas and interest in acoustics declined in the 1950s and 1960s. Engineering picked up the slack. About 1960 Hixson set up an acoustics laboratory in EE and began supervising graduate students; he started teaching a transducers course (EE) in 1962. The availability of DRL for support for graduate students prompted ME to look for a faculty person in acoustics. George J. Gruber, Assistant Professor in Mechanical Engineering (1965-71), was recruited in the Mechanical Systems area. Hixson and Gruber soon collaborated to set up and teach two new engineering acoustics courses (ME and EE), one at the graduate level and one at the undergraduate level; these were in addition to the transducers course. A boon to the new program was the large underwater pool, originally intended for use by DRL, in the basement of ENS, the Electrical Engineering building.

Two new acoustics faculty appeared at the beginning of the 1970s. After a visiting appointment 1969-70 in EE, David T. Blackstock joined ARL:UT and began teaching and supervising acoustics graduate students as Lecturer in ME, Thermal/Fluid Systems area. Architectural Engineering appointed Douglas D. Reynolds, specialist in noise control and industrial acoustics, Assistant Professor (1971-77). At about the same time ECJ,
the new Civil Engineering building, was constructed with an anechoic chamber in its basement. Hixson, Blackstock, and Reynolds set up the current array of seven graduate acoustics courses in Engineering: Acoustics I & II, Transducers, Nonlinear Acoustics, Ultrasonics, Noise Control, and Underwater Acoustics. The courses became cross-listed as ME 384N, EE 384N, and ARE 384N (ARE dropped its listing a few years after the departure of Reynolds). This marked the beginning of the current program in acoustics in Engineering. Although the main participating departments have been ME and EE (now ECE), faculty in other departments have also contributed, mainly Aerospace Engineering & Engineering Mechanics. Physics has also continued to contribute via a small but steady stream of graduate students and the support of faculty members Austin M. Gleeson and Thomas A. Griffy. The gap left by Reynolds’s departure from the University in 1977 was filled when ME hired N. Duke Perreira (Mechanical Systems, 1977-1984) as assistant professor and W. James Hadden (1979-1981) as an adjunct faculty. They taught some of the acoustics courses for a short period.

**Acoustics in the 1980s and 1990s:**

Acoustics in ME received a big boost in the 1980s with the hiring of Ilene J. Busch-Vishniac (1982) and Mark F. Hamilton (1985), both in Mechanical Systems. Seminars on acoustical topics had been given occasionally over the years. By 1984, however, acoustical research was so active that the weekly Acoustics Seminar series was started, both to enable faculty and students to report their work and to expose the campus acoustics community to outside speakers, international as well as domestic. The next dozen years were very productive. Hixson, Blackstock (who became full time ME faculty in 1987), Busch-Vishniac, and Hamilton constituted a stable acoustics faculty base, and the sponsored research they generated along with that ARL:UT continued to provide (financial support as well as thesis topics) made it possible for many graduate students to complete master’s and doctoral degrees. Changes came, however, as the end of the 20th century approached. Busch-Vishniac departed (1998) to become Dean of Engineering at Johns Hopkins University, Hixson reached full retirement in 1998, and Blackstock began phased retirement in 1999. The next challenge was therefore to rebuild the acoustics faculty base. In the meantime Hixson and Blackstock continued to teach acoustics courses, despite being in retirement.

**Acoustics in the 21st Century**

The new century has seen the appearance of new faculty faces in acoustics. In 2002 the new Biomedical Engineering Department hired Stanislav Y. Emelianov as Assistant Professor. Although research interest in medical ultrasound had been developing slowly at Texas since about 1988, Emelianov’s arrival made it a full fledged specialty in the acoustics program. In 2003 ME recruited Preston S. Wilson (Mechanical Systems), widely experienced in experimental acoustics both in air and in water. Arrival of the new faculty, with new research interests, assures a continuation of the energy and excellence of the program.

One measure of the productivity of UT Austin acoustics is in the number of graduates who have taken faculty positions at other universities. Of our graduates since 1985, a total of ten (seven from ME alone) have gone to academia.

Acoustics at UT Austin enjoys an international as well as national reputation. One indication is the large number of national and international acoustics meetings that have been held in Austin. For example, the Acoustical Society of America began holding national meetings in Austin in 1954 (Richard N. Lane, Chair) and continued at 10-year intervals ever since: 1964 (C. Paul Boner, Chair), 1974 (Chester M. McKinney, Chair), 1984 (David T. Blackstock, Chair), 1994 (F. Michael Pestorius, Chair), and 2003 (Clark S. Penrod, Chair). The Institute of Noise Control Engineering (INCE) held its national meeting, NOISE-CON, in Austin in 1990 (Elmer L. Hixson, Chair). In recognition of Texas’s international renown in nonlinear acoustics, the International Symposium on Nonlinear Acoustics was held in Austin in 1969 (Thomas G. Muir, Chair) and again in 1990 (Mark F. Hamilton and David T. Blackstock, Cochairs). Austin has been the site of many other national and international meetings on specialty topics in acoustics.

Individual recognition and awards offer another measure of a program’s stature and vigor. Awards from the Acoustical Society of America to UT Austin acoustics faculty and/or graduates include the following:

- Gold Medal (1 ME)
- Silver Medal (2 ME, 1 Physics, 1 Psychology)
- R. Bruce Lindsay Award (4 ME, 1 Psychology)
- F. V. Hunt Postdoctoral Fellowship (5 ME)
- Fellow (7 ME, 12 ARL:UT, 1 ECE, 1 Linguistics, 4 Physics, 3 Psychology)

Officer positions in the Acoustical Society include the following:

- President (1 ME, 1 Physics, 1 ARL:UT)
- Vice President (3 ME, 1 ARL:UT)
- Member of Executive Council (3 ME, 3 ARL: UT)

Today acoustics in the College of Engineering is an interdisciplinary area of teaching and research. It includes physical acoustics, medical ultrasound and imaging, underwater sound, transducers, nonlinear acoustics, noise and noise control, and environmental acoustics. The program remains concentrated in ME and ECE, but several other departments—mainly ASE/EM, CE, PGE, and Physics—have faculty and students who participate. Major campus facilities include:

- Anechoic Chamber (ECJ B-408)
- Reverberation Room (ENS 22)
- Electroacoustics Laboratory (ENS 628)
- Acoustics and Transducers Laboratory (ETC 4.156)
- Ultrasonics Laboratory (ETC 7.156)
- Pancoscopic Imaging Laboratory (ENS 613)
Besides the capital investment made by the University in the construction of the Anechoic Chamber and the Reverberation Room (both of which are fundamental acoustical measurement facilities), individual contracts and grants have provided state-of-the-art equipment for the laboratories. In particular, a large water tank with a high precision, computer automated positioning apparatus was constructed for the Ultrasonics Laboratory. The acoustics facilities are used by a variety of University researchers, not just those in the acoustics program. For example, the Center for Transportation Research (CTR) has used the Acoustics and Transducers Laboratory to measure acoustical properties of road surfaces, and the high quality acoustical measurement and analysis equipment in the Electroacoustics Laboratory has supported a variety of projects in the areas of biology and medicine. The excellent acoustics facilities at ARL:UT should also be counted. While not an academic unit of the University, ARL:UT provides strong support for acoustics education through its many R&D programs in acoustics.

[1] Not covered in this history, except for the early role of Professor Jeffress, is the research and teaching of hearing, speech communication, and musical acoustics carried out at the University. The departments involved, with their principal acoustics faculty listed are Psychology (Randy L. Diehl, Catherine H. Echols, Peter MacNeilage, Dennis McFadden), Communication Sciences and Disorders (Craig A. Champlin, Jan Moore, Harvey M. Sussman), and Music (Russell F. Pinkston).

Dr. Blackstock expresses his appreciation to Elmer Hixson, Dennis McFadden and Chester McKinney for providing crucial information, and to Mark Hamilton for agreeing for me to lift a passage or two from his 1998 “White Paper” and for reviewing the ms.
Biomechanical Engineering
Contributed by Dr. Ron Barr

**Timeline:**
- **1966** - Started as a unit within the Department of Electrical Engineering when Dean McKetta appointed Eugene A. Ripperger of Engineering Mechanics as director of the Bio Engineering Laboratory to initiate the graduate program in Biomedical Engineering.
- **1969** - The Biomedical Engineering program, is established.
- **1970** - Program became an undergraduate option in engineering.
- **2002** - Biomedical Engineering becomes a separate department under Chairman Ken Diller

Within the Department of Mechanical Engineering the Biomedical Engineering program changes to Biomechanical Engineering

**Founding Faculty:** Dr. George B. Thurston, Professor Emeritus

**Description of Area:**

Biomechanical Engineering is the application of Mechanical Engineering science and technology to problems in medicine and biology. The student applies basic statics and dynamics to the human body. The program seeks to develop in the student an understanding of human anatomy and physiology from a human system perspective. Since the human body is usually the centerpiece or component of a Biomechanical Engineering enterprise, it is the interface between engineering and the human. Areas of application include: medical devices, medical instrumentation, research in medical physiology, cellular mechanics, materials, pharmaceuticals, musculoskeletal biomechanics, rehabilitation, and radiation cancer therapy. The mechanical engineer with a specialization in Biomechanical Engineering might be involved in the design of heart valves, blood pumps, prosthetic devices, gait analysis, methods of blood preservation, and thermal protective clothing. He/she might also develop robotic systems for surgical procedures, aided hearing systems, materials for implantation into the body, or sterile packaging. The Mechanical Engineering Degree plus the Biomechanical Engineering option can lead to the following professional activities: Mechanical Engineer, Clinical Engineer, Schools for Medical Professions, Graduate Studies in Engineering.

Biomechanical Engineering arose as an area after Biomedical Engineering split off from the Department of Mechanical Engineering to form its own department in 2002. It was started in the early seventies by Dr. George Thurston to offer a technical area in Mechanical Engineering for the then burgeoning field of Biomedical Engineering. Since then it has been both an undergraduate ME technical block as well as an ME graduate area. The interdisciplinary Biomedical Engineering (BME) Graduate Program was composed of faculty from Electrical Engineering, Mechanical Engineering and Chemical Engineering. It taught graduate courses under a common 385J title that were cross-listed amongst the departments. Both MS and PhD degrees were offered in BME. Dr. Lee Baker (EE) was Director of that BME Graduate Program for about 25 years during this era. Around 1998, Dr. Ken Diller took over the program and initiated efforts for it to become an undergraduate degree granting unit as well. The new BME Department was officially christened in Fall 2002. This then resulted in the technical area in Mechanical Engineering being called Biomechanical Engineering.
Some mechanical engineering faculty who work primarily in the Department of Mechanical Engineering continue to have ties to the newly created Department of Biomedical Engineering. Within the Department of Mechanical Engineering, Biomechanical Engineering remains a discipline of study.

Biomedical Engineering has been a program within the College of Engineering since 1969. Since that time, numerous PhD and Master’s students have gone on to take positions within academic institutions and in industry. In Fall 2001, Biomedical Engineering became a full academic department and in Fall 2002 began offering degrees at both the graduate and undergraduate level. The expansion of this program has allowed students and faculty to build interdisciplinary knowledge in the areas of medicine, molecular and cellular biology and engineering. Degree holders in Biomechanical Engineering can expect to find jobs in the orthopedics industry, in automobile companies crash tests divisions and in sports medicine.

**Location:** The Biomechanical Engineering area is housed in the Engineering Teaching Center II on the campus of The University of Texas at Austin.

**Biomechanical Engineering Faculty in 2003:**

**Ronald E. Barr**  
Computer Graphics Modeling; Biosignal Analysis; Biomechanics of Human Movement

**Shaochen Chen**  
Biomedical Micro- and Nano-Devices; Micro- and Nano-Scale Laser Processing of Biomaterials

**Kenneth R. Diller**  
Low-temperature biology; tissue banking; burn injury; computer vision.

**Benito Fernandez-Rodriguez**  
Modeling, Simulation and Control Design of Nonlinear Systems; Adaptive, Robust and Intelligent Control; System Identification and Diagnostics

**Mark F. Hamilton**  
Nonlinear Surface Waves; High-Intensity Ultrasonics; Numerical Modeling of Finite Amplitude Sound

**Raul G. Longoria**  
System Modeling and Analysis; Electromechanical Systems; Vehicle System Dynamics and Control

**Tess J. Moon**  
Mechanics of Materials and Materials Processing; Polymer Composites Processing and Structures; Electronics Packaging and Interconnects

**Richard R. Neptune**  
Musculoskeletal Modeling and Simulation of Human Movement; Neuromuscular Function and Adaptation; Sports Biomechanics and Equipment Design; Acute and Overuse Injury Mechanics; Rehabilitation Engineering

**Marcus Pandy**  
Computational Musculoskeletal Biomechanics

**Li Shi**  
Micro, Nano Optical/Thermal Sensors; Scanning Probe Microscopy for Characterization of Nano Structures

**S. V. Sreenivasan**  
Design of Ultra-Precision Machines; Nanostructure Fabrication Techniques; Design of Opto-Mechanical Systems; Robotics and Machine Theory; Biomechanics

**Delbert Tesar**  
Actuators; Motor, Brake, Sensor, and Electronic Interfaces; Systems Metrology and Modularity; Structural Design; Fault Tolerance and Condition-Based Maintenance; Robotics

**Related Research Activities/Labs:**

- Biomedical Engineering Society
- Center for Nano-Molecular Sciences and Technology
- ICMB - Institute for Cellular and Molecular Biology Learning Resources Center
- NIH Biotechnology Graduate Student Training Grant Program
- NSF-IGERT Optical Molecular Bio-Engineering Graduate Student Training Grant Program
- TICAM - Texas Institute for Computational and Applied Mathematics
- TMI - Texas Materials Institute
The modern Engineering Graphics paradigm can be labeled as “Art to Part.” An idea starts with a simple sketch that is quickly rendered into a solid computer model. The model can then be analyzed and physically prototyped directly from the computer data base.

The Engineering and Computer Graphics (ECG) area of Mechanical Engineering is a teaching and service area specializing in computer graphics and computer-aided design (CAD) technology as it pertains to engineering design. The area is responsible for instruction in the core courses, ME 302 and ME 210, and in the elective course, ME 352K. The area maintains the freshman graphics lab (FGL) and the freshman rapid prototyping (RP) lab. Faculty in the area are active in developing curriculum exercises in 3-D computer modeling, and participate professionally in the American Society for Engineering Education (ASEE).

Timeline:  1910 - School of Mechanical Drawing is created.
1912 - School of Mechanical Drawing becomes the School of Drawing.
1921 - School of Drawing becomes a department.
1968 - Department of Engineering Drawing is merged into the Department of Mechanical Engineering
1978 - UT ME Chairman, Dr. Grady Rylander, Jr. revives Drawing as Graphics.

Founding ME Faculty (modern era): Dr. Davor Juricic and Dr. Ronald E. Barr

Area Description:

Engineering Computer Graphics emerged from the School of Mechanical Drawing which was created in 1910. In 1912 the School of Mechanical Drawing became the School of Drawing. The School of Drawing became a department in 1921. After James D. McFarland, Chairman of the Department of Drawing retired in 1968, Engineering Drawing was reorganized into the Department of Mechanical Engineering. This addition of Drawing to the Department of Mechanical Engineering gave the department its first female faculty member in the form of Margaret R. Baker who was hired into the Department of Drawing in 1966. In time with the rise and advances of computer applications in rendering three-dimensional representations of designs, Drawing became Graphics.

In 1978, the Chairman of Mechanical Engineering, Dr. Grady Rylander, Jr., recruited two tenure-track faculty to revive the Graphics Area of Mechanical Engineering, which had been depleted from retirements. Dr. Davor Juricic was recruited from Stanford University as a Full Professor in January of that year, and Dr. Ronald Barr was recruited from Texas A & M as an Assistant Professor in September of that year. Their uniform mission was to bring Graphics into the computer-aided design era which was unfolding in industry in the late 1970’s. After careful study, the first computer graphics teaching laboratory on campus was opened in 1979 in Mechanical Engineering. The laboratory consisted of eight stand-alone Hewlett-Packard desktop computers running modular graphics software that was developed locally. During that era, no commercial computer-aided graphics software was available for educational purposes, so the Graphics Area faculty devised their own software units that they termed “Mini-CAD”.

In 1983, the Graphics Area, along with the Mechanical Engineering Department, moved into the new Engineering Teaching Center (ETC) building. Along with this new building came a sizable budget for equipment and other...
teaching facilities. A considerable investment was made in acquiring the Holguin Computer-Aided Drafting and Design (CADD) system, which was used for teaching the graphics courses during the 1980’s. This era saw the retirement of Ms. Margaret Baker, a long-time Associate professor in the Graphics Area and a guidance counselor in the Engineering Dean’s office. Other graphics faculty included Teaching Specialists Thomas Krueger, Wendell Deen, Charles Perkins, Laneda Miller, Mostafa Pirnia, and Billy Wood.

Through a series of NSF grants in the 1990’s, Juricic and Barr began transforming graphics from a 2-D drafting program to a 3-D solid modeling curriculum, which ultimately had a national influence. The seminal event was an NSF Symposium on “Modernization of the Engineering Design Graphics Curriculum”, which was held on the UT campus. For their early work in 3-D solid modeling curriculum development, Juricic and Barr received the ASEE Chester F. Carlson Award in 1993 for innovation in engineering education. Numerous papers were presented on the topic at ASEE meetings, and Barr and Juricic won several Best Paper awards for their work.

During the 1990’s, the Graphics Area experimented with several commercial CAD packages, including ME-30, AutoCAD, and Solid Works. A low-cost rapid prototyping lab was added to the graphics curriculum in 1996. In 1998, after hosting the 7th International Conference on Engineering Computer Graphics and Descriptive Geometry, Professor Juricic retired from active teaching, and was afforded the ‘Emeritus Professor’ title. In 1999, Barr received the ‘Distinguished Service Award’ from the Engineering Design Graphics Division of ASEE, the highest award that is bestowed on an engineering graphics faculty member in the United States. Barr continues as Coordinator of the Graphics Area as of this writing.

**Location:** The Engineering Computer Graphics Area is located in the Engineering Teaching Center II.

**Graphics Faculty in 2003:**

**Theodore A. Aanstoos**  
Engineering Design Graphics and Solid Modeling; Electromechanics; Professional Responsibility; Engineering Education; Freshman Seminar

**Ronald E. Barr**  
Computer Graphics Modeling; Biosignal Analysis; Biomechanics of Human Movement

**Thomas J. Krueger**  
Computer Graphics and Design; Computer Aided Design

**Mostafa Pirnia**  
Computer Graphics Modeling and Design

**Billy H. Wood**  
Computer Graphics and Design; Architectural Design; Solid Modeling

**Related Research Activities/Labs:**

American Society for Engineering Education (ASEE)
Manufacturing and Decision Systems Engineering is the use of resources (personnel, information, energy, materials and facilities) to make products that satisfy customer needs. Manufacturing and Decision Systems Engineering (MDSE), a broad-based multi-disciplinary activity in which unit manufacturing operations are integrated into a system, requires knowledge about unit processes and an understanding of the systems approach. Participating academic units in the multi-disciplinary graduate program in MDSE at the University of Texas at Austin include the Departments of Electrical and Computer Engineering, Mechanical Engineering, and Chemical Engineering within the College of Engineering and the Department of Management in the College of Business Administration.

**Date Created:** 2002

**Founding Faculty:** current instructors

**Description of Area:**
In response to major recent developments and changes in the needs of the national economic and industrial sectors, the Manufacturing & Decision Systems Engineering Program (MDSE) has been created and will be managed by the Department of Mechanical Engineering (ME). The MDSE Program began full operations in the Fall Semester of 2002.

**Changes in Economic and Industrial Sector Needs:**
Over the last several decades, the economy of the United States has seen a marked transformation from an economy based primarily on physical products and goods to an economy based on services. The service sector of the United States (US) Economy, either embodied in commercial enterprises solely providing service to individuals and corporations or embodied in “after-the-purchase” service, currently accounts for 80% of the U.S. Gross Domestic Product (GDP) and about 75% of the total employment of individuals in the U.S. Even with this dominance of the marketplace, the service sector is still the fastest growing component of the economy.

The service sector embodies many opportunities for improving quality and productivity in all service enterprises which include air and roadway transportation, logistics, maintenance, health care, insurance and financial services, retail, and hospitality.

The MDSE Program will embrace both the “traditional” areas of manufacturing and production and the new areas in both the service and manufacturing sectors of the economy. Existing areas that remain of significant importance include the study of traditional unit processes, production and inventory control, scheduling, project management, systems engineering, and manufacturing automation and assembly. Particular attention will be given to the connection between manufacturing automation and assembly processes and the growing science of robotics. In addition to providing education in these more traditional realms related to manufacturing, the MDSE Program will prepare highly qualified individuals to have significant impacts on the emerging opportunities for improvements both in the efficiency and productivity of the service sector and in nanomanufacturing.
Often described as the next “industrial revolution,” nanomanufacturing has captured the imaginations of academics, manufacturing leaders, and government and military funding agencies including the National Science Foundation (NSF) and Defense Advanced Research Projects Agency (DARPA). The MDSE Program will focus on both theoretical and experimental methodologies to answer the essential open questions that will allow for predictability, producibility, and productivity at the nanoscale level of manufacturing. The fruits of these research efforts will lead the way to successful commercialization and implementation in diverse arenas including coatings, electronic/ magnetic/ optical devices, structural components, energy storage/conversion technology and biological/chemical applications, to name just a few of the large number of possibilities.

While incorporating and building on established associated curricular and research strengths within ME and other Departments within the College of Engineering (COE) and the Graduate School of Business, the MDSE Program will become an international leader in fundamental and applied research, specifically focused on creating rapid and robust solutions for the entire business spectrum of the manufacturing and service industries. Rapid prototyping/manufacturing and real time decision-making techniques are examples of two areas where opportunities exist for cutting-edge research. MDSE will offer courses of study leading to both MS and PhD degrees. In the near future, MDSE will incorporate significant numbers of ME undergraduate students in ways that enhance their skills related to manufacturing and service methodologies. A significant interaction with the current undergraduate PROCEED project is a very likely enhancement to the MDSE program. Like the highly successful programs at Georgia Tech, MIT, Stanford and UC-Berkeley, whose focus is primarily on manufacturing, UT-Austin is well positioned for MDSE to grow into an outstanding program. Austin has a large high-tech manufacturing industry, and this industrial base will play a key role in MDSE. We will continually draw on industrial expertise and industrial needs in developing and evolving the program. In addition, the large industrial base makes UT-Austin and its many career opportunities an attractive choice for students.

The Manufacturing and Decision Systems area will offer both MS and PhD degrees.

**Location:** The Manufacturing and Decision Systems area is located in both the Engineering Teaching Center II and the McCombs School of Business at The University of Texas at Austin.

**Faculty in 2003 Associated with the Area:**

**Kenneth S. Ball**  
Computational Fluid Dynamics and Spectral Methods; Heat and Mass Transfer; Flow Instabilities; Transition and Turbulence

**Jonathan F. Bard**  
Vehicle Routing; Machine Scheduling; Hierarchical Optimization

**J. Wesley Barnes**  
Manufacturing Scheduling; Vehicle Routing; Applied Probability and Statistical Analysis

**Joseph J. Beaman**  
Freeform Fabrication; System Dynamics; Control

**David G. Bogard**  
Turbine Blade Cooling; Turbulence Structure and Drag Reduction; Thermal/Fluid Measurement Techniques

**David L. Bourell**  
Materials Processing; Mechanical Behavior of Materials; Powder Processing; Materials Selection

**Michael D. Bryant**  
Friction and Wear (Tribology); Mechatronics; Integrated Systems Design

**Shaochen Chen**  
Micro- and Nano-electro-mechanical Systems (MEMS and NEMS); Laser Micro- and Nano-manufacturing; Thermal/Fluid Transport in MEMS and NEMS

**Richard H. Crawford**  
Computer-aided Mechanical Design and Manufacturing; Geometric Modeling; Solid Freeform Fabrication

**Ofodike A. Ezekoye**  
Heat Transfer in Reacting Flows; Particle-gas Fluid Mechanics; Fire and Combustion Modeling

**Benito Fernandez-Rodriguez**  
Modeling, Simulation and Control Design of Nonlinear Systems; Adaptive, Robust and Intelligent Control; System Identification and Diagnostics

**John Hasenbein**  
Operations Research; Stochastic Models; Scheduling and Analysis of Queueing Networks

**Paul S. Ho**  
Electronic Packaging Materials and Processing; VLSI Interconnect Technology; Microelectronics Materials and Processing
John R. Howell
Radiative Energy Transfer; Heat Transfer in Energy Systems; Heat Transfer with Combined Modes

Desiderio Kovar
Mechanical Reliability of Ceramics; Low-Cost Alternatives to Composites; Materials Science and Engineering

Erhan Kutanoglu
Applied Operations Research; Supply Chain Management; Manufacturing and Transportation Logistics; Game Theoretic and Distributed Mechanisms (E-Commerce and Auctions)

Arumugam Manthiram

Glenn Y. Masada
Modeling Techniques for System Dynamics; Electric Generating Power Plant Dynamics and Control; Analysis of Solder Reflow and Chip Bonding Techniques

Tess J. Moon
Mechanics of Materials and Materials Processing; Polymer Composites Processing and Structures; Electronics Packaging and Interconnects

David P. Morton
Stochastic Programming; Large-Scale Optimization; Monte Carlo-based Optimization Algorithms

Elmira Popova
Stochastic Modeling of Manufacturing Systems; Reliability Analysis and Estimation; Bayesian Methods

Philip S. Schmidt
Microwave Regeneration of Adsorbents; Microwave and Radio-frequency-enhanced Drying; Electrotechnology Applications and Economics

S.V. Sreenivasan
Design of Ultra-Precision Machines; Nanostructure Fabrication Techniques; Design of Opto-Mechanical Systems; Robotics and Machine Theory; Biomechanics

Eric M. Taleff
High-temperature Deformation of Materials; Mechanical Properties; Light Alloys

Kristin L. Wood
Engineering Design Theory and Methodology; Product Design and Development; Solid Freeform Fabrication; Microelectromechanical Systems; Design for Manufacturing
New initiatives from the U.S. Government:
The Manufacturing & Decision Systems area is not alone in our recognition of a need for new efforts in the manufacturing and service sectors. In particular, the Division of Design, Manufacture and Industrial Innovation (DMII) of the National Science Foundation (NSF) supports fundamental research in manufacturing and engineering decision systems. In DMII’s September 2001 initiative, programs were divided as follows:

Manufacturing Process and Equipment Systems Programs:
- Manufacturing Machines and Equipment (MME)
- Materials Processing and Manufacturing (MPM)
- Nanomanufacturing (NM)

Engineering Decision Systems Programs:
- Engineering Design (ED)
- Operations Research (OR)
- Manufacturing Enterprise Systems (MES)
- Service Enterprise Engineering (SEE)

Previously, these NSF programs were designated: Design and Integration Engineering, Manufacturing Machines and Equipment, Operations Research and Production Systems and Material Processing and Manufacturing. Nanomanufacturing, Manufacturing Enterprise Systems and Service Enterprise Engineering are completely new programs.

The domain of nanoscale structures, typically sized below 100 nm, lies dimensionally between that of ordinary, macroscopic or mesoscale products and microdevices on the one hand, and single atoms or molecules on the other. The Nanomanufacturing Program supports innovative, fundamental research in the science and technology of fabrication of nanostructured materials, components, devices and systems, leading to potential breakthroughs in manufacturability of new industrial products, or in enabling useful services and new applications. The Manufacturing Enterprise Systems (MES) program addresses focused research on design, planning and control of operations in manufacturing enterprises, from shop floors to the associated procurement and distribution supply chains. The goal of research in MES is to extend the range of analytical and computational techniques addressed to these extended enterprise operations, and/or to advance novel models offering policy insight or the prospect of implementable solutions.

The Service Enterprise Engineering (SEE) program addresses focused research on design, planning and control of operations and processes in commercial service enterprises. Here, important research thrusts will extend the range of analytical and computational techniques addressed to these systems, and/or advance novel models offering policy insight or the prospect of implementable solutions. However, measurement and conceptualization of service processes as engineered systems may themselves represent a contribution in some applications.
Materials Science

Materials Science and Engineering involves understanding and tailoring of the relationships between the structure and processing of materials and their properties and performance. As a technical option area in Mechanical Engineering, the emphasis is on the microstructure of materials, the origin of physical and mechanical properties, and the role of processing.

Date Created:

1983: Created as the Center for Materials Science and Engineering
1998: Changed name to Texas Materials Institute

Description of Area:

The Materials Science and Engineering concentration in Mechanical Engineering encompasses graduate study in the fields of materials development, characterization, processing, and structure-property-performance relationships. Areas of study include ceramics, physical metallurgy, mechanical behavior, fuel cells, high-energy density batteries, new materials development, nanomaterials and nanotechnology, and microelectronics packaging. Extensive laboratory facilities are also available. These include scanning and transmission electron microscopes; X-ray scattering, metallography, laser processing, thermal analysis, and thin film characterization facilities; mechanical, electrical, magnetic, and electrochemical property measurement equipment. The Mechanical Engineering department is also a primary participant in the interdisciplinary Graduate Program in Materials Science and Engineering.

Contemporary developments and challenges in materials cut across the traditional lines of engineering and science. The Materials Science and Engineering program at The University of Texas at Austin has been designed to respond to these challenges by bringing together faculty from several departments in the Colleges of Engineering and Natural Sciences. The result is a program that offers breadth as well as flexibility in planning individual programs of graduate study to suit students’ interests and objectives. Theoretical and experimental research programs are available. A wide range of active research topics are pursued by faculty and students within the MS & E Program. Examples of some of these topic areas include: design, synthesis, characterization and fabrication of new or improved materials for structural, microelectronic, magnetic, dielectric and optical devices; nanostructure materials for mechanical, superconductor and optical applications; structural mechanics; and alternate methods of energy conversion and storage.

Applications include development of new lightweight, high-strength materials for automotive and aerospace applications, minimizing corrosion of pipe in sour oil wells, analyzing failures in microelectronics packages, developing and processing new superconducting materials, and selecting a bearing material with outstanding resistance to wear. Potential employers include the manufacturing sector, electrical and electronic equipment, aircraft and parts, machinery, scientific instruments, motor vehicles, fabricated metal products, and primary materials production.

The Materials Science and Engineering area offers both MS and PhD degrees.

Location:

The primary facilities are located on campus in the ten-story Engineering Teaching Center II and on the J.J. Pickle Research Campus. These resources offer everything from wood shops to electron microscopes, and microcomputers to an active teaching nuclear reactor.
Faculty in 2003 Associated with the Area:

David Bourell  
Materials Processing; Mechanical Behavior of Materials; Powder Processing; Materials Selection  

Paulo Ferreira  
Crystalline Defects and Solid-Solid Interfaces; Electron Microscopy; Displacive Phase Transformations; High-Tc Superconductor Materials; Applied Magnetic Field Effects on Materials Behavior; Processing-Microstructure-Properties Relationships; Nanomaterials  

John Goodenough  
High-Tc Copper-Oxide Superconductors; Narrow-band Phenomena in Solids; Ionic Conductors, Both Electrolytes and Insertion Compounds  

Paul Ho  
Electronic Packaging Materials and Processing; VLSI Interconnect Technology; Microelectronics Materials and Processing  

Desiderio Kovar  
Mechanical Reliability of Ceramics; Low Cost Alternatives to Composites; Materials Science and Engineering  

Arumugam Manthiram  

Llewellyn K. Rabenberg  
Materials Science, Electron Microscopy  

Kenneth Ralls  
Processing and Properties of Refractory Metal Alloys; Microstructural Analysis of Refractory Metal Alloys  

Juan Sanchez  
Computation and Modeling of Phase Diagrams; Magnetic Alloys and Magnetic Multilayers; Electronic and Thermodynamic Properties of Materials  

Michael Schmerling  
Materials Science  

Eric Taleff  
High-temperature Deformation of Materials; Mechanical Properties; Light Alloys  

Harovel Wheat  
Corrosion of Structural Materials; Environmental Degradation of Composite Materials; Corrosion of Steel-reinforced Concrete
Mechanical Systems and Design is the largest area of the Department of Mechanical Engineering. Mechanical Systems and Design utilizes modern analytical tools to design structures and systems associated with power plants, manufacturing machines, transport vehicles, robots, space stations, recycling, hazardous-waste management, military hardware, prosthetic devices and even toys for children. Today’s manufacturing processes utilize precision machine systems. The supporting technologies for these systems include machine tools, robotics, metrology, microelectronic systems, and human augmentation systems. Research in manufacturing processes also addresses several specific processes, including free-form fabrication with laser sintering, a process invented in this Department that enables computer-guided production of any three-dimensional object directly from a design database.

All engineering curricula have design courses for their specialty starting at the beginning of the degree plan. With the start of the first Mechanical Engineering degree program in 1914, two courses were listed with some of the content still included in the courses taught in 2002. Also included in these early courses were the design of buildings and their structural components. Drawing or drafting has always been included since kinematics and mechanical assembly are difficult to envision with only mathematics. The content of these first courses included strength and rigidity for frames and rails along with the specific design of connecting rods, shafting, bearing, springs, fly-wheels, belting and gearing. Mechanical has always concentrated on the design of machines using all of the material taught in mechanical engineering plus other departments. Thermodynamics, fluid mechanics and heat transfer are used in most designs.

The word “design” is defined: 1. to conceive and plan out in mind: 2. to devise for a specific function or end. In order to teach these concepts one needs to give the students a design assignment, usually in a laboratory, then supervise and lead them through the process.

A 15 hour block of courses was added to the new Mechanical Engineering Curriculum in 1960 specifically in Design. An M.E. student then had the option to select one of five options thus enabling him to specialize with some depth in the field of choice.

Many faculty have been involved in teaching design even though they were not specifically assigned to that group. In the years prior to the official area, faculty who taught design were Hal C. Weaver (1910-1929), Forrest E. Cardullo (1941-1915), and James A. Correll (1918-1919). Professor Alex Vallance (1921-1930) wrote a book with Venton L. Doughtie (1929-1970) which was widely used.

Even Professor Byron E. Short (1926-1978) taught design classes but was a specialist in thermodynamics and heat transfer.

After World War II, a number of new faculty were added to the Design group. Professor William J. Carter (1943-1978) was a specialist in computation, particularly vibration. Professor Leonard F. Kreislie (1943-1993) was a general machine design specialist who introduced the concept whereby small groups of students work on the design of real machines and systems as needed by industry using industrial support from outside U.T.


Professor Steven P. Nichols (1976-) added professional experience plus a Law degree to the general design experience. Senior Lecturer Alfred Traver (1978-) also added experience plus a Law degree thus helping to round out our need to broaden the design course. Professor Davor Juricic (1978-1998) was a specialist in Computer Graphics thus adding this new concept to U.T. before it was universally available elsewhere. Joseph J. Beaman added another dimension to design with his invention of free-form design directly from a computer.
Faculty in 2003:

Ted Aanstoos
Engineering Design Graphics and Solid Modeling, Electromechanics, Professional Responsibility, Engineering Education, Freshman Seminar

Ronald Barr
Computer Graphics Modeling, Biosignal Analysis, Biomechanics of Human Movement

Joseph Beaman
Freeform Fabrication, System Dynamics, Control

Michael Bryant
Friction and Wear (Tribology), Mechatronics, Integrated Systems Design

Rich Crawford
Computer-Aided Mechanical Design and Manufacturing, Geometric Modeling, Solid Freeform Fabrication

Eric Fahrenthold
Systems Dynamics, Impact Dynamics, Constitutive Modeling

Benito Fernandez-Rodriguez
Modeling, Simulation and Control Design of Nonlinear Systems, Adaptive, Robust and Intelligent Control, Systems Identification and Diagnostics

Mark Hamilton
Nonlinear Surface Waves, High Intensity Ultrasonics, Numerical Modeling of Finite Amplitude Sound

Raul Longoria
System Modeling and Analysis, Electromechanical Systems, Vehicle System Dynamics and Control

Glenn Masada
Modeling Techniques for System Dynamics, Electric Generating Power Plant Dynamics and Control, Analysis of Solder Reflow and Chip Bonding Techniques

Tess Moon
Mechanics of Materials and Materials Processing, Polymer Composites Processing and Structures, Electronics Packaging and Interconnects

Steven Nichols

S. V. Sreenivasan
Design of Ultra-Precision Machines, Nanostructure Fabrication Techniques, Design of Opto-Mechanical Systems, Robotics and Machine Theory, Biomechanics

Delbert Tesar
Actuators, Motor, Brake Sensor and Electronic Interfaces, Systems Metrology and Modularity, Structural Design, Fault Tolerance and Condition-Based Maintenance, Robotics

Alfred Traver
Computer-Aided Engineering, Construction Automation, Legal Aspects of Engineering Practice

Kristin Wood
Engineering Design Theory and Methodology, Product Design and Development, Solid Freeform Fabrication, Microelectromechanical Systems, Design for Manufacturing
Nuclear & Radiation Engineering

Researched in part by Taylor Green, Undergraduate Research Assistant BSME '04
Sources: NETL staff, Nuclear Program Faculty, Drs. Grady Rylander and Billy Koen, Commitment to Excellence by Earnest Gloyna, and the American Nuclear Society.

Timeline
1957 - Program began as part of the Physics Program.
1960 - Nuclear Engineering became part of Engineering Science.
1963 - Obtained TRIGA MARK I Fission Reactor when AEC donated a reactor to the College of Engineering. The College installed the TRIGA reactor in Taylor Hall.
1964 - The University granted its first degree in Nuclear Engineering.
1966 - Department of Mechanical Engineering began to gradually take over the program.
1988 - The Taylor Hall Reactor was shut down and parts were moved to the Balcones Research Center were they would be used to build an upgraded nuclear reactor.
1992 - The TRIGA MARK II fission reactor goes critical at the Pickle Research Center.

Founding Faculty: Jack Scanlan (Mechanical Engineering), Eugene Wissler (Chemical Engineering), Earnest Gloyna (Civil Engineering), and Arwin Dougal (Electrical Engineering).

Nuclear Engineering Teaching Lab Directors:
Jack Scanlan (1963-?)
Stephen Gage (Seventies - dates?)
Carl Beard (2000-2001)
Sheldon Landsberger (2003-)

The Nuclear Engineering Department began as part of the Physics department in 1957. The Physics Department had a non-critical uranium neutron source, which they used for experiments. In 1960 Nuclear Engineering became a part of Engineering Science, and it stayed there until 1970 when it became part of the Mechanical Engineering Department. During these years the nuclear engineering program was a multidisciplinary program involving the departments of chemical, mechanical, civil and electrical engineering. Faculty involved in the conception of the nuclear program at The University of Texas were Jack Scanlan (Mechanical), Eugene Wissler (Chemical), Earnest Gloyna (Civil) and Arwin Dougal (Electrical). As early as 1961 an application for a student section of the American Nuclear Society was made and a student branch was established at the University of Texas at Austin.

In 1963 with Carl Gatlin as the Mechanical Engineering Department Chairman, the Atomic Energy Commission purchased a TRIGA MARK I fission reactor for the College of Engineering and installed it in Taylor Hall. Jack A. Scanlan from the Department of Mechanical Engineering was the first director of the Nuclear Reactor Laboratory. The reactor contained Uranium 235, was capable of sustaining ten kilowatts in a steady state and could be pulsed to twenty-five million kilowatts for a few seconds. The reactor was used almost exclusively in developing nuclear coursework and graduate student experiments. It was one of only two in the country capable of such broad transient operation, and was unique in the Southwest. The University accepted its first doctoral candidate in nuclear engineering in 1962 and granted the first degree in 1964.

In 1968, Stephen Gage of the Department of Mechanical Engineering added fuel elements to the TRIGA reactor upgrading it from a steady state of 10 Kw to 250 Kw and under the supervision of the Atomic Energy Commission, installed a battery of cobalt 60 rods, totaling 8400 curie, for research in materials irradiation. Projects undertaken in the Taylor Hall reactor involved Neutron Activation Analysis, Cobalt irradiation, and student laboratories. Faculty involved with operating the Nuclear Reactor Laboratory in Taylor Hall were Stephen Gage, Billy Koen, Linn Draper, and Dong Nguyen. In 1988, the Taylor Hall reactor was shut down and disassembled.
Construction began on the NETL (Nuclear Engineering Teaching Laboratory) reactor in 1989 and the reactor went critical in 1992. Certain parts of the old TRIGA Reactor were moved out to the Pickle Research Campus and used to upgrade the old reactor at 250 KW to a new Mark II TRIGA reactor at 1100 KW. The NETL reactor is a TRIGA Mark II fission reactor. The facilities at NETL include: neutron radiography, a cold neutron source, NAA (neutron activation analysis), prompt gamma neutron activation analysis, isotope production, alpha beta and gamma spectroscopy, radiation handling areas, and a positron source. The courses taught at NETL are ME 397 nuclear and radiochemistry, ME 389R.1 nuclear engineering reactor laboratory, and ME 361F radiation and radiation protection.

Some major projects at NETL are funded by the INIE grant from the DOE (Department of Energy). INIE stands for the Innovation in Nuclear Infrastructure and Education. The INIE grant gives UT $3.5 million over the next five years.

NETL also collaborates with many programs at UT. These include:
- Middle Eastern studies for NAA on pottery.
- Thermal fluids group in Mechanical Engineering for nuclear power industry projects.
- Materials Engineering for radiation damage studies on electronics.
- Physics for conducting experiments on measuring the mass of a neutrino.
- Environmental Engineering for aerosol and soil studies.
- Marine science for studies of aerosol input into the Gulf of Mexico.
- Operations research for counter-terrorism.

**Faculty in 2003 Associated with the Area:**

**Carl Beard**
Radiation Transport; Nuclear Fuels; Nuclear Materials

**Steven Biegalski**
Nuclear Instrumentation; Neutron Radiography; Analysis of Environmental Media with Nuclear Methods; Modeling of Environmental Pathways; Reactor Operations and Reactor Safety Analysis

**William Charlton**
Nuclear Systems Modeling with Application to Nonproliferation and Nuclear Safeguards; Development and Application of Advanced Nuclear Analytical Techniques; Nuclear Data Measurement and Analysis

**Dale Klein**
Radioactive Waste Disposal; Thermal Analysis of Nuclear Shipping Containers; Nuclear Weapon Dismantlement

**To make improvements to our reactor. Some of these improvements are: positron source development, upgrade of cold neutron facility with a larger cooler, and cooperative education with Texas A&M and University of New Mexico.**

NETL collaborates with national labs, industry and other universities on many different projects. The different national laboratories NETL employees are working on projects which include: Sandia, Pantex, Pacific Northwest National Lab, Los Alamos, Oak Ridge, and Argonne National Laboratories. Industry collaborations are with South Texas Project, International Atomic Energy Agency, TXU Energy, Veridian Corporation, and Mantech Environmental Technology. University collaborations include: University of California Lawrence Livermore National Laboratory, National Academy for Nuclear Training, University of Illinois, and International Arctic Research Center – University of Alaska.
The fields of Operations Research and Industrial Engineering comprise a rich collection of analytic techniques that have been developed over the last 50 years to solve complex problems arising in all aspects of human activity. The scope of such problems can be as broad as designing the layout of a new manufacturing facility or as narrow as selecting a battery technology for an electric vehicle. Integral to the field is the study of problem formulation, mathematical modeling, computer implementation, and the wide range of analytic techniques used as building blocks. (Jon Bard)

**Date Created:** 1967

**Founding Faculty:** Charles Beightler, John Watt, Wilbur Muir, Bill Lesso, and Paul Jensen.

**Description of Area:**
The fields of operations research and industrial engineering comprise a rich collection of analytic techniques that have been developed over the last 50 years to solve complex problems arising in all aspects of human activity. The scope of such problems can be as broad as designing the layout of a new manufacturing facility or as narrow as selecting a battery technology for an electric vehicle. Integral to the field is the study of problem formulation, mathematical modeling, computer implementation and the wide range of analytic techniques used as building blocks.

A principal goal of the OR/IE graduate program is to provide the student with the educational basis for continued learning and to impart the fundamental skills necessary to function effectively as a professional. At the master’s level, we strive for a balance of theory and applications, relying heavily on the accumulated years of experience our faculty bring to the classroom. At the PhD level, the emphasis shifts to research, enabling students to extend their field of knowledge and to develop analytic techniques that will serve them in their academic, industrial, or governmental careers. Although rigor is the mainstay at all levels, sufficient flexibility is built into the program to accommodate the needs and interests of most students. With a deep concern for the future, we feel that this formula works best for our students, our faculty and our industrial partners.

The program was created to fill a growing need for engineers and analysts in industry who could design manufacturing facilities and coordinate their operations. In addition, there was a defined need for analysts and computer specialists who could bring a quantitative perspective to service organizations and government agencies. Students in this area are prepared for jobs in such fields as project management, systems analysis, operations and production planning, software development, business analysis, and financial analysis.

The Operations Research and Industrial Engineering area offers both MS and PhD degrees.

**Location:** Utilizes the Mechanical Engineering Learning Resource Center and the Mechanical Engineering High Performance Computing Lab, both of which are located in ETC II.
History of the Operations Research Group

The current era of the Operations Research group began in 1967. Prior to this time it was not a formal area and mainly offered courses in the traditional discipline of Industrial Engineering. Prior to 1966, there were four faculty members. Charles S. Beightler, John Watt, Wilbur Muir and a fourth member. (Does anyone know his name?)

In 1966 Muir and the fourth person left and joined the Industrial Engineering of Texas A&M. Also at this time, the Coordinating Board authorized the department to confer a Masters of Science in Operations Research degree. This may have been the first non-traditional degree authorized for the college. So for the academic year, there were only two faculty members in the group.

In 1967, two new members joined the faculty: William G. Lesso and Paul A. Jensen. With the new designated degree, the courses offerings were expanded – over the next several years – to a full degree program. Around this time, the ‘block option’ approach was adopted by the department. Don Phillips was added to the OR Group. The OR block soon became the most popular option and the largest of the five or six that existed at the time. Also, the program began to attract military officers who were sent here by their commands for Masters and PhD degree. At one point in time there were over six graduates from our program on the faculty at the United States Air Force Academy and for more than a decade there were always at least two from our graduate program there. The US Army starting in 1968 would send one officer after another for the MS in OR degree.

In the 1970's, Gerald R. Wagner joined the faculty and introduced a series of courses in Applied Statistics and Information Systems that attached many graduate students, especially the military officers. (Later, Wagner started his own company, Execucom, and when it grew to have over two hundred employees, left the faculty.)

Faculty of the OR Group have distinguished themselves with a couple of prestigious awards. Charles S. Beightler along with Doug Wilde won the highest award of the Operations Research Society of America for their book, Foundations of Optimization. Paul A. Jensen and J. Wesley Barnes won the top award of the American Institute of Industrial Engineers for their book, Networks.

Faculty in 2003 Associated with the Area:

Jonathan Bard
Vehicle Routing; Machine Scheduling; Hierarchical Organization

Wesley Barnes
Manufacturing Scheduling; Vehicle Routing; Applied Probability and Statistical Analysis

Melba Crawford
Digital Image Processing; Statistical Analysis of Time Series; Remote Sensing Applications for Optical and Radar Imagry

John Hasenbein
Operations Research; Stochastic Models; Scheduling and Analysis of Queueing Networks

Paul Jensen
Network Flow Optimization; Decisions with Uncertainty; Computation Methods in Manufacturing

Erhan Kutanoglu
Applied Operations Research; Supply Chain Management; Manufacturing and Transportation Logistics; Game Theoretic and Distributed Mechanisms (E-Commerce and Auctions)

David Morton
Stochastic Programming; Large-Scale Optimization; Monte Carlo-based Optimization Algorithms

Elmira Popova
Stochastic Modeling of Manufacturing; Reliability Analysis and Estimation; Bayesian Methods

Related Research Activities/Labs:

Omega Rho
INFORMS (Institute for Operations Research and the Management Sciences)
IIE (Institute of Industrial Engineers)
Thermal Fluid Systems

Compiled from input from Jack Howell and Gary Vliet

Thermal fluids is the study of energy and fluid flows in engineer systems, generally comprised of the studies of thermodynamics, heat transfer and fluid mechanics.

Date Created: related courses as early as 1903

Founding Faculty: Byron Short, Carl Eckhardt, Howard Brown

Description of Area:
The Thermal/Fluid Systems Group, TFS, is a major technical area within the Mechanical Engineering Department. As of 2003, research within this group covers the following topics: dielectric and conventional drying, combustion, IC engines, gas turbine blade cooling, turbulent transport, drag reduction, thermal radiation in absorbing/emitting/scattering media, HVAC, energy management and conservation, numerical simulation of turbulence, viscous and hypersonic flow, laser measurement techniques, electronics cooling, interfacial heat and mass transport, liquid metal magnetohydrodynamics, thermal analysis of manufacturing processes, solar radiation measurement, solar energy applications, and energy conversion.

Several of the professors associated with the TFS Group are also associated with other technical areas. These areas include nuclear engineering, engineering acoustics, and biomedical engineering. Nuclear engineering research includes radiation transport and measurement, health/medical physics, fusion neutronics, radiation shielding, radioactive waste disposal, nuclear reactor reliability, and thermal hydraulics. The primary contact for information on the nuclear engineering area is Dr. Sheldon Landsberger. Engineering acoustics research focuses primarily on nonlinear acoustics. The primary contact for information on the engineering acoustics area is Professor David Blackstock. Biomechanical research focuses primarily on freeze/burn tissue damage, blood flow, cryopreservation, and digital image processing. The primary contact for information on the biomedical engineering area is Professor Barr.

Today’s program seeks to accomplish strong graduate and undergraduate education in the major aspects of thermal fluids, and cutting edge research in both the engineering science and application of thermal fluids as well as innovative education approaches. (howell) Continued innovations in courses and curriculum, interaction with the national and international research and educational community to identify and pursue important research and educational topics is strongly encouraged. Graduates with a degree in Thermal Fluids can expect to find employment in thermal management of computer systems, utility energy systems, propulsion systems, automotive and aircraft engine design, air-conditioning; heating equipment design, industrial furnaces/heaters and heat exchangers, as well as a wide variety of renewable energy systems.

The Thermal Fluids area offers both MS and PhD degrees.

Location: Utilizes the following labs which are housed in ETC II: General Motor’s Combustion Research Lab, the Heat Transfer Lab, the Liquid Metals Lab, the Nonlinear Acoustics Lab, the Solar Energy Lab, and the Turbulence and Turbine Cooling Research Lab. The Center for Energy Studies and the Nuclear Engineering Teaching Lab are housed at the Pickle Research Center.
Faculty in 2003 Associated with the Area:

Kenneth S. Ball
Computational Fluid Dynamics and Heat Transfer; Turbulence; Transport Phenomena in Manufacturing and Materials Processing

David T. Blackstock
Acoustics; Fluid Mechanics

David G. Bogard
Fluid Mechanics, Experimental Methods

Shaochen Chen
Micro- and Nano-electro-mechanical Systems (MEMS and NEMS); Laser Micro- and Nano-manufacturing; Thermal/Fluid Transport in MEMS and NEMS

Michael E. Crawford
Heat and Mass Transfer; Turbulence Modeling; Gas Turbine Cooling

Janet L. Elzey
Combustion; Fluid Dynamics

Ofodiike A. Ezekoye
Heat Transfer in Combustion Systems; Fire; Incineration, I.C. Engines; Aerosol-Acoustics

Matthew J. Hall
Engine Combustion Processes; Thermodynamics

John R. Howell
Radiation Heat Transfer Methods and Fundamentals; Applications of Radiation to Industrial Processes

Jerold W. Jones
Thermodynamics; Design of Thermal Systems; Building Energy Systems

Thomas Kehne
Energy Conservation; Design of Thermal Systems; Second Law Analysis

Dale E. Klein
Radioactive Waste Disposal; Thermal Analysis of Nuclear Shipping Containers; Nuclear Weapon Dismantlement

Ronald D. Matthews
Combustion

Ronald L. Panton
Fluid Dynamics; Thermodynamics; Applied Mechanics; Perturbation Methods; Heat Transfer; Acoustics

Philip S. Schmidt
Heat and Mass Transfer; Dielectric Heating; Industrial Process Efficiency

Li Shi
Thermal Transport and Cooling of Micro-Nano Electronics; Micro-Nano Biomedical/Optical/Thermal Sensors; Scanning Probe Microscopy Characterization of Nanostructures

Gary C. Vliet
Heat and Mass Transfer; Solar Energy; Energy Systems

Dennis E. Wilson
Thermal Fluid Mechanics

Related Research Activities/Labs:
General Motor’s Combustion Research Laboratory
Heat Transfer Laboratory
Liquid Metals Laboratory
Nonlinear Acoustics Laboratory
Solar Energy Laboratory
Turbulence and Turbine Cooling Research Laboratory
Center for Energy Studies
Nuclear Engineering Teaching Laboratory
PROCEED Laboratories
Appendix G

2003 Research Groups & Laboratories

Laboratory for Freeform Fabrication

The Laboratory for Freeform Fabrication seeks to develop and disseminate processes that enable exceptional improvement in the manufacture and maintenance of geometrically and functionally complex objects. These objects can have spatially varying materials and microstructures oversize ranges from the nano- to the macro scale. This is achieved by precise application of energy and materials in space and time. Measures of improvements are the introduction of novel products and higher quality existing products more quickly and economically, with positive impact on the environment. Affiliated ME Departmental faculty are: Joseph J. Beaman, David L. Bourell, Richard H. Crawford, and Kristin L. Wood.

Combustion Research Group

a part of the Thermal/Fluid Systems Area. Affiliated ME Departmental faculty are: Janet L. Elzey, Ofoideke A. Ezekoye, Matthew J. Hall, and Ronald D. Matthews.

Highway Noise Control

focuses on highway noise barriers and tire/pavement interaction noise. Affiliated ME Departmental faculty are: David T. Blackstock and Mark F. Hamilton.

Graphics Lab

Affiliated ME Departmental faculty are: Ronald E. Barr and Thomas J. Krueger.

IMPACT Lab

studies materials processing and manufacturing methods to enable industry to make their processes: Better, Greener, Faster, & Cheaper. Detailed modeling and extensive experimentation are used to develop a phenomenological understanding of various processes for enhanced process control and optimization. Affiliated ME Departmental faculty are: Tess Moon.

MAD Lab

MANUFACTURING AND DESIGN (MAD) LAB - The MAD-Lab endeavors to improve manufacturing and engineering design through the application of systematic design methodologies and the development of computer-based design tools. Affiliated ME Departmental faculty are: Richard Crawford, Kristin L. Wood, Matthew I. Campbell, and David C. Thompson.

Neuro Engineering Research & Development Lab

NERDLab's research addresses the development of new neural network architectures and learning algorithms, and the application of neural networks to system identification of nonlinear dynamic systems, adaptive control, intelligent control, fault diagnostics, optimization, knowledge representation, reverse engineering, and precision machining. Affiliated ME Departmental faculty are: Benito Fernandez-Rodriguez.

Robotics Research Group

The Robotics Research Group represents over 30 years of concentration on the design, test and operation of manipulator systems. The program focuses on production of modular systems which exhibit advanced performance at reduced costs and whose architecture matches that of today's computers, allowing rapid repairs and reduced threat of obsolescence. Affiliated ME Departmental faculty are: Delbert Tesar.
Nuclear Engineering Teaching Lab

The Nuclear Engineering Teaching Laboratory enables students to study the operation of a fission reactor through its full cycle - start-up through shutdown - and offers the opportunity for graduate student research. The wide range of experimental facilities available for teaching and research features modular electronic components for various radioactive detection and analysis. These components include a multi-channel analyzer and a microcomputer. Equipment available for use in the Nuclear Engineering Teaching Lab includes the following:

TRIGA Mark I Thermal Fission reactor at a steady state power level of 250 kw and pulsed power of 250 Ms;
1000 curie cobalt-60 irradiator;
14MeV Texas Nuclear neutron generator;
Isotropic neutron sources: $^{252}$Cf and PuBe$_6$;
HpGe gamma-ray spectroscopy data acquisition system;
Si(Li) energy dispersive x-ray fluorescence;
Subcritical core and reflector assembly;
Portable industrial x-ray source.

The Director is Dr. Sheldon Landsberger.

Solar Energy Laboratory

The Solar Energy Laboratory was established in 1982 and includes space and equipment for solar energy related projects, and research. Affiliated ME Departmental faculty are: Gary C. Vliet.
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Appendix H

Student Organizations Related to Mechanical Engineering

American Society of Mechanical Engineers
http://asme.me.utexas.edu/
Faculty Advisor: ALFRED TRAVER

A 125,000 member organization, ASME conducts one of the world’s largest technical publishing operations, holds some 30 technical conferences and 200 professional development courses each year, and sets many industrial and manufacturing standards. Founded in 1880 as the American Society of Mechanical Engineers, today ASME International is a nonprofit educational and technical organization serving a worldwide membership. ASME’s vision is to be the premier organization for promoting the art, science and practice of mechanical engineering throughout the world. The mission is to promote and enhance the technical competency and professional well-being of our members, and through quality programs and activities in mechanical engineering, better enable its practitioners to contribute to the well-being of humankind.

Pi Tau Sigma
http://nesc.me.utexas.edu/~pts/
Faculty Advisor: GARY VLIET

Pi Tau Sigma is the National Honorary Mechanical Engineering Society and is a member of the Association of College Honor Societies. With 150 chapters installed, there are chapters at universities in almost every state of the United States.

Society of Automotive Engineers
http://nesc.me.utexas.edu/~sae/

Faculty Advisor: RON MATTHEWS
The Society of Automotive Engineers is one of the few professional engineering societies whose membership represents practically every engineering and engineering-science discipline. Members combine their specialized abilities to further the research, development, design, manufacture, and utilization of vehicles which operate on land and water, in air and space. One of the rewards of any professional education is the opportunity to apply the theoretical knowledge of several disciplines to the solution of real-life problems and challenges. Each year SAE sections and student chapters sponsor student design competitions. These events offer a chance to apply textbook knowledge of engineering -and a lot of ingenuity, imagination, and teamwork- to produce a workable automotive product. Participation in competitions, meetings, and international conferences gives SAE student members the opportunity to interact with engineers from their area and around the world. These associations can result in career opportunities that, otherwise, might not be available and are vital after graduation to land that first job. SAE membership says your interested in your continued professional development and the interests of the field of engineering, too.
American Nuclear Society
http://www.me.utexas.edu/~ans/
Faculty Advisor: SHELDON LANDSBERGER

The American Nuclear Society is an international not-for-profit organization consisting of more than 17,000 engineers, scientists, educators, students and others with nuclear related interests. These individuals represent more than 1,600 corporations, educational institutions, and government agencies - approximately 1,200 members live overseas in 40 countries. The Society's main objective is to promote the advancement of engineering and science relating to the atomic nucleus, and of allied sciences and arts. Other purposes are to integrate the many nuclear science and technology disciplines, encourage research, establish scholarships, disseminate information, hold meetings for the presentation and discussion of scientific and technical papers, and cooperate with government agencies, educational institutions, and other organizations having similar purposes.

American Society for Engineering Education
http://uts.cc.utexas.edu/~asee/
Faculty Advisor: RON BARR

ASEE, the American Society for Engineering Education, is a national organization which strives to improve and advance education in engineering and engineering technology. It does so by promoting excellence in instruction, research, public service, and practice; exercising worldwide leadership; fostering the technological education of society; and providing quality products and services to members. The UT student chapter of ASEE has been functioning for almost four years. UT Mechanical Engineering is one of the first student chapters of ASEE, since the concept of such chapters was only recently introduced by the organization. The chapter has about 40 members, who are graduate students or postdoctoral researchers from the College of Engineering at the University of Texas at Austin. The primary purposes of the student chapter are to encourage students to consider careers in academia, to arrange regular mentoring between students and faculty, to enhance the teaching and representation skills of prospective educators, to develop the skills needed to establish and lead a research program and to assist students in their search for academic positions.
Appendix I

FEW: Future Engineering Women (circa 1969)

Me?

an Engineer?
It’s a very simple to...
# Undergraduate Enrollment

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*1976-77 Mechanical Engineering Annual Report, p.23  
**1980 Annual Report prepared by Leonard Kreisle, p.1  
***1989-90 Mechanical Engineering Department Annual Report, p.17  
****1993-94 Mechanical Engineering Department Annual Report, p. 38  
*****2001-02 Mechanical Engineering Department Annual Report, p. 3  
******Office of Institutional Research
UT Mechanical Engineering

Undergraduate Enrollment: Last 37 Years

*1976-77 Mechanical Engineering Annual Report, p.23
**1980 Annual Report prepared by Leonardt Kreisle, p.1
***1989-90 Mechanical Engineering Department Annual Report, p.17
****1993-94 Mechanical Engineering Department Annual Report, p. 38
*****2001-02 Mechanical Engineering Department Annual Report, p. 3
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Sources: Commitment to Excellence by Richard McCaslin and Dean Earnest Gloyna, pp. 270-273.
*Source Information for BS, MS and PhD Degrees is listed on the following pages.
****2001-2002 UT ME Annual Report p. 5 and Department Data Kept on File.
*****UT Office of Institutional Research [online]
Citations for ME Degrees Conferred

Books used:
Degrees Conferred For 1915-1956
Degrees Conferred For 1957-1963
Degrees Conferred For 1964-1969
Degrees Conferred For 1970-1972
Degrees Conferred For 1973-1975
Degrees Conferred For 1976-1978

This is where I got all the information for just the PhD Degrees, except for the years 1943-1947 (those years were gotten elsewhere in the Red books).

(Red Books)
- used for the BS and MS degrees as well as for the curricula sheets.
- the red books are a compilation of different catalogues (for instance, the General Information Catalogue, Graduate Catalogue, College of Engineering Catalogue, etc.) Each citation will indicate the proper Catalogue name.

BS and MS degree sources are listed first. PhD degree sources follow.

BS and MS Degree Sources
The University of Texas at Austin, University of Texas Catalogue, 1919-20, (For the year 1919), “Catalogue of The University of Texas, 1919-1920, University of Texas Bulletin, No. 2025,” May 1, 1920, pp. 328 (MS-none listed), 332 (BS).

The University of Texas at Austin, University of Texas Catalogue, 1920-21, (For the year 1920), “Catalogue of The University of Texas, 1920-1921, With Announcements for 1921-1922, University of Texas Bulletin, No. 2125,” May 1, 1921, pp. 364 (MS-none listed), 370 (BS).

The University of Texas at Austin, University of Texas Catalogue, 1921-22, (For the year 1921), “Catalogue of The University of Texas, 1921-1922, With Announcements For 1922-1923, University of Texas Bulletin, No. 2217,” May 1, 1922, pp. 373 (MS-none listed), 379 (BS).

The University of Texas at Austin, University of Texas Catalogue, 1922-23, (For the year 1922), “Catalogue of The University of Texas, 1922-1923, With Announcements for 1923-1924, University of Texas Bulletin, No. 2317,” May 1, 1923, pp. 396 (MS), 397 (BS).

The University of Texas at Austin, University of Texas Catalogue, 1923-24, (For the year 1923), “Catalogue of The University of Texas, 1923-1924, With Announcements for 1924-1925, University of Texas Bulletin, No. 2417,” May 1, 1924, pp. 268 (MS-none found), 269 (BS).

The University of Texas at Austin, University of Texas Catalogue, 1924-25, (For the year 1924), “University of Texas Bulletin, No. 2517, With Announcements for 1925-1926,” May 1, 1925, p. 283 (for BS, MS-none listed).

The University of Texas at Austin, University of Texas Catalogue, 1925-26, (For the year 1925), “Catalogue of The University of Texas, 1925-1926, With Announcements for 1926-1927, University of Texas Bulletin, No. 2617,” May 1, 1926, pp. 284 (MS-none found), 285 (BS).

The University of Texas at Austin, University of Texas Catalogue, 1926-27, (For the year 1926), “Catalogue of the University of Texas, 1926-1927, With Announcements for 1927-1928, University of Texas Bulletin, No. 2717,” May 1, 1927, pp.303 (MS), 312 (BS).

The University of Texas at Austin, University of Texas Catalogue, 1927-28, (For the year 1927), “Catalogue of the University of Texas, 1927-1928, With Announcements for 1928-1929, Main University, Medical Branch, College of Mines and Metallurgy, University of Texas Bulletin, No. 2817,” May 1, 1928, pp. 343 (MS-none listed), 344 (BS).

The University of Texas at Austin, University of Texas Catalogue, 1928-29, (For the year 1928), “Catalogue of the University of Texas, 1928-1929, With Announcements for 1929-1930, Main University, Medical Branch, College of Mines and Metallurgy, University of Texas Bulletin, No. 2917,” May 1, 1929, pp. 351 (MS), 359 (BS).
The University of Texas at Austin, *University of Texas Catalogue, 1929-30*, (For the year 1929), “Catalogue Number, Part I: General Information, Main University, 1929-1930, With Announcements for 1930-1931, The University of Texas Bulletin, No. 3013,” April 1, 1930, pp. 77 (MS), 78 (BS).

The University of Texas at Austin, *University of Texas Catalogue, 1930-31*, (For the year 1930), “Catalogue Number, Part V: General Information, Main University, 1930-1931, With Announcements for 1931-1932, The University of Texas Bulletin, No. 3116,” April 22, 1931, pp. 229 (MS) and 230 (BS).


The University of Texas at Austin, *University of Texas Catalogue, 1932-33*, (For the year 1932), “Catalogue Number, Part V: General Information, Main University (Including the Handbook for the Guidance of Students), 1933-1934 and 1934-1935, The University of Texas Bulletin, No. 3316,” April 22, 1933, pp. 67 (MS), 68 (BS).


The University of Texas at Austin, *The University of Texas Bulletin; No. 3639: October 15, 1936; Report of the Registrar; 1935-1936*, p. 7


The University of Texas at Austin, *The University of Texas Catalogue, 1939-40*, (For the year 1939), “Catalogue Number, Part V: General Information, Main University (Including the Handbook for the Guidance of Students), For 1940-1941, The University of Texas Publication, No. 4016,” April 22, 1940, pp. 84 (MS), 85 (BS).

The University of Texas at Austin, *The University of Texas Catalogue, 1940-41*, (For the year 1940), “General Information, Main University, Catalogue Number: Part V (Including the Handbook for the Guidance of Students), For 1941-1942, The University of Texas Publication, No. 4116,” April 22, 1941, pp. 90 (MS), 91 (BS).

The University of Texas at Austin, *The University of Texas Catalogue, 1941-42*, (For the year 1941), “General Information, Main University, Catalogue Number: Part V, 1942-1943, The University of Texas Publication, No. 4216,” April 22, 1942, pp. 95 (MS), 96 (BS).

The University of Texas at Austin, *The University of Texas Catalogue, 1942-43*, (For the year 1942), “General Information, Main University, Catalogue Number: Part V, 1943-1944, The University of Texas Publication, No. 4316,” April 22, 1943, pp. 103 (MS), 104 (BS).

The University of Texas at Austin, *The University of Texas Catalogue, 1943-44*, (For the year 1943), “General Information, Main University, Catalogue Number: Part V, 1944-1945, The University of Texas Publication, No. 4416” April 22, 1944, pp. 101 (MS), 102 (BS).

The University of Texas at Austin, *The University of Texas Catalogue, 1944-45*, (For the year 1944), “General Information, Main University, Catalogue Number: Part V, 1945-1946, The University of Texas Publication, No. 4516,” April 22, 1945, pp. 103 (MS), 104 (BS).
The University of Texas at Austin, The University of Texas Catalogue, 1945-46, (For the year 1945), “General Information, Main University, Catalogue Number: Part V, 1946-1947, The University of Texas Publication, No. 4616,” April 22, 1946, pp. 117 (MS), 118 (BS).

The University of Texas at Austin, The University of Texas Catalogue, 1946-47, (For the year 1946), “General Information, Main University, Catalogue Number: Part V, 1947-1948, The University of Texas Publication, No. 4716,” April 22, 1947, pp. 120 (MS), 121 (BS).


The University of Texas at Austin, The University of Texas Catalogue, 1948-49, (For the year 1948), “General Information, Main University, Catalogue Number: Part V, 1949-1950, The University of Texas Publication, No. 4907,” April 1, 1949, pp. 125 (MS), 126 (BS).

The University of Texas at Austin, The University of Texas Catalogue, 1949-50, (For the year 1949), “General Information, Main University, Catalogue Number: Part V, 1950-1951, The University of Texas Publication, No. 5013,” July 1, 1950, pp. 141 (MS), 142 (BS).

The University of Texas at Austin, The University of Texas Catalogue, 1950-51, (For the year 1950), “General Information, Main University, Catalogue Number: Part V, 1951-1952, The University of Texas Publication, No. 5108,” April 15, 1951, pp. 103 (MS), 104 (BS).


The University of Texas at Austin, The University of Texas Catalogue, 1956-57, (For the year 1956), “General Information, Main University, 1957-1958, Catalogue Number: Part V, The University of Texas Publication, Number 5708,” April 15, 1957, pp. 116 (MS), 117 (BS).

The University of Texas at Austin, The University of Texas Catalogue, 1957-58, With Announcements For 1958-1959, (For the year 1957), “General Information, Main University, 1958-1959, Catalogue Number: Part V, The University of Texas Publication, Number 5808,” April 15, 1958, pp. 117 (MS), 118 (BS).

The University of Texas at Austin, The University of Texas Catalogue, 1959-60, (For the year 1958), “General Information, Main University, 1959-1960, Catalogue Number: Part V, The University of Texas Publication, Number 5908,” April 15, 1959, pp. 125 (MS), 126 (BS).


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The University of Texas at Austin, *The University of Texas Catalogues, 1962-63*, (For the year 1961), "General Information, Main University, 1962-1963, Catalogue Number: Part V, The University of Texas Publication, Number 6208," April 15, 1962, pp. 128 (MS), 129 (BS).


The University of Texas at Austin, *The University of Texas Catalogue, 1972-73*, (For the year 1971), "The University of Texas at Austin, General Information, 1972-1973, The University of Texas Publication, Number 7216," August 15, 1972, pp. 188 (MS), 190 (BS).


The University of Texas at Austin, *The University of Texas Catalogue, 1974-75*, (For the year 1973), "The University of Texas at Austin, General Information, 1974-1975, The University of Texas Publication, Number 7413," July 1, 1974, pp. 190 (MS), 191 (BS).

The University of Texas at Austin, *The University of Texas Catalogue, 1975-76*, (For the year 1974), "The University of Texas at Austin, General Information, 1975-1976, The University of Texas Publication, Number 7515," August 1, 1975, pp. 190 (MS), 192 (BS).
The University of Texas at Austin, *The University of Texas Catalogue, 1976-77*, (For the year 1975), “The University of Texas at Austin, General Information, 1976-1977, The University of Texas Publication, Number 7615,” August 1, 1976, pp. 199 (MS), 201 (BS).


Note: For the years 1978-2002, source information for BS and MS degrees conferred in Mechanical Engineering is shown on second page of this appendix.

**PhD Degree Sources**

The University of Texas at Austin, *Degrees Conferred For 1915-1956*, (For the years 1922-1943), “Doctoral Degrees Conferred, The Graduate School, The University of Texas, 1915-1943, The University of Texas Publication, No. 4417,” May 1, 1944, pp. 5-41, 43.


The University of Texas at Austin, *Degrees Conferred For 1915-1956*, (For the year 1949), “Degrees Conferred at The University of Texas in 1948 and 1949, The University of Texas Publication, No. 5113,” July 1, 1951, pp. 78-83 (none listed).

The University of Texas at Austin, *Degrees Conferred For 1915-1956*, (For the year 1950), “Degrees Conferred at The University of Texas in 1950, The University of Texas Publication, No. 5119,” October 1, 1951, p. 58.

The University of Texas at Austin, *Degrees Conferred For 1915-1956*, (For the year 1951), “Degrees Conferred at The University of Texas in 1951, The University of Texas Publication, No. 5120,” October 15, 1951, pp. 53-60 (none listed).


The University of Texas at Austin, *Degrees Conferred For 1915-1956*, (For the year 1953), “Degrees Conferred at The University of Texas in 1953, The University of Texas Publication, No. 5320,” October 15, 1953, pp. 46-54 (none listed).


Note: For the years 1978-2002, source information for PhD's conferred in Mechanical Engineering is shown on second page of this appendix.
# Distinguished ME Graduates

<table>
<thead>
<tr>
<th>Year of Award</th>
<th>Name</th>
<th>Year of UT ME Degree</th>
</tr>
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<tbody>
<tr>
<td>1961</td>
<td>William C. Cawthon</td>
<td>MSME 1947</td>
</tr>
<tr>
<td>1961</td>
<td>Carol L. Orr</td>
<td>BSME 1919</td>
</tr>
<tr>
<td>1964</td>
<td>Joe J. King</td>
<td>BSME 1925</td>
</tr>
<tr>
<td>1966</td>
<td>Jerry W. Brougher</td>
<td>BSME 1952</td>
</tr>
<tr>
<td>1966</td>
<td>Maurice N. Dannenbaum</td>
<td>BSME 1919</td>
</tr>
<tr>
<td>1967</td>
<td>George P. Hill</td>
<td>BSME 1922</td>
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<tr>
<td>1971</td>
<td>Louis F. Davis</td>
<td>BSME 1934</td>
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<tr>
<td>1977</td>
<td>George A. Helland, Jr.</td>
<td>BSME 1959</td>
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<tr>
<td>1978</td>
<td>Frank W. McBee, Jr.</td>
<td>BSME 1947, MSME 1950</td>
</tr>
<tr>
<td>1980</td>
<td>Patrick O. Braden</td>
<td>BSME 1954, PHD ME 1961</td>
</tr>
<tr>
<td>1984</td>
<td>Calvin D. Sholtess</td>
<td>BSME 1950</td>
</tr>
<tr>
<td>1985</td>
<td>Jerry P. D’Arcy</td>
<td>BSME 1956, PHD ME 1973</td>
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<tr>
<td>1989</td>
<td>H. Grady Rylanter, Jr.</td>
<td>BSME 1943, MSME 1952</td>
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<td>1990</td>
<td>Edward M. Galle, P.E.</td>
<td>BSME 1950</td>
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<td>1992</td>
<td>Bill Boren</td>
<td>BSME 1949</td>
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<td>1995</td>
<td>Donald Douglass</td>
<td>BSME 1954</td>
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<td>1996</td>
<td>Tom Moser</td>
<td>BSME 1961</td>
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<td>1996</td>
<td>Marvin Selig</td>
<td>BSME 1947</td>
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<td>1997</td>
<td>Donald Evans</td>
<td>BSME 1969, MBA 1973</td>
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<td>1997</td>
<td>Charles E. McQueary</td>
<td>BSME 1962, MSME 1964, PHD ME 1966</td>
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<td>1997</td>
<td>Byron E. Short</td>
<td>BSME 1926, MSME 1930</td>
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<td>1999</td>
<td>Kenneth E. Eickmann, P.E.</td>
<td>BSME 1969</td>
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<td>2000</td>
<td>Kenneth D. Cockrell</td>
<td>BSME 1972, MSAE 1974</td>
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<tr>
<td>2001</td>
<td>Keys Curry</td>
<td>BSME 1958</td>
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1961
William C. Cawthon, MSME '47, BME, Cornell University, 1944; He was Executive Vice - President of The Weatherhead Company. Previously, he was associated with International Telephone & Telegraph Corp., American Radiator & Standard Sanitary Corp., and the Chrysler Corp. He is listed in Who's Who in America, International Year Book, and Statesman's Who's Who (Burke's Peerage).

1961
Carol L. Orr, BSME '19, Formerly Assistant General Manager of the Texas Gulf Sulphur Co., he was a consulting engineer and ranchman.

1964
Joe J. King, BSME '25, He retired from Tennessee Gas Transmission Co. in 1965 and went on to be an independent engineering consultant. Former associations include Vice Chairman of Tenneco Chemical, Inc., President of Cary Chemicals, Inc., and Director of Petro-Tex Chemical Corp. and Cary Chemicals. He is past Chairman of the Engineering Foundation Advisory Council, U. T. Austin. In early 1969 he founded the Joe J. King Professorship in the College of Engineering.

1966
J. W. Brougher, BSME '52, MBA '54.
Vice President and General Manager, Operations, Cameron Iron Works, Houston; and Director, Cameron Iron Works, Ltd. Mr. Brougher was a member of the Engineering Foundation Advisory Council, The University of Texas at Austin; a member of the Advisory Board, Rice Information and Communications Exchange; and was on the Board of Directors, Metal Properties Council.

1966
Maurice N. Dannenbaum, BSME '19, was Chairman of the Board, M. N. Dannenbaum Co., Houston, sales engineers and manufacturers' representatives, a firm he founded in 1925. He was a Registered Professional Engineer No. 807. Mr. Dannenbaum has been extremely active throughout his career in serving with numerous civic, religious, and professional organizations, and held high office in most of them.

1967
George P. Hill, BSME '22, was an independent oil operator and producer in Ft. Worth. During his long career he was a member of 26 business, professional, civic, philanthropic, educational, and social organizations. For U. T. Austin, he was in the Longhorn Club since its founding; T-Association since 1922; Life Member, Ex-Students' Association; Development Board, 145-54, three years as Chairman; Comittee of 75 (for long range goals), 1957-58; and in 1966 was a Founding Member of the Chancellor's Council.

1971
Louis F. Davis, BSME '34, was instrumental in the 1968 discovery of the vast oil reserves in Prudhoe Bay, Alaska. He passed away in 2002.

Born in Longview, Mr. Davis received a bachelor's degree in Mechanical Engineering from the University of Texas at Austin in 1934. He did graduate work at Texas A&M University before joining Atlantic Refining Co. in 1935.

Mr. Davis started out running oil field equipment in Dickinson, Texas. Mr. Davis advanced through a number of production and engineering assignments. In 1958, he was named regional division manager for Atlantic Refining in Dallas.

In 1965, he was elected vice president and named general manager of the company's North American production division. Atlantic Refining and Richfield Oil Corp. merged in 1966 and became Atlantic Richfield Co., or Arco.

In December 1967, Mr. Davis was elected to the company's board of directors and executive committee.

He played a major role in the company's search for oil on the north slope of Alaska, often commuting from Dallas to the field. On March 13, 1968, Arco, in conjunction with what is now Exxon Mobil Corp., discovered the larges oil field in the Western Hemisphere. Arco is now part of BP Amoco PLC.

Mr. Davis' respect within the industry extended beyond his work in Alaska. Mr. Davis led the effort to standardize fitting that connect the various types of pipe from different manufacturers to be used interchangeably in the oil field.

In 1972, he was put in charge of Arco's worldwide search for oil reserves and production.

In 1975, he became vice chairman of the Arco board of directors. He later added the title of president and chief operating officer of Anaconda, an Arco subsidiary. He retired in 1979 but continued to work as a consultant to the company and the industry from Dallas.

1977
George A. Helland, BSME '59, was Vice President of Weatherford International, Inc. Helland was also President of Petroleum Equipment Suppliers Association and a director of the American Petroleum Institute. He served on the executive committee of Junior Achievement of Southeast Texas and as vice-president of the board of directors of the Briawood School in Houston. He was also a member of the Houston Chamber of Commerce Energy Committee. The Junior Chamber of Commerce named him the Outstanding Young Houstonian and one of the Five Outstanding Young Texans in 1972. (p42, COE annual report 1976-77)
1978
Frank W. McBee, Jr., BSME ‘47, MSME ‘50,
Chairman of the Board, President and Chief Executive Officer of TRACOR, Inc. Austin, Texas. Mr. McBee, one of the founders of Tracor, Inc., Established in 1955, progressed from Treasurer to President, then Chairman, directing fiscal and business affairs of the company since its establishment. He is also a member of the National Academy of Professional Engineers, Texas Society of Professional Engineers, Texas Manufacturers’ Association and the Austin Investment Association. He is listed in Who’s Who in Engineering, American Men of Science, Leaders in American Science, Who’s Who in the South and Southwest. Mr. McBee is a Senior Active member of The University of Texas Engineering Foundation Advisory Council. (THE COE Annual Report 1977-1978 p. 40)

1980
Father Patrick O. Braden
of Houston obtained a master’s degree in mechanical engineering from UT Austin in 1954, two years after he was ordained into the Catholic priesthood. He earned a Ph.D. from UT in 1961. Father Braden retired in 1979 after 12 years as president of the University of St. Thomas. He also had been director of engineering studies and professor of physical science at the university. (COE Annual Report: 1979-80 p. 42)

1984
Calvin D. Sholtess, BSME ‘50, was born in Longdale, Oklahoma in 1926 and graduated from high school in Fairview, Oklahoma in 1943. After receiving his Bachelor of Science degree in Mechanical Engineering from The University of Texas at Austin in 1950, Mr. Sholtess became associated with the Hughes Tool Company. He worked as an engineer in various districts including Oklahoma, Kansas, and the Rocky Mountains until 1959, when he was assigned as a regional sales coordinator in Denver. He held various managerial positions in oilfield and industrial products operations until he was appointed Senior Vice President of Europe - Middle East - Africa Operations in 1975 and assigned to London, England. In London, he was responsible for both manufacturing and marketing. He served as Senior Vice President until January 1980, when he was appointed President and Chief Executive Officer of Hughes Tool Division, Hughes Tool Company.

Mr. Sholtess served with the U. S. Navy during World War II. He is a member of the Methodist Church, the Petroleum Club of Houston, The Houston Club, the Chaparral Club, and has memberships in SPE, AIME, American Society of Metals, API and Nomads. Mr. Sholtess holds directorships in various Hughes Tool Company subsidiaries. Sholtess is a supporter of The University of Texas including programs like the President’s Associates, Friends of Alec, and The Engineering Foundation.

1985
Colonel Gerald P. D’Arcy, BSME ‘56, Ph.D. ’73, earned his M. S. in the same field at the University of Colorado in 1962. Colonel D’Arcy was Commander of the Air Force Office of Scientific Research in Washington, D. C.

1989
H. Grady Rylander, Jr., BSME ‘43, MSME ‘52,
Joe J. King Professor and Chairman of the UT Mechanical Engineering Department from 1976 - 1986, received his BSME from The University of Texas at Austin in 1943, his MSME from The University of Texas at Austin in 1952, and his PhD from Georgia Institute of Technology in 1965.

Professor Rylander was instrumental in organizing The University of Texas at Austin Center for Electromechanics (UTCEM) and served as its Director until June 1, 1985. UTCEM actually originated in 1972 when Dr. Rylander, a professor of Mechanical Engineering collaborated with Dr. H. H. Woodson, then Chairman of the Electrical Engineering Department, to initiate an investigation to determine a suitable pulsed power supply for controlled thermonuclear fusion experiments. Available power supplies were becoming too bulky, unreliable, and much too expensive as the size of experiments increased. Drs. Rylander and Woodson identified inertial energy storage with homopolar machine conversion to be potentially the least expensive and most compact and reliable pulsed power supply for some fusion research applications. The Energy Storage Group was formed in 1973 to continue the research and to develop homopolar generators for conducting experiments; this was followed in 1977 by establishment of the UTCEM, with a continually - expanding pulsed power technology research program and a distinct element devoted to industrial applications.

Chairman of the Mechanical Engineering Department between 1976 - 1986, Rylander has taught over 20 different courses in the mechanical engineering systems group and has supervised some 60 theses and dissertations. He was selected as an Alcoa Professor in 1974 - 75, Jack S. Josey Professorship in Energy Studies, 1978 - 80, J. C. Walter, Jr. Professor, 1980 - 81, E. P. Schoch Professor, 1981 - 83 and since 1983 he has held the Joe J. King Professorship in Engineering. He has received numerous Engineering Foundation Awards, and Mobil Oil Foundation Faculty Awards. He also received The Industrial Research and Development Magazine’s award for Center of Electromechanics design of the homopolar generator. In 1985, Dr. Rylander received the Leonardo Da Vinci Award, from the ASME Design Division.

He was employed as an engineer by several concerns in private industry before entering the academic ranks, and, as a registered professional engineer in the State of Texas, he has since 1958 served as a consultant to more than 30 different firms.

Professor Rylander is a member of Pi Tau Sigma, Tau Beta Pi, Phi Kappa Pi, and Sigma Xi; listed in American Men of Science and Who’s Who in Engineering; and the author or coauthor of two books and over 80 publications.
1990

Edvard M. Galle, P. E., BSME '50, retired as Senior Vice President of engineering and research for Hughes Tool Company in 1988. As a mechanical engineer, he spent most of his professional career in the petroleum industry developing oil well drilling tools and techniques.

Mr. Galle received his B. S. degree in Mechanical Engineering in 1950 from The University of Texas at Austin and his M. S. degree in Mechanical Engineering from Rice University in 1959.

Beginning as a design engineer for Hughes Tool Company in 1953, Mr. Galle’s career with Hughes spanned years. When he was named Senior Vice President in 1980, he became responsible for all product engineering and research activities with the company, as well as all patent prosecution, patent licensing and patent litigation activities.

Mr. Galle holds 26 U. S. patents on various rock bits and oil well drilling tools and has published numerous technical papers. His patent for seal means for drill bit bearings was the subject of extensive patent litigation and resulted in damage awards to Hughes Tool Company approximating $337 million.

Mr. Galle is a member of several professional societies including the International Association of Drilling Contractors, the American Petroleum Institute, the American Institute of Mechanical Engineers, the Houston Chamber of Commerce and the Texas Society of Professional Engineers.

1995

Donald Douglass, BSME '54, founded Alamo Group Inc. (ALG-NYSE) in 1969 and has served as Chairman of the Board and Chief Executive Officer of the company until January 1, 2000 when he became non-executive Chairman. Alamo Group Inc. is a leading manufacturer of high quality, tractor mounted mowing and grounds maintenance equipment for governmental and agricultural end users. The company's history of developing innovative products, its reputation for quality and service, and its increased geographic market coverage in the U. S., United Kingdom and France have enabled the company to establish a leadership position in the markets it serves. Alamo Group, Inc. has 805 employees in the U. S. and 339 in Europe.

Mr. Douglass currently serves on the Graduate School of Business Advisory Board at Babson College in Wellesley, Massachusetts, the Chancellor's Council Executive Committee of The University of Texas System, and the Development Board of The University of Texas at San Antonio, and is a Trustee at Southwest Research Institute in San Antonio, and a Trustee at the Archives of American Art, Smithsonian Institution in Washington, D. C. and a Director and Officer of Nueces Financial in Corpus Christi, a family business.

Mr. Douglass is President of the Douglass Foundation which he established in 1982 exclusively for educational, entrepreneurial programs, scientific and artistic purposes. In 1994, Mr. Douglass was bestowed the Supporter of Entrepreneurship Award through the Entrepreneur of the Year Institute for the San Antonio and South Texas region. He was honored as a Distinguished Graduated by The University of Texas at Austin, College of Engineering in May 1995.

Mr. Douglass’ educational background includes a B. S. in Mechanical Engineering from The University of Texas at Austin in 1954 and a M. B. A. from Stanford Business School in 1959.

1996

Tom Moser, BSME 1961, Vice President, Aerospace Systems, Analytic Services (ANSER); Arlington, VA; After earning his bachelor’s degree at UT Austin, Mr. Thomas L. Moser received his master’s degree from the University of Pennsylvania in 1963. While working toward a Ph.D. at Rice University, he began his career on the Apollo Program at NASA's Johnson Space Center as a mechanical engineer and technical manager for structures and mechanical systems.

From “sketch pad to launch pad”, he led many technical and management developments on the Space Shuttle from 1969 to 1986. He received the Outstanding Engineering Medal of the Year award for his contributions.
for his work on the development of the Orbiter structure and reentry thermal protection system (the infamous “tiles”). In 1986 he moved to NASA headquarters in Washington, D. C. to serve as the deputy associate administrator for space flight to help return the Space Shuttle to flight after the shuttle Challenger incident.

As the director of engineering at NASA's Johnson Space Center and as the program director of the International Space Station in Washington, D. C., he led the early development of the $30 billion program and the formation of partnerships with 11 European countries, Japan and Canada. For these accomplishments, Mr. Moser became a fellow of the American Institute of Aeronautics and Astronautics and of the International Academy of Astronautics.

After leaving NASA, Mr. Moser served as vice president for Fairchild Space, a developer of scientific satellites, and is currently vice president of Aerospace Systems at ANSER - a leader in systems engineering of launch and satellite systems.

Mr. Moser is currently a member of Tau Beta Pi and Pi Tau Sigma. He is a registered professional engineer in Texas and has served on the boards of several private Texas corporations as well as engineering and business professional societies.

1996

Mr. Marvin Selig, BSME '47, President and Chief Executive Officer, Commercial Metals Company Steel Group; Seguin, Texas. After earning his bachelor's degree, Mr. Marvin Selig began work on a master's degree in mechanical engineering, but set aside his studies in 1949 to found and build Structural Metals, a steel mill using electric furnace melting technologies, a rolling mill and steel fabricating facilities.

In 1968, Mr. Selig merged his company to become Commercial Metals Company Steel Group. Today, this steel group, headed by Mr. Selig, consists of four steel mills, twenty fabrication operations, three steel fence post finishing shops, two railcar rebuilding facilities and many other manufacturing and processing sites. Mr. Selig also serves as a member of the board of directors and the executive committee of Commerical Metals Co., the steel group's parent company.

Mr. Selig has been a member of many organizations, including the Steel Service Center Institute, the American Society for Metals, the American Foundrymen's Society, and the British Iron and Steel Institute. He served on the board of directors for the Texas Research League, the Concrete Reinforcing Steel Institute, the Lower Colorado River Authority, and chaired the Steel Manufacturer's Association.

At UT Austin Mr. Selig recently endowed the Charles W. Merritt Endowed Graduate Fellowship Fund.

In addition he is a member of UT System's Chancellor's Council, UT Austin’s Littlefield Society, UT Austin’s Development Board, and UT Austin’s President's Council.

Mr. Selig has been active in his community as a founder and supporter of the Seguin County Library and Guadalupe Valley Hospital, and assisted in establishing the Seguin/Guadalupe County Senior Citizen's Center. He is a former president of the Seguin Rotary Club, B'na B'rith and the Jewish Institute of National Security Affairs.

1997

Donald Evans, BSME '69, MBA '73, was tapped for U. S. Secretary of Commerce by president - elect George W. Bush on December 20. Evans, 54, of Midland, is chairman of the board and CEO of Tom Brown, Inc., a Denver - based oil firm; and past chair of the UT System Board of Regents. The Houston native earned his mechanical engineering degree from the College in 1969, followed by an M. B. A. - also at UT - in 1973. During the mid - 1970s he moved to Midland to launch a career in the oil business. Beginning as a roughneck on a Tom Brown drilling rig, he rapidly worked his way up the corporate ladder, to his present position as head of the company. In Midland he became acquainted with Bush, another recently - arrived young man just starting out in the oil industry. The two have been close friends ever since. Evans served as both chair of the Bush - Cheney 2000 presidential campaign, and the campaign's chief fundraiser - bringing in a record - setting $100 million.


He resigned from UT's Board of Regents on January 19, 2001, just two weeks shy of completing a full six - year term. As Secretary of Commerce, he will direct a governmental department that oversees a wide range of trade - related activities, including the promotion of U. S. business interests at home and abroad.

1997

Charles E. McQueary, BSME '62, MSME '64, PhDME '66, a native of Gordon, Texas, earned three back - to - back diplomas at The University of Texas at Austin: a bachelor's degree in mechanical engineering in 1962, master's degree in mechanical engineering in 1964 and doctorate in engineering mechanics in 1966. He joined Bell Laboratories upon final graduation to work on the Safeguard AntiBallistic Missile Program and later headed a team that developed application for lightweight technology for the military. In 1994, Chuck was tapped as president of Advanced Technology Systems, an outgrowth of the undersea sensor and transmission systems business with Bell Labs that became part of Lucent Technologies.

Though Advanced Technology Systems was purchased by leading defense contractor General Dynamics in 1997, Chuck remains president of the now $400 - million subsidiary that has world - class competencies in fiber optics and photonics. The Greensboro, N. C. - company has seen its markets shift dramatically over the past two and a half years.
Today, fueled largely by the explosion of the Internet, the commercial sector represents 65 percent of General Dynamics Advanced Technology Systems business. The University of Texas at Austin in 1997 named Chuck a Distinguished Engineering Graduate.

1997

Byron E. Short, BSME ‘26, MSME ‘30, was born on December 29, 1901, in Putnam, Texas, the son of Samuel Washington Short and Florence Gurrude Sublett Short. After attending elementary schools at Scranton, Sagerton and de Leon, he graduated from de Leon high school in 1919 and came to The University of Texas in 1921. During his student years he met Carl J. Eckhardt, and they became lifelong friends, working together at the U. T. power plant and as faculty in the Mechanical Engineering department. Byron completed his B. S. in Mechanical Engineering in 1926 and his M. S. in Mechanical Engineering in 1930. In 1935, he entered Cornell University, where he received the Master of Mechanical Engineering degree in 1936 and a Ph.D. in 1939 working on heat transmission and thermodynamics. While at Cornell he received the Sibley Fellowship in Mechanical and Electrical Engineering.

Professor Short’s industrial experience spanned many years, mostly in the summers from 1926 through 1948 working for The Texas Company (now Texaco, Inc.) and The University of Texas power plant. From 1948 until his retirement he was a consultant with the Texas Gulf Sulfur Company, Oak Ridge National Laboratory, U. S. Army Corps of Engineers, Ford Motor Company, Svedrup and Parcel, Atomics International, Gulf States Tube Corporation, and General Atomic. Through all of his external interests, however, he never compromised his main love, which was teaching.

While a graduate student, Byron began his teaching career in 1926 as an Instructor in Mechanical Engineering. He served as an Adjunct Professor between 1929 and 1935, primarily teaching thermodynamics. Between 1935 and 1936 he held a position as Teaching Fellow at Cornell. After receiving his Ph.D. from Cornell in 1936, he returned to The University of Texas as an Associate Professor, and in 1939 was promoted to Professor of Mechanical Engineering, a position he held until retirement in 1973. Upon retirement he was given the title of Professor Emeritus.

In addition to his regular and continuous classroom teaching, Dr. Short was in charge of the Heat-Power and Fluid Mechanics Laboratory in Taylor Hall from 1930 to 1965. His very close friend, Dean W. R. Woolrich, gave him complete control of all equipment maintenance and use, new purchases, and allocation of space in this laboratory. With a keen memory, he always knew where every piece of equipment was located and who was using anything belonging to this laboratory.

During the 1940’s and 1950’s the Mechanical Engineering Department operated with a rotating Chairmanship among its full Professors in which each would serve a two - year term. Professor Short served terms from 1945 until 1947 and again from 1951 until 1953. Between these assignments he served as acting Dean of the College of Engineering from 1948 through 1949 and during the summer of 1955.

Intercollegiate athletics was always an important part of Byron’s life. He seldom missed a baseball, football or basketball game or other sports events held on campus. This intensive interest led to his service as Chairman of the U. T. Intercollegiate Athletics Council from 1945 through 1948.

Honor societies that recognized his outstanding achievements were Tau Beta Pi (President of Alpha Chapter of Texas, 1927 - 1928), Pi Tau Sigma, Sigma Xi and Phi Kappa Phi (President of U. T. Chapter, 1972). He was continuously active in each group and never failed to express his deep appreciation for being selected.

When Byron returned from Cornell in 1939, he was the only member of the Mechanical Engineering Department faculty with a doctoral degree, a distinction he held for many years. He was immediately appointed Graduate Advisor in 1939, where he attracted many outstanding young scholars. Most of the doctoral students wanted to work under him since he had, along with this advanced degree, a considerable amount of research money and many new ideas for research topics. His term as Graduate Advisor lasted for 24 years. In addition, he also served on The University Faculty Council from 1945 until 1949.

Most of the undergraduate students in Mechanical Engineering had Dr. Short for their basic thermodynamics course, where he lectured in Taylor Hall 138 underneath a working demonstration model of a slide rule (six feet in length). His own oversized slide rule (24 inches) and great mathematical skill always left many students in awe; nevertheless, he was always available for student consultations in his office, which occupied a corner in the non - air - conditioned Thermodynamics and Fluids Laboratory. In his later years he mastered computer programming and became adept at using the FORTRAN language to write codes for scientific computations.

During his 47 years at U. T., Dr. Short taught thousands of students and is remembered as being a conscientious and dedicated member of the faculty, thus it is impossible to cite all of the successful ones. He supervised 23 Master’s theses and 12 Ph.D. dissertations. He also served on many University committees and even more College committees plus numerous continuous assignments within the M. E. Department. A partial listing of the important committee assignments given to Professor Short by The University and the College is shown below.

- Member, Sub-Committee for Intercollegiate Athletics for Women
- Executive Committee, Scottish Rite Dormitory, University of Texas
- Board of Directors of Scottish Rite Educational Association
- U. T. Austin Committee of Counsel on Academic Freedom and Responsibility, 1969
- Degrees and Courses Committee, College of Engineering, 1939-1942, 1961-1963, 1969
- Chairman, Engineering Building Committee, 1964
- Tau Beta Pi, Faculty Advisor
- Member of Aerospace Engineering Graduate Faculty
- Board of Grants, 1962-1963
- Engineering Foundation, 1956-1963
- Graduate Student Program Committee, Graduate School, 1958-1962
- Dean’s Committee, College of Business Administration, 1959-1960
- Engineering Publications Committee, 1930-1940, 1957
- Chairman, ORSORT Study Proposal Committee, Engineering and Sciences, 1956
- Graduate Legislative Council, 1956
- Nuclear Engineering and Reactor Committee, College of Engineering, 1953-1956, Chairman, 1956
- Graduate Council, 1951-1957
- Fellowship and Scholarship Committee, Graduate School, 1949-1959, Chairman, 1950-1956
- University Chancellorship Advisory Committee, 1950
- Petroleum Engineering Budget Council, 1949-1950
- Engineering Research Committee, College of Engineering, 1949-1950
- Engineering Research Committee, College of Engineering, 1941-1949
- Junior Accrediting Committee, College of Engineering, 1940-1945
- Engineering Scheduling Committee, College of Engineering, 1940-1944
- University Committee on Admission of Transfer Students, 1939-1944
- University Discipline Committee, 1931-1939
- Engineering Library Committee, 1930-1934

In addition, Byron was instrumental in the formation of the Engineering Mechanics Department in 1947 and served on the Dean’s committee to study the need of a meteorology program in the College of Engineering. He was also affiliated with the Defense Research Lab during its early years. When he accepted a committee assignment he was extremely diligent, never missing meetings and always participating fully in the deliberations.

He belonged to a number of professional societies including The American Society of Mechanical Engineers (Life Member and Fellow), the National Society of Professional Engineers (Life Member), The American Society of Engineering Education (Life Member) and The Texas Society of Professional Engineers (Life Member). He served as National Vice - Chairman of the American Society of Engineering Education during 1946-1948 and served on a number of committees at the national level for each organization. Dr. Short’s fields of specialization include: heat transfer in shell and tube exchangers, condensing vapors of tube banks, pressure drop in baffled tube bundles and specific heats of foodstuffs and solutions at low temperatures. He was considered an international authority on shell and tube heat exchangers. His publication record contained numerous research publications, a patent and six books. The books are: Power Engineer Handbook, Texaco, 1927; Flow, Measurements and Pumping of Fluids, University Lithprinters, Norman, Oklahoma, 1934; Engineering Thermodynamics with H. L. Kent and B. F. Treat, Harper Brothers, New York, 1953; Pressure - Enthalpy Charts with H. L. Kent and Hugh A. Walls, Gulf Publishing Company, 1970; Design Volume, Handbook for the American Society of Refrigeration Engineers, 10th Edition, 1957; Faculty Editor: The Journal of Architecture, Engineering and Industry (19390-1940), published by U. T. College of Engineering.

Some of the more important awards and honors in addition to the election to Fellow grade in two national organizations include being voted the Outstanding Alumnus of the U. T. Department of Mechanical Engineering in 1995 and the election to Distinguished Graduate of the U. T. College of Engineering in 1996, just prior to his death. As a student he was a member of the Ransom Club fostered by Dean Taylor. He received a Certificate of Commendation from the South Texas Section of ASME in 1954 and was made an Honorary Member of the Process Heat Transfer Society in 1964. His work was cited in several textbooks plus a section in W. R. Woolrich’s book Men of Ingenuity, From Beneath the Orange Tower. Biographical listings included: Who’s Who in America, Who’s Who in the South and Southwest, Dictionary of International Biography, Who’s Who in Engineering and American Men of Science. Two endowments have been made in his name: The Byron E. Short Endowed Presidential Scholarship in Mechanical Engineering, begun in 1993 by the M. E. Class of 1940, and The Byron E. Short Lecture Series Endowment, begun in 1990.

Professor Short donated a large amount of time, talent and finances to the Ex-Students Association, Texas Exes Clubs, Executive Council and special volunteer work. For many years he spoke to the ex-students at various locations during March 2 (Texas Independence Day) meetings. He also arranged meetings of Texas Exes at the annual meetings of ASME and supported financially such activities as athletic banquets and the general scholarship fund. He was a member of The First Baptist Church of Austin, where he was Chairman of the Board of Deacons and Chairman of the Downtown Bible Class. He was a member of the Austin Kiwanis Club, a Life Member and Master, University Lodge No. 1190 A. F. and A. M., District Deputy Grand Master, 50th Masonic District, 33rd, Scottish Rite, Austin Consistory (1st Vice - President) Scottish Rite Dormitory for Girls at The University of Texas. He served as Kych and Commander, Colorado Commandery No. 4, and District Deputy for both York Rite Chapter and Council; Sovereign, St. Austin Conclave,
Red Cross Constantine, Member of Ben Hur Temple. He was a member of the Patrick Henry Chapter of Sons of American Revolution; President, Fleur-de-Lis Chapter of the Huguenot Society, and President of Huguenot Society of Texas.

He married Mary Jo Fitzgerald on June 1, 1937, and had one son, Byron Elliott Short, Jr., and one daughter, Mrs. James L. (Mary Aileen) Gaunt. Professor Short died on October 31, 1996, at age 94.

Prepared by Professors H. Grady Rylander (Chair), Jr., Howard E. Brown, and J. Parker Lamb.

1997

Dr. Richard W. Smalling, B.S. A.S.E., ‘70, M.S. M.E., ‘72

Co-Director and Professor of Medicine, Division of Cardiology, Department of Internal Medicine, University of Texas Medical School - Houston; Director, Clinical Cardiology, Hermann Hospital, Houston.

Dr. Richard W. Smalling earned his bachelor’s degree in aerospace engineering in 1970, and his master’s degree in mechanical engineering in 1972, studying the biomedical core curriculum at UT Austin. He earned his doctorate of medicine at UT Medical School in Houston in 1975. While completing medical school, Dr. Smalling began work toward his Ph.D., at the UT Graduate School of Biomedical Sciences in Houston.

He served his internship and residency at University Hospital and Veterans Administration Hospital, at the University of California in San Diego from 1975 to 1978. He was also a Cardiology Fellow there from 1978 through 1980.

Dr. Smalling returned to Houston in 1980 as an assistant professor in the Division of Cardiology at UT Medical School, and at the UT Graduate School of Biomedical Sciences. He was promoted to associate professor of medicine at UT Medical School in 1985 and to professor of medicine in 1992. Dr. Smalling became the Co-Director of the Division of Cardiology at UT Medical School in 1989. He later became the Director of Clinical Cardiology at Houston’s Hermann Hospital in 1994. He is also involved in several different committees on myocardial infarction research.

He is immediate past president of the medical staff of Hermann Hospital, where he is also director of the Hermann Heart Center and the Cardiac Catheterization Laboratory. He is chairman of the Council Representatives of the Council on Clinical Cardiology for the American Heart Association.

He is also chairman of the Health Star Task Force and a member of the Medical and Scientific Committee and first vice president of the Center for Cardiovascular Medicine, medical director of the Texas Affiliate of the American Heart Association.

He is associate editor of Circulation, the Catheterization and Cardiovascular Diagnosis Journal of Interventional Cardiology. He has had more than 100 scientific articles published, and is a frequent reviewer of publications including the American Heart Journal, the Journal of the American Medical Association, the American Journal of Cardiology, and the New England Journal of Medicine.

Dr. Smalling received the UT Austin Outstanding Young Texas-Ex Award in 1986. He is a Friend of Alec

1999

Kenneth E. Eickmann, (Lt. Gen., USAF, RET), P.E. BSME ’69, Director, Construction Industry Institute, The University of Texas at Austin; Senior Lecturer, Civil Engineering, UT Austin.

After earning his bachelor’s degree in mechanical engineering at UT Austin, General Eickmann began a distinguished and highly decorated thirty - one year career in the U. S. Air Force.

He entered the Air Force in 1967 as a distinguished graduate of The University of Texas’ Reserve Officer Training Corps program. He earned his master’s degree in systems engineering from the Air Force Institute of Technology at Wright - Patterson Air Force Base, Ohio, in 1968.

General Eickmann eventually completed twenty - two assignments, including a stint from 1994 to 1996 as Commander, Oklahoma City Air Logistics Center, Tinker Air Force Base, the largest military and industrial complex in the U. S. Department of Defense. During this time he led the federal rescue and recovery efforts following the 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City. His success inspired the governor of Oklahoma to declare July 11, 1995, as “General Ken Eickmann Day” in the State of Oklahoma. His last assignment on active duty was Commander, Aeronautical Systems Center, Wright - Patterson Air Force Base, where he led the nation’s largest center of excellence for research, development, and acquisition of aircraft, aeronautical equipment, and munitions. As commander, he managed more than 2,800 programs ranging from basic research to design, development and support of advanced aeronautical systems. He executed an annual budget of more than $11 billion and employed a work force of approximately 12,000 people at Wright - Patterson and 35 locations worldwide.

As the installation’s commander he provided operational support for approximately 22,000 people, including personnel from more than 100 operational units located on bas e.
Upon retirement from the U. S. Air Force, General Eickmann was selected director of UT’s Construction Industry Institute, where he leads a collaborative effort by engineering and construction owners, contractors, and academia to improve one of the nation’s largest industries. The Construction Industry Institute is the internationally acclaimed ninety - corporation research consortium that funds $5 million in research at thirty U. S. universities to improved the total quality and cost effectiveness of the construction industry. UT Austin houses the research unit within the College of Engineering. As director, he guides more than 700 individuals from the institute’s current eighty member - companies in research projects. In addition, he serves as a senior lecturer in civil engineering at UT Austin.

General Eickmann is a recognized expert in propulsion technology and has published several technical papers in the United States and abroad. He has received many awards, including the Distinguished Service Medal with oak leaf cluster, the Legion of Merit with two oak leaf clusters, and the Defense Meritorious Service Medal, all from the U. S. Air Force. Upon his retirement, his enlisted troops honored him with the Order of the Sword, the highest honor that enlists can bestow upon a leader.

1999
Dr. Byron D. Tapley, P. E., BSME ‘56, MSEM ‘58, PhD ‘60, Professor, Aerospace Engineering and Engineering Mechanics, College of Engineering, The University of Texas at Austin; Clare Cockrell Williams Centennial Chair in Engineering, UT Austin; Director, Center for Space Research, UT Austin; Director, Texas Space Grant Consortium;

After earning three degrees at UT Austin, Dr. Tapley joined UT’s aerospace engineering faculty in 1960, establishing the orbit mechanics program in the department in 1961. He served as the chair of the Department of Aerospace Engineering and Engineering Mechanics from 1966 to 1977. In 1981, he established the Center for Space Research. During the next decade, he developed the orbit mechanics program and the Center for Space Research into internationally respected centers for study and research.

Dr. Tapley’s research interests include orbit mechanics, nonlinear parameter estimation, and their uses in satellite measurements to study geodesy, geodynamics and oceanography. He has been a principal investigator for six NASA missions. He is currently in charge of a NASA project teaming up UT Austin researchers with German researchers in a satellite mission to be launched from Russia in 2001.

The $125 million Gravity Recovery and Climate Experiment will use highly accurate measurements between two satellites to sense variations in the Earth’s gravity field. Results are expected to have many implications for weather study and a variety of environmental issues, including improved long - range climate forecasts and a new perspective on global ocean circulation.

Dr. Tapley has been very active in professional organizations, including the National Research Council, chairing the Geodesy Committee (1982-85), the Committee on Earth Sciences (1987-91), and the Geophysics Study Committee (1990-93).

His honors include the NASA Medal for Exceptional Scientific Achievement (1983), the American Institute of Aeronautics and Astronautics Mechanics and Control of Flight Award (1989), the Billy and Claude R. Hocott Distinguished Centennial Engineering Research Award (1991), the NASA Public Service Medal (1994), the AAS Dirk Brouwer Space Mechanics Award (1995), and the Joe J. King Professional Engineering Achievement Award (1997). He is a fellow of the American Institute of Aeronautics and Astronautics, the American Geophysical Union and the American Association for the Advancement of Science. In 1987, he was elected to membership in the National Academy of Engineering. He is a life member of Friends of Alec.

2000
Kenneth D. Cockrell, BSME ‘72, Astronaut, NASA, Lyndon B. Johnson Space Center, Houston.

As a naval aviator, pilot, and astronaut, Mr. Kenneth D. Cockrell has logged nearly 8,000 flight hours, over 900 of those hours in space. A native Texan, Mr. Cockrell earned a B. S. in mechanical engineering from The University of Texas in 1972. He then entered the University of Florida and received an M. S. in aeronautical in 1974.

Mr. Cockrell’s long career in the U. S. Naval Reserve began in 1972. He was a member of the U. S. Naval Aviation Reserve Officer Candidate Program at Naval Air Station, Pensacola, Florida, where he was commissioned, and later designated a naval aviator. In 1978, he entered the U. S. Test Pilot School in Maryland. Upon graduation a year later, he remained at the Naval Air Test Center conducting flight tests on a variety of aircraft until 1982, when he reported to the Naval Station in San Diego to become a staff officer and pilot. Mr. Cockrell resigned his commission in 1987 and retired from the U. S. Naval Reserve in 1999.

His career with NASA began in 1987, first as an aerospace engineer and a research pilot. He became an astronaut in 1991, taking on a wide - range of technical assignments responsible for everything from testing craft safety and operations, to preparing procedural manuals carried upon shuttle flights.

2001
Keys Curry, P. E., BSME ‘58, Chairman, President and Chief Executive Officer, Curgil Oil and Gas, Inc., Houston, Texas.
Keys Curry has a long, successful history of combining his engineering background with skillful entrepreneurship. Since graduating from UT, he has started, or been a principal in, four companies, two of which were taken public with very successful initial public offerings. He has achieved licensure as a Texas professional engineer and a Texas real estate broker, acquired an M. B. A. and run enterprises in computer software, mineral acquisition and power generation engineering.

Mr. Curry began his career at the Westinghouse Electric Corporation, where he held the position of sales engineer for seven years. In 1967 he received his M. B. A. from the University of Houston, and the following year launched Land Value Dynamics, Inc, a computer software firm, where he held the posts of founder, president and member of the board of directors.

Two years later, he became founder, vice president and executive committee member of Steve T. Cochran and Associates, Inc.

His next venture was as founder, president and member of the board of directors of Texas Resource Development Corporation, a mineral acquisitions firm. From 1978-87 he held various executive positions with Power Systems Engineering Inc., that launched a successful initial public offering in 1986 as PSE Inc. (AMEX), rising to become president and chief operating officer from 1987-89.

Between 1989 and 1997 he served as executive vice president and chief operating officer and subsequently as president and chief operating officer of Destec Energy, Inc., and independent power firm specializing in combined cycle electric power generation and coal gasification and clean gas technology. He was a member of the National Petroleum Council from 1987-97.

His dedication to the College of Engineering is reflected in a wide range of College - related and University - wide leadership roles. He has long been active in recruiting talented Houston - area high school students to engineering at UT and is a two - time past chair of the Engineering Foundation Advisory Council and a Friend of Alec.
Appendix M

The Department Visiting Committee

Department Visiting Committees were created by Dean William Hagerty in 1959. Once created implementation took several years to achieve. The earliest record of a Visiting Committee associated with the UT Department of Mechanical Engineering was dated 1975.

The Department Visiting Committee, renamed in 2003 the Mechanical Engineering Advisory Council, is composed of representatives from companies which support the Mechanical Engineering Department through (a) hiring of our students (either for internships or as graduates), (b) providing scholarships/fellowships to our students, (c) providing equipment grants for our laboratories or (d) supporting faculty research activities. A large percentage of the members are graduates of the department and some are also involved with student recruitment for their companies.

The committee, composed of 18-25 members, meets once each semester for one and a half days to hear reports from faculty and students, to inspect Instructional and lab facilities, to visit informally with students. During their three-year term as a committee member each one will learn about curricula development, about the financial structure of the department, and about long range needs and plans. They will also hear presentations from the Dean and be made aware of the College’s activities.

Mechanical Engineering faculty receive feedback from the committee on the quality and relevance of UT engineering programs to contemporary industrial needs as well as on emerging and long range trends in the industrial world. Students (both undergraduate and graduate) receive considerable information on job opportunities in various industrial sectors as well as advice on interviewing skills.

After serving on the committee the members have an improved understanding of the inner workings of the University and thus will be better able to represent UT within their company.
1975–1976

George Helland, Chairman
Vice-President
Cameron Iron Works
Houston, Texas

Ovid Baker
Manager-Research Planning
Field Research Laboratory
Mobil Research and Development Corp.
Dallas, Texas

B. J. Brock
Supervisor - Dynamics
Vought Systems Division
LTV Aerospace Corporation
Dallas, Texas

Charles A. Dubberley
Manager - Compressor Engineering
Central Air-Conditioning Product Dept.
General Electric Company
Tyler, Texas

Fred Griffin
Vice-President, Director of Engineering
Lufkin Industries
Lufkin, Texas

Bruce R. Paton
Procter & Gamble Manufacturing Co.
Dallas, Texas

Fred Repper
Vice-President
Central Power & Light Company
Corpus Christi, Texas

Harold T. Wright
Manager-Engineering Production Dept.
Exxon Company, USA
Houston, Texas

Harold T. Wright
Manager - Engineering Production Dept.
Exxon Company, USA
Houston, Texas

B. J. Brock
Supervisor - Dynamics
Vought Systems Division
LTV Aerospace Corporation
Dallas, Texas

Fred Griffin
Vice-President, Director of Engineering
Lufkin Industries
Lufkin, Texas

Bruce R. Paton
Procter and Gamble Manufacturing Co.
Dallas, Texas

Clay Fulcher
Manager of Engineering and Advanced Programs
Space Division
General Electric Company
Houston, Texas

James McBride
Director of Materials Testing
Johnson Space Center, Texas

Les Moor, Jr.
Manager - Materials Services
Gulf States Utilities
Beaumont, Texas

William E. Jennings
Chief of Flight Test
Bell Helicopter, Plant 6
Fort Worth, Texas

William Smith
Chief Mechanical Engineer
Aluminum Company of America
Rockdale, Texas

Philip Sizer
Vice President - Engineering Research
Otis Engineering Company
Dallas, Texas

1976–1977

George Helland, Chairman
Vice-President
Weatherford International, Inc.
Houston, Texas

Ovid Baker
Manager - Research Planning
Field Research Laboratory
Mobil Research and Development Corporation
Dallas, Texas

1977–1978

Fred Griffin, Chairman
Vice President & Director
Lufkin Industries
Lufkin, Texas
B. J. Brock  
Dallas, Texas

Gerald P. D'Arcy  
Colonel, USAF  
Elgin AFB, Florida

Clay Fulcher  
Manager, Engr./Advanced Programs  
General Electric Company  
Houston, Texas

W. E. Jennings  
Chief of Flight Test  
Bell Helicopter Company  
Fort Worth, Texas

Charles E. Lemon, Jr.  
Manager, Dallas Commercial Division  
Mobil Oil Corporation  
Dallas, Texas

James McBride  
Director-Materials Test, CP7  
Johnson Space Center  
Houston, Texas

Leslie M. Moor, Jr.  
Gulf State Utilities Company  
Beaumont, Texas

Bruce R. Paton  
Procter and Gamble Manufacturing Company  
Dallas, Texas

Philip Sizer  
Senior Vice President  
Tech. Director - Engrg. Research  
Otis Engineering Corporation  
Dallas, Texas

William Smith  
Chief Engineer, ALCOA  
Rockdale, Texas

Harold T. Wright  
Manager - Engineering  
Exxon Company, USA  
Houston, Texas

1978–1979

Philip Sizer, Chairman  
Senior Vice President  
Tech. Director-Engineering Research  
Otis Engineering Company  
Dallas, Texas

Clay Fulcher  
Manager of Engr./Advanced Programs  
General Electric Co.  
Houston, Texas

James McBride  
Director of Materials Testing  
Johnson Space Center  
Houston, Texas

Les Moor, Jr.  
Manager  
Materials Services  
Gulf States Utilities  
Beaumont, Texas

William E. Jennings  
Chief of Flight Test  
Bell Helicopter, Plant 6  
Fort Worth, Texas

William Smith  
Chief Mechanical Engineer  
ALCOA  
Rockdale, Texas

Gerald P. D'Arcy  
Colonel, USAF  
Elgin AFB, Florida

Charles Lemon, Jr.  
Manager  
Dallas Commercial Division  
Mobil Oil Corporation  
Dallas, Texas

W. R. Garrett  
Vice President  
Research and Development  
Drlco  
Houston, Texas

Barry Hiney  
Food Process Manager  
Procter and Gamble Manufacturing  
Dallas, Texas

Malcolm D. Abel  
Independent Oil Producer  
Midland, Texas

D. M. Bingham  
Manager of Development  
IBM Corp.  
Austin, Texas

Milton Walther  
Chief Engineer  
Lufkin Industries  
Lufkin, Texas
1979–1980

Charles N. Lemon, Jr.
Manager, Dallas Commercial Division
Mobil Oil Corporation
Dallas, Texas

Col. Gerald P. D’Arcy
Bedford, MA

W. R. Garrett
Vice President, Research and Development
Drilco
Houston, Texas

Barry Hiney
Food Process Manager
Procter and Gamble Manufacturing
Dallas, Texas

Malcolm D. Abel
Independent Oil Producer
Midland, Texas

D. M. Bingham
Manager and Development
IBM Corp.
Austin, Texas

Milton Walther
Chief Engineer
Lufkin Industries
Lufkin, Texas

Dale Pryor
Vice President, Engineering
OIME, Inc.
Odessa, Texas

Jerry Brougher
President and Chief Executive Officer
Gulf Forge Company
Houston, Texas

George A. Helland, Jr.
President
McEvoy Oilfield Equipment Co.
Houston, Texas

George W. Rampt
President, Target Construction, Inc.
San Antonio, Texas

Sam B. Devall
Engineering Manager
ALCOA
Point Comfort
Calhoun County, Texas


W. R. Garrett, Chairman
Retired as Vice President, Research and Development,
Drilco
Houston, Texas

George A. Helland, Jr., Associate Chairman
President
McEvoy Oilfield Equipment Co.
Houston, Texas

Barry Hiney
Food Process Manager
Procter and Gamble Manufacturing
Dallas, Texas

Malcolm D. Abel
Independent Oil Producer
Midland, Texas

D. M. Bingham
Manager of Development
IBM Corp.
Austin, Texas

Milton Walther
Chief Engineer
Lufkin Industries
Lufkin, Texas

Dale Pryor
Vice President, Engineering
OIME, Inc.
Odessa, Texas

Jerry Brougher
President and Chief Executive Officer
Gulf Forge Company
Houston, Texas

George W. Ramp
President, Target Construction Co.
San Antonio, Texas

Sam B. Devall
Engineering Manager
ALCOA
Point Comfort
Calhoun County, Texas

Richard D. Stewart
Manager, Biochemical Department
E.I. DuPont de Nemours & Co.
La Porte, Texas

Clifford L. Thompson
Manager, Oklahoma District
Sun Production Co.
Tulsa, Oklahoma

Donald J. Douglass
Chairman of the Board
Terrain King Corp. and K.O. Steel Castings
San Antonio, Texas

Robert J. Patton
Chief Engineer for Development
Vought Corporation
Dallas, Texas

Leonard E. Williams, Jr.
Technical Manager
Oil Tool Division
Cameron Iron Works
Houston, Texas

1982–1983

Donald J. Douglas, Chairman
President
Alamo Group, Inc.

Richard D. Stewart
Manager, Oklahoma District
Sun Production Co.

Robert J. Patton
Vice President, Aircraft Development Engineering
Vought Corporation

Leonard E. Williams, Jr.
Technical Manager, Oil Tool Division
Cameron Iron Works

Jack Spinks
Vice President for Corporate Development
Valero Energy Corporation

Tom Lewis
Manager of Technical Operation
IBM

Eric L. Jones
Vice President
Texas Instruments, Inc.

Calvin D. Sholtess
President, Hughes Tool Division
Hughes Tool Company

W. Keith Miller
Plant Manager
Folgers Coffee Company

Lawrence E. Keels
Manager, Engineering Services
General Motors Corporation

Ghazi Hashem
Vice President of Technical Operations
Grant Corporation

Fred D. Griffin
Vice President, Director of Engineering
Lufkin Industries, Inc.

H. Norman Abramson
Vice President for Engineering Sciences
Southwest Research Institute

Ernest M. Closuit
Independent Investor

1983–1984

H. Norman Abramson, P.E.
Vice President
Engineering Sciences Division
Southwest Research Institute

Richard L. Berger
President
Berger Engineering Company

Ernest Closuit, Jr.

Robert A. Felsman, P.E.
Felsman, Bradley & Gunter

Emil E. Friberg, P.E.
Friberg Alexander Maloney Gipson Weir, Inc.

Marcel E. Gres, P.E.
Senior Vice President
Tracor, Inc.

Fred D. Griffin, P.E.
Vice President and Director of Engineering
Lufkin Industries, Inc.

Ghazi Hashem
Vice President, Technical Operations
Grant Corporations

Lawrence E. Jenkins
Vice President & General Manager
Lockheed Missiles & Space Co., Inc.

Eric L. Jones
Vice President
Texas Instruments Incorporated

Larry Keels
Manager, Engineering Services
Facilities Engineering
General Motors Corporation

Thomas B. Lewis  
Manager of Technical Operations  
IBM Corporation

W. K. Miller  
Plant Manager  
The Folger Coffee Co.

Calvin D. Sholtess  
Executive Vice President-Operations  
Eastern Hemisphere  
Hughes Tool Company

Jack Spinks, P.E.  
Vice President  
Corporate Development  
Valero Energy Corporation

1984–1985

Richard L. Berger  
President  
Berger Engineering Company

George A. Champine  
Senior Staff Scientist  
Digital Equipment Corporation

Ernest M. Closuit, Jr.  
Private Investor

Billy Ray Cobb  
Senior Member Technical Staff  
Texas Instruments Incorporated

Robert A. Felsman  
Felsman, Bradley & Gunter

Emil E. Friberg, P.E.  
President  
Friberg, Alexander, Gipson, Weir, Inc.

William L. George  
Vice President & General Manager  
Motorola, Inc.

Marcel E. Gres  
Senior Vice President  
Tracor, Inc.

Ghazi Hashem  
President  
Grant Corporations

Lawrence E. Jenkins  
Vice President & General Manager  
Lockheed Missiles & Space Co., Inc.

Laurence E. Keels  
Manager, Engineering Services  
Facilities Engineering  
General Motors Corporation

William F. Leonard  
Director of Research and Engineering Relations  
Rockwell International Corporation

W. K. Miller  
Plant Manager  
The Folger Coffee Co.

Robert K. Moeser  
Director, Quality & Systems Assurance  
IBM Corporation

Calvin D. Sholtess  
Executive Vice President  
International Operations  
Hughes Tool Company

John P. Veldman  
Division Superintendent  
Acids-Mechanical Division  
Petro-Chemicals Department  
E.I. DuPont de Nemours & Co.

1985–1986

Richard L. Berger  
President  
Berger Engineering Company

George A. Champine  
Senior Staff Scientist  
Digital Equipment Corporation

Billy Ray Cobb  
Senior Member, Technical Staff  
Texas Instruments, Inc.

Frank DiPietro  
Director  
Production Engineering  
General Motors Corporation

Robert A. Felsman  
Felsman, Bradley and Gunter

Emil E. Friberg, P.E.  
President  
Friberg Alexander Maloney Gipson Weir

Edward M. Galle  
Senior Vice President  
Engineering and Research  
Hughes Tool Company
William L. George  
Vice President and General Manager  
Wafer Processing and Development Division  
Motorola, Inc.

Fred T. Goetting, Jr.  
Owner and President  
Goetting and Associates, Inc.

Marcel E. Gres  
Senior Vice President  
Tracor, Inc.

Fred D. Griffin  
Vice President and Director of Engineering  
Lufkin Industries, Inc.

Samuel Idrogo  
Executive Assistant to the Commander  
Department of the Air Force  
San Antonio Headquarters

Lawrence E. Jenkins  
Vice President and General Manager  
Lockheed Missiles and Space Company, Inc.

William F. Leonard  
Director  
Research and Engineering Relations  
Rockwell International Corporation

Robert K. Moeser  
Director  
Quality and Systems Assurance  
IBM Corporation

John P. Veldman  
Division Superintendent  
Acids-Mechanical Division  
Petro-Chemicals Department  
E.I. DuPont de Nemours and Company

1986–1987

Henry G. Anderson  
Safety Department Head  
Union Carbide

Billy Ray Cobb - Chairman  
Senior Member, Technical Staff  
Texas Instruments, Inc.

Frank DiPietro  
Director, Production Engineering  
General Motors Corporation

E. Linn Draper  
President & Chief Operating Officer  
Gulf States Utilities

Edward M. Galle  
Senior Vice President, Engineering & Research  
Hughes Tool Company

Fred T. Goetting, Jr.  
Owner & President  
Goetting & Associates, Inc.

Jeffery C. Hogan  
Vice President, Marketing, Sales & Engineering  
CompAir Kellogg, Inc.

Samuel Idrogo  
Executive Assistant to the Commander  
Headquarters, San Antonio, Air Logistics Center  
U.S. Department of the Air Force

Gary Knippelmier  
Laboratory Manager, Test & Measurement Systems  
Austin Division  
Minnesota Mining & Manufacturing Company (3M)

William F. Leonard  
Director, Research & Engineering Relations  
Rockwell International Corporation

John P. Veldman  
Superintendent, Acids-Mechanical Division  
Petro-Chemicals Department  
E. I. DuPont de Nemours & Company

1987–1988

Fred T. Goetting, Jr. – Chair  
Owner & President  
Goetting & Associates, Inc.

Frank A. DiPietro  
Director  
Production Engineering  
General Motors Corporation

Edward M. Galle  
Senior Vice-President of Research & Engineering  
Hughes Tool Company

Fred D. Griffin  
Lufkin, Texas

Samuel Idrogo  
Executive Assistant to the Commander  
Department of the Air Force

H. G. Anderson  
Manager  
Maintenance Department  
Union Carbide

E. Linn Draper  
President & Chief Operating Officer  
Gulf States Utilities

J. T. Hill  
Engineering Manager  
ALCOA  
Rockdale, Texas

Jeffrey C. Hogan  
V.P. of Marketing/Sales/Engineering  
CompAir Kellogg, Inc.  
Blacksburg, VA

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Laboratory Manager  
Test & Measurement Systems  
3M Austin Division

Lawrence J. Semrad  
Director of Fabrication  
Rockwell International

Robert N. Hambright  
Manager  
Robotics and Automation Section  
Southwest Research Institute

Joe Formichelli  
Plant Manager  
Systems Technology Division  
IBM

Harold Blair  
President  
Nova-Graphics International

E. Linn Draper  
President & Chief Operating Officer  
Gulf States Utilities  
Beaumont, Texas

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Engineering Manager  
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Richardson, Texas

Marshall Andrews  
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Mechanical Packaging  
MCC - Austin

Arthur B. Carroll  
President & Chief Executive Officer  
Carroll - Touch  
Round Rock, Texas

Carol Dettmer  
Section Manager  
Assembly and Pack Engineering  
Texas Instruments - Data Systems Group  
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Clay Fulcher  
Principal Staff Engineer  
Engineering and Operations Support Division  
McDonnell-Douglas-Houston

1988–1989

H.G. Anderson  
Manager, Maintenance Department  
Union Carbide  
Bound Brook, N.J.
J.J. McGee
Senior Staff Drilling Engineer
Shell Oil Company
Bellaire Research Center

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Petroleum Equipment Corporation
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1989 – 1990

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Harold Blair
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Arthur B. Carroll
President & Chief Executive Officer
Carroll Touch, Inc.
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Thermon Corporation

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Energy Systems Department  
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Conoco  

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1991–1992  

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1992–1993

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**Dick Grant**
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1994–1995

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**Fort Flowers, Jr.**
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Staff Engineer
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1995–1996

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City of Austin Electric Utility Department
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1996–1997

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Dept of Mechanical Engineering Annual Report 1996-1997, p. 44.
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1997–1998

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TU Electric
Tatum, Texas

Howard Burris
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Applied Machine Tool Technology
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N. Binz DeWalch
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Information Systems Department  
Exxon Company, USA  
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1998–1999

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1999–2000

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William G. Beazley  
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Factory Logic Software  
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Schlumberger 

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Pratt & Whitney  
West Palm Beach, Florida 

Warren R. Waggoner  
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BP Amoco Exploration  
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2000–2001 

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Arthur C. Ratzel, III
Group Manager, Thermal, Fluids and Aero Sciences
Engineering Sciences Center
Sandia National Laboratories

Rick Relyea
Investor

Brian Renz
Plant Manager
TXU Electric

Elliott Short
Principal Mechanical Engineer
Electronic Systems
Raytheon Company

Colonel Nathaniel H. Sledge, Jr.
USA Project Manager, Combat Ammunition Systems
US Army PEO Ammunition

Ben Sumrall
Senior Director
Applied Materials

Warren Waggoner
Manager, System Software
Global Services Company
ExxonMobil Corporation

Susan Wang
University Relations Manager
Halliburton

2002–2003

Robby Abarca
Advisor to the Chairman
Public Utility Commission of Texas

Jack F. Browder
Chief Operating Officer
eCorp – The Energy Company

Todd E. Campbell
Director of Engineering, CPI
Applied Materials

John M. Casstevens
President
Dallas Optical Systems

David M. Cobb
General Manager, LNG
CMS Energy

Keys Curry
Engineering Entrepreneur
Curry and Associates

Gloria Ho Driscoll
Marketing and Sales Director
Simpler-Webb Inc.

Julio Guerrero
Sr. Engineer, Vector Product Center
Schlumberger

Debra Hentz
Engineering Project Manager
Hewlett-Packard Company

E. Dan Hirleman
Professor and William E. and Florence E. Perry Head
Purdue University

Joe Juarez
Technical Manager
Honeywell

Henry S. Kleespies, III
Senior Staff Engineer
Lockheed Martin Aeronautics Co.

Gary D. Kott
Manager of Electrical Engineering
Fluor Daniel

Riccardo Leggio
Manager Construction Assurance
Shell Chemical Major Projects - OGEP

Dept of Mechanical Engineering Files.
Angus McCorkodale  
Commercial Manager  
CSO-Aker Maritime, Inc.

Colin Norman  
3M

Jerri L. Paul - Chair

Rick Relyea  
Investor

Brian Renz  
Plant Manager  
TXU Electric

Elliott Short  
Principal Mechanical Engineer Electronic Systems  
Raytheon Company

Colonel Nathaniel H. Sledge, Jr.  
USA Project Manager,  
Combat Ammunition Systems

Warren Waggoner  
Manager, System Software  
Global Services Company  
ExxonMobil Corporation

Susan Wang  
University Relations Manager  
Halliburton

Judy Wright  
Director, Software Solutions Group  
Metrowerks
Appendix II

Mechanical Engineering Endowments

Richard & Ann Berger Heat/MassTransfer Laboratory Fund
Leonardt F. Kreisle Endowed Presidential Scholarship
ME Endowed Excellence Fund
Kreisle Senior Design Project Lab
J. David and Jean Frank Scholarship
Hank Franklin Scholar
Edwin L. Pace Endowed Presidential Scholarship
Rylander ME Longhorn Alumni Club Teaching Fellowship
M. Selig Endowed Presidential Scholarship
Robert and Susan Campbell Endowed Scholarship in Mechanical Engineering
Carl Eckhardt Memorial Endowed Scholarship
Charles Edwin Smith Endowed Presidential Scholarship Mechanical Engineering
Byron Short Endowed Presidential Scholarship in Mechanical Engineering
Pejaver Shridhara and Janaki Rao Endowed Scholarship
John M. Scott Endowed Presidential Scholarship in Mechanical Engineering
Steam Turbine
Photo courtesy of the UT Power Plant
The University Power Plant is significant to the Department of Mechanical Engineering not only because it provides the department with electricity, steam, compressed air and purified water but also because it was the first home of the Mechanical Engineering when it was organized as a School in 1913. The School of Mechanical Engineering remained in the Power Plant until 1927 when it relocated to Taylor Hall. The first floor of the Power Plant housed the Heat Power Lab and the Refrigeration Lab. Classrooms and offices were located on the second floor. Hal C. Weaver, the man responsible for the renovation of the Power Plant in the late twenties, was a professor of mechanical engineering and taught courses in the Heat Power area. Carl Eckhardt, also a mechanical engineering professor and BSME ’25, and MSME ’30, became the superintendent of the Power Plant in 1931. At various times in his career Eckhardt served as Superintendent of the Power Plant, Superintendent of Utilities and Director of the Physical Plant. Eckhardt had many innovative ideas including the transformation of the Power Plant from a coal burning plant to a natural gas burning plant. He also had the idea for the installation of the University’s underground tunnel system which allows all of the electrical wiring to be run underground and out of sight.

Today’s University Power Plant provides four products to the University community: steam, electricity, distilled water and compressed air. This has not always been the case. In the early 1920’s, steam was the only product generated by the Power Plant. These were the days before electricity. The steam was used throughout campus for heating, humidification and autoclaves. The operation was relatively straightforward. In order to produce steam, a source of heat was necessary, and in early days, pre 1930’s, heat was produced by the burning of lignite coal in boilers. Boilers would burn lignite coal and heat a water source producing steam the pressure of which ran the steam-turbines (rotary engines) which in turn would transport the steam and therefore heat all over campus. A remnant of the early coal burning days is the 220-foot tall smoke stack which stills stands today. The smoke stack was built tall so that the smoke from the coal-fired boilers would travel further away from the campus. The smoke stack is still used today with some of the modified coal fired boilers which now burn natural gas. In the late 1920’s, electric generation was still new. The University had to purchase electricity from the City of Austin and the quality and dependability were not absolute. UT was at the mercy of the City for electric power; if the city lost power, so would the university.
In the 1930’s, the Power Plant was redesigned by Hal C. Weaver to include electricity production. Turbines went into service in the early 1930’s. The Power Plant switched from a coal burning plant to a natural gas burning plant right after World War II. To give an idea of the comparison of efficiency between burning coal and burning natural gas, the largest coal turbine generates 25 megawatts of electricity while the largest gas turbine generates 32 megawatts.

2000’s

Today the University Power Plant generates all electricity that The University of Texas campus consumes. The University no longer has to buy power from the City of Austin. The University Power Plant is a Combined Heat and Power Plant and has been since Hal C. Weaver rebuilt the plant in the 1930s. Seventy five percent of the power generated goes to the chilling stations for air conditioning. Lighting costs are incidental when compared to the cost for the air-conditioning. Electricity from the Power Plant runs the four Chilling Stations on campus. The chilled water produced is circulated to the buildings to run the air conditioners on campus. Steam and condensate go between the University’s buildings providing heating and cooling.

Electricity in today’s Power Plant is produced by a combined-cycle-cogeneration unit. The set up consists of a generator, coupling skid, a natural gas turbine, a.k.a. the combustion turbine, which is wrapped in blankets. On the floor, is a grating that is removable so that workers can drop equipment down to the floor below if needed. There is a heat recovery steam generator and a steam drum. Normally this room is about 90 degrees Fahrenheit. On a hot day the temperature can rise to 120 to 130 degrees. This system controls the power for the entire campus. The process is usually automatic control. From the control panel outside of the room, HMI’s, or Human Machine Interfaces, can open valves to regulate pressure if automatic system goes down. Under normal operating conditions, 150,000 lbs of steam is supplied to the turbines. The middle pressure is 400 psi at 730 degrees. Pressure for the UT power plant only gets as high as the middle pressure range of a city utility.

Part of the process is the handling of water. There are three different types of water handled by the power plant. The first type is circulating water. This is not potable water. Tower - condenser - discharged at top and falls down, fans cool water down. This water’s temperature needs to have no greater than a ten-degree variation. The second type of water is feed water. Feed water is steam that condenses in the bottom of the condenser. Then there is a third type of water - the makeup water. The makeup water consists of water that is lost in the process and totals to about 3000 gallons per hour. Drinking water on campus is supplied by the City of Austin.
Power Plant Products*

Twenty-four hours a day, every day of the year, the 85 MW Power Plant provides the UT campus with all the requirements for electricity, steam, compressed air and purified water. Electrical power is generated at 12,000 volts and at 4,160 volts for distribution throughout the campus. Steam at 425 psi and 710 F is generated for use in the plant, and also for distribution throughout the campus at 170 psi to provide building heat, heat for hot water, and auxiliary services. Distribution steam is also used in steam turbines at chilling station #2 for the production of chilled water. Compressed Air at 100 psi is provided for campus building and laboratory use. About 8 million gallons of purified water is provided to the campus for laboratory use.

Power Plant Personnel*

Power Plant personnel are organized into two sections, the operations section and the maintenance section. Operations personnel work 12 hour rotating shifts around the clock in the Power Plant. They monitor and control critical on-line equipment and place generating units into and out of service as needed. The Maintenance Section is divided into three shops. In the Maintenance Shop, personnel provide virtually all the equipment maintenance in the Power Plant. This includes many of the major overhauls on the units, as well as preventive and corrective maintenance. Maintenance personnel fabricate and weld new equipment and process piping. In the Lab & Electrical Shop, personnel provide important quality control and technical support functions in the Power Plant. They install, calibrate and repair process instruments. They troubleshoot and repair electrical components on existing equipment. In addition, they install new equipment for control system upgrades.

The Electrical Distribution Division has the primary responsibility of servicing the main electrical distribution systems and auxiliary equipment at the Main Campus, Pickle Research Campus, Montopolis Research Center, Off-Campus Student Housing and the Whitaker Fields.

The electrical networks include all of the equipment from the Power Plant or incoming power supply to each building’s main power switchgear. The electrical systems include over 60,000 ft. of underground ductbank, over 30,000 ft. of overhead line, and over 120 double-ended main power stations.

The distribution voltage to each individual building’s power station is done at 12,000 Volts and at 4,160 Volts. The voltage then is stepped down at the building where it can be utilized. Auxiliary and additional equipment that are serviced include emergency standby electrical systems, medium-voltage metal-clad switchgear Low-voltage distribution metal-enclosed switchgear, protective devices and controls, revenue metering and monitoring and area and sports lighting.
Chilling Stations*

The Chilling Stations provide cooling for approximately 12 million square feet of the Main Campus buildings. There are four Chilling Stations scattered around Campus. These, along with the Power Plant, are the buildings you can see "steam" rising from on cold days. The "steam" is actually water that has evaporated from the Chilling Stations' cooling towers. That water is the final step in the process that carries heat away from the buildings, thus keeping them cool. It is interesting to note that even on the coldest day of the year, the cooling load on campus is approximately 6,000 Tons. This is enough to cool about 1,600 average size homes on the hottest days of the year. The combined firm cooling capacity of the Chilling Stations is approximately 35,800 Tons. This enough to cool about 9,000 average size homes. There are 38 dedicated people that maintain and operate this service 24 hours a day, seven days a week, to the Campus Community.

Three Mechanical Engineers are currently employed by the Power Plant. There are seventy maintenance and operations employees. Maintenance takes care of equipment and works day-shift unless there is an outage or overhaul. Operations personnel operate the equipment around the clock all year long. The Power Plant saves The University a lot of money. In order to establish redundancy with the City electric system, it would cost the university twice as much. For more information about the University’s Power Plant, log onto http://www.utexas.edu/utilities/power.html

Directors of the University Power Plant:

Carl Eckhardt
H.D. Gorham
Juan Nunez
Coal Burning at UT
contributed by Mack Andrews, Assistant Utility
Operations Supervisor, UT Power Plant

H. D. Gorham worked at plant when it was still burning coal and then directed the efforts to modify the boilers to gas firing in 1947-48. In the early days of the Power Plant's operation, lignite coal was transported from Rockdale to Austin in railcars. The coal was moved from the rail siding to the campus power plant by large trucks. The trucks were weighted on the scale located where the lab is today. The coal was then augured to the coal bunker overhead in the power plant. From there the fireman would weigh the coal and feed it to the chain stoker. A bed of coal approximately one foot thick traveled on the chain stoker from the front of the boiler to the back at a variable speed adjusted by the fireman.

At the back of the boiler, the ash and clinker fell off the chain stoker into a hopper below the boiler. The clinker and ash was removed from this hopper in the basement and loaded into small hopper cars that ran on rails still visible in the basement of the power plant. The hopper cars were rolled into position and mechanically hoisted and dumped into another holding hopper located in the coal receiving area. The same trucking company that brought the coal to the university had a contract to remove the clinker and ash from this holding hopper. According to Mr. Gorham this waste was used to make road – paving material. It was never deposited in Waller Creek as a way of disposal.

Chain Stoker, circa
photo courtesy of UT Power Plant

Burner front for coal
photo courtesy of UT Power Plant
Historical Pictures: Boilers Through the Years

Boiler 3 - 1958

Boiler 3 Erection

Boiler 7 - 1970

Boiler 1970
Appendix P

The Chronology of Alec

The chronology of Alec is something of a mystery. Dean Taylor recounts Alec’s history to the Spring of 1928. Pictures, photographs and admitted reproductions and abductions add to the mystery and confusion as to the current whereabouts of the original Alec and the beheaded Alec, whose head was returned to Dean Taylor in 1927. Maybe the reader can decipher the clues and discover where this long-lived and fascinating character of Engineering history now resides. Maybe one of the readers knows his whereabouts all too well!

1902 – Edward Cown Connor brought to The University of Texas campus the words of a song, set to the tune of “Frau Diavilo,” extolling the virtues and attainments of Alexander Fredericke Claire (Alec)

March 31, 1908 – Captured at Jacoby’s Garden by Joe H. Gill, Banks McLaurin, O. K. Greene, Bille Carruthers, Cy Joynes and Murray Gill.

April 1, 1908 – Delivered by Joe H. Gill, sophomore Engineer to the Junior Engineers in front of the Main Building

April 1, 1909 – Unveiled by Alf Toombs in front of the Main building and christened Alexander Frederic Claire.

March 3, 1910 – Taken from the Engineering Building by Albert Moody and other law students.

March 31, 1910 – Returned to the Engineering Building by order of Judge Townes.

February 21, 1913 – Taken from the Engineering Building by Grady Niblo and others.

November 30, 1913 – Recaptured near Pflugerville by Glenn Vaughn, Harry Fritz, and Joe Moore.

June 12, 1916 – Taken by Houghton Brownlee and other members of the law class of 1911 through a bill of sale.

November 28, 1916 – Recaptured from the premises of Lonnie McKean in West Austin.

1917 – Alec remained in the custody of the lawyers until he was taken to a Justice of the Peace Court – had him declared a vagrant, and he was placed in the city jail for a short term. (In order to neutralize this insult to Alec, Dean Taylor went to Governor Ferguson, and had him give Alec a full and unconditional pardon over the seal and signature of the Governor.

Fall 1918 – the right leg of old Alec was cut into small strips and branded ‘Celafotrap’ (‘part of Alec’ spelled backwards). A piece was set to all Texas engineers in the American Expeditionary Forces.

February 21, 1927 – The new dummy Alec captured by Laws and cut into pieces.

March 1, 1927 – Body of Alec recovered by Paul Netzer.

April 1927 – Head of dummy Alec returned to Dean Taylor by Governor Dan Moody. (discrepancy – pamphlet says head was returned on March 1, 1927 & it has no mention of body of Alec being returned by Paul Netzer)

Spring 1928 – Old Alec brought back from mountains and restored and still reigns.

1936 – was his last public appearance where he was shipped to Austin in a box labeled ‘surveying instruments’ and was delivered to the instrument room.

Summer 1964 – journalism students found him in a house on Archway.

October 2-3, 1964 – made first public appearance in over 25 years at the College of Engineering reunion and 80th anniversary of the college

1972 – made special appearance for the crowning of that year’s engineering sweetheart.

March 30, 1987 – David Walker and Chris Flynn, engineering seniors, got permission from Julia Ashworth, archivist at the Tarleton Law Library to take a picture of the Alec’s torso for his birthday 2 days later.

-while taking the picture outside, it was stolen once again by masked and unknown thieves. Following a hearing at the law school (Law School v. Engineers case), Judge Harley Clark, a UT law graduate, made no decision of ownership.

May 1987 – at the Austin Area Engineering Exes dinner, Alec’s torso, under close supervision by the APD, was returned by the students to the engineering alumni.

Presently – Alec’s torso is stored in a hermetically sealed display in the Engineering Library, next to the second generation Alec.

Alec on TV as the Alec Affair is reported by an Austin television reporter. Photo courtesy of Dr. Gary Vliet.
CITATION

THE STATE OF TEXAS
TO DEAN ERNEST GLOYNA
THE ENGINEERING TEACHING CENTER, 26th STREET, THE UNIVERSITY
OF TEXAS, AUSTIN, TRAVIS COUNTY, TEXAS 78705

Defendant, in the hereinafter styled and numbered cause:

You are hereby commanded to appear before the 167th District Court of Travis County, Texas, to be held at the
courthouse of said County in the City of Austin, Travis County, Texas, by filing a written answer to the petition of plaintiff
at or before 10 o’clock a.m. of the Monday next after the expiration of 20 days after the date of service hereof, a copy of
which accompanies this citation, in cause number

415634, styled
STUDENTS OF THE UNIVERSITY OF TEXAS SCHOOL OF LAW, Plaintiff,
vs. DEAN ERNEST GLOYNA ET AL, Defendant,
filed in said court on the 31st day of MARCH, 1987.

If this citation is not served within 90 days after date of its issuance, it shall be returned unserved.
WITNESS, JOHN DICKSON, Clerk of the District Courts of Travis County, Texas.
Issued and given under my hand and seal of said Court at office in the City of Austin, this the
18th day of April, 1987.

ATTORNEY: JOHN DICKSON
XXX???
Clerk of the District Courts of Travis County, Texas
By Deputy
DARLENE ALDRIDGE

Custody Hearing flier courtesy of Dr. Steve Nichols.
March 1, 1988

Dr. Steve Nichols
Mechanical Engineering Department
ECC 5.214B

Dear Steve:

Thanks a million for your participation in Alec’s unveiling last Thursday. You articulated clearly and precisely what the folks needed to hear. I believe everyone enjoyed themselves tremendously and I hope this ends another exciting chapter in Alec's saga. May he rest peacefully here at home for fifty more years.

Sincerely,

[Signature]

Jeff Balam
Program Coordinator

JM:j1

Thank you letter courtesy of Dr. Steve Nichols.
CAUSE NO. 415,634

STUDENTS OF THE UNIVERSITY $  
Texas School of Law $  
Plaintiff

V. $  

DEAN ERNEST GLOYNA (sic), $  
MICHAEL HUBERT (sic), THE $  
STUDENT ENGINEERING COUNCIL, $  
and VARIOUS UNNAMED AND $  
UNKNOWN ENGINEERING GEEKS $  
Defendants

IN THE DISTRICT COURT OF $  

TRAVIS COUNTY, TEXAS

167th JUDICIAL DISTRICT

DEFENDANT, MICHAEL HUBERT (sic) AND $  
THE STUDENT ENGINEERING COUNCIL'S PLEA IN ABATEMENT $  
AND ORIGINAL ANSWER SUBJECT THERETO

TO THE HONORABLE JUDGE OF SAID COURT: $  

NOW COMES, DEFENDANT, MICHAEL HUBERT (sic), and THE STUDENT ENGINEERING COUNCIL, two of the $  
Defendants herein, and make and file this their Plea in Abatement and Original Answer subject thereto, $  
and in support thereof would respectfully show $  
unto the Court the following:

PLEA IN ABATEMENT

I. $  
MICHAIL HUBERT (sic) is not a person known to these Defendants. It is more than likely that the Plaintiff LAW $  
STUDENTS should learn how to spell. In the alternative, and strictly so, Defendants say and would show that MICHAIL $  
HUBERT (sic), whoever he might be, has not been served with process anyway.

II. $  
Pursuant to Rule 92 (1) of the Texas Rules of Civil Procedure, Defendants say and would show that the $  
STUDENT ENGINEERING COUNCIL does not have the legal capacity to be sued. In the alternative, and strictly so, $  
Defendants say and would show that the STUDENT ENGINEERING COUNCIL has not been served with process $  
anyway.

Another example of the sloppy legal work of your Plaintiffs herein.

III. $  
Defendants say and would show that they do not know the identity of any of the Defendant “VARIOUS UNNAMED $  
AND UNKNOWN ENGINEERING GEEKS.” The SCHOOL OF ENGINEERING has a strict and unchanging policy of not $  
admitting Geek applicants into its program and regularly refers any Geek applicants to the Plaintiff’s attorney herein to $  
pursue a legal education where they are regularly admitted to the School of Law without exception.

IV. $  
Defendants deny each and every, all and singular the frivolous, harassing and scandalous allegations in Plaintiff’s $  
Original Petition contained, demand strict proof thereof by a preponderance of the evidence, and of this puts themselves $  
upon the country.
VI.

Further answering herein, if same be necessary, Defendants say and would show that the Plaintiffs are guilty of unclean hands. Your Plaintiffs have not come into this Court with clean hands in pursuit of their equitable remedy of injunction relief. In fact, their hands are soiled right down to their grimy little fingernails with the numerous thefts of Sir Alec from your Defendants beginning in 1910. Moreover, this Court took judicial notice of such thefts and judicially admitted such thefts on the part of the Plaintiffs, stating:

“Clark said, ‘After all law students came by Sir Alec as a result of common theft.’”

The Dallas Morning News, April 1, 1987. Moreover, the Plaintiffs have exhibited their unclean hands by mutilating and dismembering Sir Alec, much like a butcher would slice up a hog. In other words, the Plaintiffs have shown their unclean hands by lopping off the precious hands of the sainted ALEXANDER FREDERICKE CLAIRE.

VII.

Further answering herein, if same be necessary, Defendants say and would show that they are faithful and dedicated servants of the University of Texas at Austin. Although there is some dispute about this, the Plaintiffs also claim to be servants of the University of Texas at Austin. Pursuant to Rule 94 of the Texas Rules of Civil Procedure, Defendants plead the affirmative defense of “injury by fellow servant” and would show that Plaintiffs have absolutely no standing to bring this weak cause of action.

VIII.

Further pleading herein, if same be necessary, Defendants plead the affirmative defense of contributory negligence. In this connection, Defendants would show that Plaintiffs were in all things wholly negligent in allowing an unknown third person or persons to steal the torso of the patron saint ALEXANDER FREDERICKE CLAIRE. Such negligence is the sole proximate cause or a proximate cause of the loss made the subject matter of Plaintiffs lawsuit.

IX.

Further answering herein, if same be necessary, Defendants say and would show that any dam fool knows that you cannot obtain ownership of personal property by adverse possession or limitations.

X.

Further answering herein, if same be necessary, Defendants affirmatively plead accord and satisfaction, arbitration and award, assumption of risk, discharge in bankruptcy, duress, estoppel, failure of consideration, fraud, illegality, latches, license, payment, release, res judicata, statute of frauds, statute of limitations, waiver, and any other matter constituting an avoidance or affirmative defense.

WHEREFORE, PREMISES CONSIDERED, Defendants respectfully pray that Plaintiffs take notice of these pleadings and that upon hearing hereof, that Plaintiffs lawsuit be in all things abated, and in the alternative, and strictly so, that Defendants be denied all relief requested in Plaintiffs Petition for Temporary Restraining Order, and that Defendants recover their costs and go hence without day and for such other and further relief, both general and special, at law and in equity, to which they may be justly entitled and will ever pray.

LEA & CHAMBERLAIN
202 West Seventeenth Street
Austin, Texas 78701
(512) 474-9124

By:
DAVID E. CHAMBERLAIN
State Bar ID #04059800

CERTIFICATE OF SERVICE

I HEREBY CERTIFY by my signature above that on this the 3rd day of April, 1987, a true and correct copy of the foregoing was this day hand-delivered to Mr. Mark G. Yudof, 727 East 26th Street, Austin, Texas, 78705.
STUDENTS OF THE UNIVERSITY
OF TEXAS SCHOOL OF LAW,
Plaintiffs

V.

MICHAEL HULBERT, THE STUDENT
ENGINEERING COUNCIL, AND
VARIOUS UNNAMED AND UNKNOWN
ENGINEERING GEEKS,
Defendants

IN THE DISTRICT COURT FOR
TRAVIS COUNTY, TEXAS
167TH JUDICIAL DISTRICT

PLAINTIFF'S PETITION FOR PERMANENT INJUNCTION

COMES NOW the Plaintiffs in this action,
STUDENTS OF THE UNIVERSITY OF TEXAS
SCHOOL OF LAW, complaining of Defendants
MICHAEL HULBERT, THE STUDENT
ENGINEERING COUNCIL, AND VARIOUS
UNNAMED AND UNKNOWN ENGINEERING
GEEKS, and for cause of action would show the
following:

I. PARTIES

Plaintiffs are students at the University of Texas School of Law, located in Austin, Travis County, Texas. Defendant MICHAEL HULBERT is President of the STUDENT ENGINEERING COUNCIL, also named a Defendant in this action. The remaining Defendants include several individual Engineering geek-types whose identities are currently unknown. All the Defendants may be found and served at the towering brown eyesore known as the Engineering Teaching Center, located on 26th Street and San Jacinto, the University of Texas, Austin, Texas 78705.

II. FACTS

Since 1927, the Law School has possessed and exercised dominion over unique and irreplaceable property, the torso of the Revered Patron Saint Alexander Fredericke Claire. The history of the statue of "Old Alec", and how it came to be possessed all these years by the Law School, is set out more fully in Part III of this petition. Possession has been continuous, open, and certainly notorious. On March 30, 1987, at approximately 4:03 p.m. -- while Chief Justice John Hill of the Supreme Court of the State of Texas was delivering an address to law faculty and students -- two coldly-calculating engineering geeks fraudulently persuaded courteous and helpful members of the Tarlton Law Library staff to allow them access to the truncated Saint, then on display in an enclosed glass case. While the bold miscreants were allegedly "having their pictures taken" with the statue, several other gear-heads or similarly vile engineering-types, acting in concert with the aforementioned geeks on behalf of the Engineering School, then absconded with the hallowed property, much to the horror of the bamboozled librarians.

Within hours, a shadowy group called Club ETC. -- known to be crazed, calculator-punching adherents of Dean Ernest Gloyna's peculiar brand of engineering fundamentalism -- had called the Daily Texan to claim credit for the travesty. In fact, the tortfeasors were acting on behalf of the Engineering School, its faculty, administration and students. The whereabouts of Old Alec remain unknown to his rightful owner, the Library of the Law School.

The abduction and continued sequestration of Old Alec has caused immediate and irreparable injury to the long-standing traditions of a great and noble institution. Law Week, a tradition so revered that it is named after the greatest living legend in American law, Dean W. Page Keeton, has been disrupted. Plans for the annual Alumni Reunion,
Furthermore, the anarchy and lawlessness which is endemic to engineering geeks has come to the fore as a result of Old Alec’s asportation. On April 1, 1987, an unruly mob of pencil-necks from the Engineering School invaded the sacred precincts of the Law School and disrupted studies by singing a bawdy and unsavory drinking song in high-pitched, whiny voices accompanied by a trumpet which had obviously done duty as a coathook for many years. Later that same afternoon, a small group of engineering students (easily distinguishable by virtue of the Hewlett-Packard calculators dangling from the waistband of their polyester slacks) defaced the walls of Townes Hall with graffiti claiming responsibility for the “liberation” of Old Alec. As warned by Plaintiff’s counsel in his appearance before this Court seeking a Temporary Restraining Order, an armed conflagration seems imminent if the justice system cannot quickly assert its appropriate equitable role.

III. HISTORY OF ALEC

The history of Alec is shrouded in mystery and magic; filled with incidents and accidents; replete with hints and allegations.

It all began in 1908, when engineering students at the University of Texas decided to force the Administration into declaring April Fool’s Day a holiday by tying tin cans to the tails of dogs and running them down the steps of Old Main, disrupting the classes in progress. After an evening of searching – without success – for dogs with whom they hoped to start this bizarre new campus ritual, a group of five engineering students repaired to Jacoby’s Bier Garten to drown their sorrows. It was there they first laid their beady little engineers’ eyes on a five-foot tall statue of a potbellied, bearded man with a raised beer stein. Without a polyester shirt, without Sans-A-Belt slacks and without so much as a shirt pocket protector, a calculator or even a slide rule, Alec seemed an unlikely saint for a bunch of engineer-types. Why, he didn’t even have a pair of Coke-bottle glasses held together with masking tape! Still, it was their holiest day of the year: Ramadan, Yom Kippur, Easter and Fourth of July rolled into one. It was April Fool’s Day, the day when every engineer feels like a regular guy.

And so, while two of the gear-heads distracted the attention of Meinhart Jacoby, the good and decent proprietor of the establishment, the three others abscended with Alec. (Taylor, Fifty Years on the Forty Acres). (The court will note, of course, that this is precisely the same Modus Operandi the geeks employed in stealing Alec from the Law School this week. One wonders if new ideas come to engineers but once a century).

In 1914 Alec was liberated from his hostage-takers by commandos from the Law School, who honored his request that he ease into life among normal people – after living with engineers by first spending a few weeks in a pig sty in Pflugerville. (Cactus Yearbook, 1914)

In 1916, the Law School obtained clear and absolute legal title to Alec when Houghton Brownlee and others purchased him from the Widow Jacoby. (Meinhart having since died of embarrassment caused by the realization that he had been bamboozled by engineers too stupid to capture dogs.) (Cactus Yearbook, 1917) This is the seminal event in the history of Alec. From June 12, 1916 on, Alec was clearly the rightful legal possession of the students of the University of Texas School of Law. When the Widow Jacoby signed that bill of sale, for a statue that had been shamefully stolen from her husband, law students became her successors in right, in title, in interest and in equity. It is that title, that legal possessory interest, which Plaintiffs ask the court to uphold today.

In 1917, acting against the advice of his lawyer-owners, Alec went on a binge. The Justice of the Peace convicted Alec of vagrancy and he served time in the Austin City Jail. It took nothing less than a pardon from Governor James (“Pa”) Ferguson to free Alec from incarceration. (Focht, “The Story of Alec”). Gov. Ferguson, of course, was later impeached.

In the Fall of 1918 Dean T.U. Taylor cut Alec’s leg into strips and mailed them to engineers serving with the American Expeditionary Forces in Europe. (Focht, “The Story of Alec”). Thus began the great tradition of cutting Alec into pieces.

According to the engineers, Dean Taylor shipped the Original Alec (hereinafter, “Alec I”) to his Mountain Ranch in Virginia in the Spring of 1919 to prevent the law students from exercising their legal right to dominion over him. (Taylor, Fifty Years on the Forty Acres) It is unclear whether the “original” Alec was ever in fact secreted. Research shows that there may have been as many as four Ales, carved at different times for different reasons.

What is clear is that on February 21, 1927, law students reasserted their right to possess Alec, and liberated him from his spazoid engineering captors. Whether or not the Alec reclaimed by his rightful owners was indeed the Original Alec is not known today. Indeed it cannot be known. That secret passed on with Dean Taylor, Judge Townes, Dean T.J. Gibson and other legends of the University. What is important – and irrefutable – is that from 1916 on the Law School had
the legal right to possess Alec, and from February 21, 1927 until March 30, 1987, the Law School in fact did possess the torso-in-dispute.

On March 1, 1927, Alec’s head was presented to Dean Taylor by Governor Dan Moody (who escaped impeachment). (Focht, “The Story of Alec.”) Plaintiffs do not know how the head came to be severed from the body, but it is not implausible to speculate that engineering nerds were attempting to emulate their Dean (who had sliced off small pieces of the leg in 1918) but lacked his near-surgical precision.

In 1928, the engineers claimed that the “original” Alec had returned from the Mountain Ranch. (Taylor, Fifty Years on the Forty Acres). It is interesting to note that a full year had passed from the time the law students reclaimed their Alec to the time the engineers’ Alec appeared: far more time than was necessary to simply ship a statue from Virginia; but enough time to carve an entirely new statue.

In 1936 the engineers’ Alec was sighted by Dean Taylor, Banks McLaurin and Dean John A. Focht. (Fochts, “The Story of Alec”.) Like the imposter he was, this Alec then went underground until the coast was clear.

In 1964 journalism students discovered Alec in a house on Archway Street. Engineers claim this Alec is the One True Alec – Das Original. However, journalists noted that this statue bears the inscription “P. Mansbendel, 1927.” (Daily Texan, July 31, 1964).

It is the studied conclusion of the Plaintiffs that the torso at issue is the earthly remains of the Original Alec and not, as Dean Taylor asserted, from a replica. Our research leads us to conclude that the replica (which stands today in Cockrell Hall) was carved in 1927 to replace the Original Alec after the law students asserted their rightful and legal claim to him. This explains why, for 60 years, the engineers have not asserted a claim to the torso of Alec, which they knew to be in safekeeping in Townes Hall. It is our sad but necessary duty to inform the engineering dweeb that Dean Taylor’s story of Alec’s hiding out at the Mountain Ranch is apocryphal.

IV. ARGUMENTS AND AUTHORITIES

A. The Engineering geeks may assert no legal claim over the original “Old Alec”.

The gravamen of the pencil-necks’ argument is that the torso which they have misappropriated is the remains of “Alec II”, allegedly constructed in the days immediately following World War I, while Alec I was at the “Mountain Ranch” for his health. But there is clear and convincing evidence that the statue revealed in 1928 and claimed to be Alec I restored was in fact crafted in 1927 by P. Mansbendel (Daily Texan, July 31, 1964). What appears far more likely from the limited evidence is that Alec I was restored by the remorseful Engineering Dean, T.U. Taylor, a short time after it had been mutilated during World War I. It was that statue that was seized by the Law School in 1927, and which torso has remained in the school’s protective custody ever since.

There is also clear and uncontroverted evidence that the law students had rightful title to Alec I because of the transaction concluded with Madame Jacoby in 1916. Thus, the only party that can assert valid, contractual title to the hoary old statue is the Law School.

B. Any emotional or equitable claim the Engineering dweeb may have, based on their possession of the statue from 1918 to 1927, is barred by the statute of limitations and laches.

The Engineering students, with the lack of imagination that has characterized their profession ever since the destruction of the Colossus at Rhodes, argue that the statue is nevertheless theirs and that they are entitled, 60 years later, to Waltz in like tourists and reassert their claim. But any claim they may have had, either legal or equitable, is barred by the statute of limitations and the equitable doctrine of laches. “A person must bring suit for… conversion of personal property, taking or detaining the personal property of another… not later than two years after the day the cause of action accrues.” Tex. Civ. Prac. & Remedies Code § 16.002 (Vernon, 1986). Here, the cause of action accrued immediately after the law students made off with the statue, since the gear-heads admit knowing that it was taken and by whom from the moment of its disappearance (undated Daily Texan news clipping, 1927; Focht, “The Story of Alec”). The engineers’ whining must also be silenced by the equitable doctrine of laches. They have allowed their claims to lie fallow for 60 years—a long time, even by the standards of a profession that spent over a thousand years putting up one lousy wall in China. If “equity aids the vigilant and not those who slumber on their rights” (Black’s Law Dictionary, Abridged Fifth Edition, p. 453), these Rip Van Winkles have snoozed their suits away. Furthermore, where the possessors hold openly, continuously, and notoriously in the period during which the statute of limitations runs, and those who claim title fail to take any action to assert their rights, title passes to the possessors by virtue of the doctrine of adverse possession.
The adverse claimants in this case—various engineering-types and their advisors—clearly had knowledge of the Law School’s claim to the torso of Alec I, and received actual notice of possession when Alec’s head was presented to Dean Taylor by the Governor of Texas. Thus, the legal requirements for adverse possession are met, and Defendants may not now, by their illegal and terroristic acts, make any claim upon the petrified chest.

C. The engineering gear-heads, enamored of the “Alec II” statue created in 1927, abandoned Alec I to its fate, and are barred under Texas law from asserting a claim to it now.

It is undisputed that the engineers left Alec I to its fate in 1927, their minimal attention spans fully occupied by the new statue created by Peter Mansbendel. This abandonment continued for sixty years, and was voluntary and absolute. Their conduct thus meets all the requirements for abandonment under Texas law. Although the statue was taken from them, there is no indication of any effort on their part to determine its whereabouts or to recover it. During a period of sixty years (spanning the time period from Lindbergh’s solo flight across the Atlantic to the Voyager’s nonstop flight around the world), these vector-plotting, pocket protector-wearing spazoids never expressed any interest in the torso of their patron saint. Instead, they frittered away their time analyzing centrifugal force in the hula-hoop and gazing in wonder at slide shows of the Statue of Liberty’s scaffolding. Such behavior clearly shows an intent to abandon Alec I to its fate during a period of sixty years and more.

In such a situation, Texas law is clear that title vests in the party that possesses the res. During the past sixty years, the torso of Alec I has been in the possession and delicate care of the Law School Library. Its custodians have cared for it exquisitely, creating temperature- and moisture-controlled environments to prolong its life and occasionally anointing it with Pledge or similar products. (See Ashworth affidavit) The engineering students’ claims are mocked by their shameful prior abandonment of the statue.

D. Public policy requires that Plaintiffs be allowed to continue to care for the torso of Old Alec.

As clearly and incontrovertibly described in the statement of facts above (with supporting references in the March 31, 1987, issue of the Daily Texan), the action was precipitated by the bold daylight theft of Old Alec’s torso from a hapless librarian. Aspersion of Old Alec by the lawless Defendants has been followed by a plague of their singing and leafletting in the studious precincts of the Law School. Day by day, the toll that Defendants’ renegade actions takes upon the Law School, its activities, and—yes—the people of Texas mounts higher.

It cannot be stressed enough that these parabola-plotting pencil-necks did not seek to vindicate their rights through the legal system. Nor did they attempt to negotiate, under the auspices of the President or the Board of Regents of the University, any of their claims and demands. Instead, they acted outside the law, with reckless disregard for the consequences of their actions in terms of physical injury, damage, and human suffering. Nothing more glaringly illustrates their disrespect for all that is True, Just and the American Way than the fact that they have flagrantly disregarded the Temporary Restraining Order issued by this Court on March 31, 1987, commanding that the torso-in-dispute be committed to the Court for safekeeping pending ultimate disposition of the case. The deadline set for the production of the torso was sundown, April 1, 1987. As of 6:00 p.m. on April 2, 1987, Defendants had still not produced the torso and have thus demonstrated their contempt for this Court and the entire justice system.

Public policy demands that Defendants not be allowed to recover. Their actions have made a mockery of any claim they might have asserted; their insincerity deafens the ear that Equity turns toward them.

V. PRAYER

WHEREFORE, PREMISES CONSIDERED, Plaintiff respectfully requests that this Court grant a permanent injunction ordering Defendants MICHAEL HULBERT, THE STUDENT ENGINEERING COUNCIL, and VARIOUS UNNAMED AND UNKNOWN ENGINEERING GEEKS, and their heirs, successors and assigns:

1) to return the torso of Old Alec to the Tarlton Law Library of the Law School no later than high noon on Monday, April 6, 1987;

2) now and forever, to cease and desist from attempting to acquire, steal or otherwise purloin the torso of Old Alec;
3) to deliver to the Student Bar Association of the Law School, at its office in Room
2.125 of Townes Hall, one (1) keg of beer for each and every day they remain in violation of this Court’s Temporary
Restraining Order as sanction for Defendants’ contempt of Court, no later than 3:00 p.m. on Friday, April 10, 1987; and,
4) to pay all Plaintiffs’ costs, and such other costs as the Court may find reasonable.
Plaintiffs also respectfully request that this Court grant any and all other such relief to which the Court may find
them entitled.

Respectfully submitted,

______________________________
Mark G. Yudof
727 East 26th Street
Austin, Texas 78705
State Bar No. 22232500

Attorney for Plaintiffs, THE STUDENTS
OF THE UNIVERSITY OF TEXAS
SCHOOL OF LAW

Wes Stone, Mechanical Engineering student, being inter-
viewed on an Austin television station for his part in the
Alec Affair. Photo courtesy of Dr. Gary Vliet.
The Honorable Joseph A. Wapner
16616 Park Lane Place
Los Angeles, California 90049

Dear Judge Wapner:

As you may be aware, the University of Texas School of Law is an old and venerable institution, with many old and venerable traditions (not to mention an awful lot of old and venomous professors!). Our archivists have uncovered what may well be the oldest tradition at our school: inviting you to speak.

Never one to break tradition, I am hereby offering you our annual invitation to address the University of Texas School of Law. Our annual Law Week -- a celebration of the legal profession -- will be between February 24 and March 2. I know your schedule is busy, but if there is a break anywhere in that time period, we would be honored to have you here. Expenses will of course be reimbursed, and we would like to offer an appropriate honorarium as well.

Okay, Your Honor, I'm going to lay my cards on the table. I am in (as we say in Texas) "deep don-don." Our Dean has stuck me with this job of getting speakers and I am striking out worse than Jose Canseco in the World Series. This is my last chance, Judge. My grades give the word "mediocre" a bad name; my job prospects are somewhere between slim and none, and I don't have to tell you how crummy myicz typing is. If I don't get somebody -- somebody B-I-G -- I'm out on my knees.

You see, I am (wrongfully) being held responsible for the loss of the Law School's oldest icon -- a 100-year-old remnant of a statue by the name of Alexander Frederic Claire. It seems that some young punk engineering students (who for 100 years have laid claim to the same icon) stole the statue from the Law School. Under the "expert" tutelage of our Dean, I was lead counsel on the subsequent action for replevin. The judge was a graduate of our law school. Even the engineers' attorney was a graduate of our law school. It looked like we had it in the bag, but we lost.

(Well, actually, the presiding judge ruled that he could not determine who was the rightful owner, so the engineering geeks have kept it.) So now I am the "cabraio de Cabritos" of the Law School -- can you imagine the ignominy of losing a lawsuit to a bunch of gear-head closet cases from the Engineering School?

You, your honor, are my last hope. If I can get you to speak here, then either: A) The Dean will be so happy he won't make me transfer to the Chernobyl College of Law; or B) We could even arrange for you to sit as a Special Appeals Court Judge to hear our appeal.
The Honorable Joseph A. Wapner
Page Two

So what do you say, Your Honor? My friend and former classmate Abrody Rabinsky (who is now a lawyer in Houston, rich, fat and happy whilst I languish in law school) says you've got a big heart: here's your chance to prove it. Besides, it might be fun.

Of course, if you prefer addressing a more serious topic, we would be honored to host a formal lecture as part of our Distinguished Lecture Series. The enclosed photocopies of previous invitations for such a lecture suggest to me that perhaps you get a million such invitations a year. But how many invitations carry with them the chance to save a life or salvage a career?

I throw myself on the mercy of the "People's Court".

Sincerely yours,

Paul E. Begala
Hero or Goat of Law Week

PEB/s
encl.
## Appendix Q

### ME Computer Development Timeline

*contributed by Peggy Berry*

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1982</td>
<td>(January) Peggy Berry begins working 30 hours per week as a Teaching Specialist for Dr. Walt Reed in his Computer Applications Laboratory on the first floor of Taylor Hall. They used Equinox computers with a front panel keypad. All programs had to be written in octal machine code and entered number by number using the keypad. The courses supported were ME348 and ME383P.</td>
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<tr>
<td>1983</td>
<td>Dr. Walt Reed used his research funds to purchase 7 new microcomputers, Z80, from Balcones Computer Corporation, for the Computer Applications Lab. Peggy Berry installed them and set them up with help from Dr. Reed’s graduate students. These were used along with the Equinox computers to teach ME348 and ME383P as well as to support graduate student research. Mechanical Engineering moved to the “new” ETC building. Peggy Berry and Dr. Walt Reed’s graduate students moved the Computer Applications Lab equipment from Taylor Hall to the new location in ETC 3.136.</td>
</tr>
<tr>
<td>1984</td>
<td>(Summer) Peggy Berry is hired to teach the lecture portion of ME348 in Dr. Reed’s place while he is out of town. She and one of Dr. Reed’s graduate students handle all of the lectures, labs and grading for this class.</td>
</tr>
<tr>
<td>1985</td>
<td>The CAD/CAM lab is established in ETC 2.144 with a large grant of money and equipment from IBM. The first Manufacturing Systems Engineering program is established along with that. The CAD/CAM lab was directed by Dr. Al Traver. Computer administration for ME students was provided by Peggy Berry. Systems Administration of the IBM 4341 and all of its software was provided by Computation Center staff Sue Ponder, Larry Thorne and Paul Morris. Sam Holt and Peggy Berry installed the first network wiring in ME. Appletalk “daisy chain” wiring was installed for the ME Administrative Offices and Area Secretaries. The first ethernet wiring for the ETC building is begun. The IEEE 802.3 thick-net ethernet wiring backbone of coaxial cable is installed from floors 2 through 7 using student labor.</td>
</tr>
<tr>
<td>1986</td>
<td>The AppleTalk “daisy chain” wiring is replaced by PhoneNet “trunk” cabling which was less susceptible to failure. Again installed primarily by Sam Holt with Peggy Berry’s help. The first email server was installed by Peggy Berry to support email between the members of the Administrative offices in ETC. Kinetics FastPath devices were purchased to connect the PhoneNet cabling to the ethernet thick net cabling so that ME Administrative people could access the “world”. The CAD/CAM Lab expands into ETC 2.128 by cutting a door between 2.144 and 2.128. New equipment with large color CAD monitors is installed in 2.128. The email server is upgraded by Peggy Berry to provide internet mail so that ME Administrative people can communicate with people outside of the ETC building. ME and CE had the first internet mail servers on campus, to my knowledge. The CAD/CAM Lab expands, again, into ETC 2.130 where a small Apple Macintosh Laboratory is created for students. This becomes the first ever “LRC”, but long before the LRC fee existed. The CAD/CAM Lab five-year grant is over and the lab is disbanded. The Apple Macintosh Lab moves upstairs to ETC 3.128, thanks to Dr. Davor Juricic who allows us to use the space. ETC 3.128 had previously housed a computer system dedicated solely to drafting and was called the Engineering Graphics Lab. The Engineering Graphics Lab moves to ETC 3.142. Sue Ponder is hired by the ME Department to run the Engineering Graphics Lab in ETC 3.142 and to assist with other computing duties. The ME Apple Macintosh Lab in ETC 3.128 is renamed the ME Microcomputer Lab and eight new IBM PS/2 computers are added. It is this lab that is expanded and upgraded over the years to become the main ME LRC Micro Lab. This lab stopped having any Macintosh equipment at all in year 1999 by which time all had been replaced by Windows PCs. Sue Ponder installs the first ever unix Workstation Lab in ETC 3.140. It is comprised of 18 IBM workstations running the IBM version of unix called AIX. UT Computation Center begins providing internet email and ME signs on as one of the first “test” cases. It works well and we keep it eventually using a free email client called “Eudora”.</td>
</tr>
</tbody>
</table>
1996 - The first Cisco Router is installed in ETC intensely improving communications between ETC and the outside world.

The network wiring in ETC begins the changeover from the old thick-net ethernet wiring to a new structured wiring system. This structured wiring system uses hubs installed in data closets with wires to each office. Four storage closets are converted to data closets for this purpose. The third floor graphics area storage closet is converted to the "main" ETC data closet.

The first ME Web Server is created by Peggy Berry on an AIX workstation affectionately named “hawkeye” using Apache freeware web server software. HTML home pages for the ME Department originally consist of a small number of text-only html files created by Peggy Berry. These files are improved immensely by Greg Chandler and Kevin *****; ME undergraduate students, who added content as well as graphics. It is moved to another AIX machine two years later named “sage”.

The Workstation Lab in ETC 3.140 is “overhauled”. Brand new workstations and servers are installed by Sue Ponder and the number of workstations is increased to 20.

1998 - David Dart is hired to provide professional web pages for the ME Department and to provide staff computing support. Staff Computing Support had previously been provided by Nick Kiritsis, an ME Ph.D. student, and Peggy Berry.

1999 - (July) The Cisco Router is replaced by a Cisco 6506 Switch, and the process of replacing the “repeated” network with a “switched” network begins. The hubs in the data closets in ETC are replaced with Cisco switches by the end of the year 2000.

2001 - The ME Web Server is moved to a Dell Red Hat Linux server and Cengiz Vural takes over the system administration from Peggy Berry.

2002 - (Spring) IEEE 802.11b wireless is installed in ETC. Additional access points are installed in Fall 2002 to increase its availability throughout the ETC building.

2003 - A new data closet is added on the second floor of ETC to support the wired network for the T-room renovation. Network connections are installed for most of the student desks and carrels in the renovated area.
Appendix R

Center for Electromechanics

The Center for Electromechanics began as the Energy Storage Group as a result of research in the physics department seeking a reusable energy supply to ignite fusion devices, primarily word Dr. Herbert H. Woodson and Dr. H. G. Rylander put some design ideas together for a homopolar generator which served as a ME Senior Design Project at the Energy Storage Group in 1971-72. This 0.5 MJ homopolar generator was built in the ME shop then assembled and tested in the Thermodynamics Laboratory in Taylor Hall. It should be noted that this simple direct current device was fully described by Michael Faraday in 1831.

In 1977, the Energy Storage Group was chartered as The Center for Electromechanics, CEM, with Dr. H. G. Rylander as Director and Dr. Herbert H Woodson as Associate Director. From 1972 to 1985, CEM was located in Taylor Hall which was built in 1936 for the UT College of Engineering. From 1976 to 1984, Taylor Hall served to house all areas of the ME Department along with CEM. Dr. H.G. Rylander also served as Chairman of the ME department during this period. Many important prototypes were constructed and demonstrated in the old Civil Engineering Testing Laboratory of Taylor Hall, Room 179. The 20-25 students working on CEM research were delighted to take advantage of the T-Room which had been made into a student lounge and study hall in the Taylor Hall basement.

In 1985, The University of Texas System built and equipped the Electromechanics and Energy Research Building for a cost of $22 million at the Balcones Research Center which was later named the J. J. Pickle Research Campus (PRC). This 475 -acre research campus served as the nation’s primary magnesium refinery during World War II and was eventually declared war surplus, deeded to the University in exchange for operation of naval research facilities and eventually modernized and upgraded in 1985. The University made a large long time investment in PRC with new roads, construction of an 85-MVA substation and loop, chilled water plant, supercomputer, conference center communications link and five new research buildings, including EME. The new 140,000 ft2 building contained multifunction labs, fabrication shops, distributed heavy duty utilities, data communication networks, a vertical firing range for electric guns, office and conference rooms complete with modern instrumentation and data acquisition equipment. In 1987, the U.S. Army named CEM its Center for Excellence.

William F. Weldon joined the group in 1973 and soon became Technical Director under Dr. H.G. Rylander as Director. In 1985, Weldon was made Director and continued until his departure in 1993. John H. Gully acted as Deputy Director under Weldon and moved up to Director in 1993 but he soon left CEM for DARPA/TTO as Program Manager in 1994. Dr. Steven P. Nichols moved in as acting Director in 1994 with the assistance of W. Alan Walls as Deputy Director. Dr. Robert E. Hebner was made Director in 1999. It is interesting to note that all Directors were mechanical engineers until Hebner. As electrical engineer, took the job in 1999.

Starting from a 1972 student project, CEM has been awarded more than 220 funded projects resulting in more than 75 patents. It is considered one of the premier electro-mechanical research and development laboratories in the world for rotating machines, pulsed power, material fabrication and processing, hybrid electric vehicles and accelerators which include electric guns. CEM invented the compulsator, pulsed D.C. welding, rapid powder consolidation and electroprayed coolings. With an operation power supply of 9MA, many more world - class experiments are anticipated.
Appendix S

Contributor’s Biographical Information
Ted Aanstoots
Educational Background: BSME UT Austin 1980, MSE UT Austin 1987, PhD UT Austin 2006
Residence: Austin
Age: 53
Professional Career: Retired Research Engineer, part-time Faculty, full-time student

Rudy Acevedo
Educational Background: BSME, 1983
Residence: San Antonio, Texas
Age: 42
Professional Career: Self-Employed as a Consulting Engineer

Karl Bartels
Educational Background: Graduated from Taft High School, Taft, TX in May 1938; Graduated BS in ME at Univ. of Texas in June 1942
Residence: Portland, TX
Age: 81
Professional Career: From June ‘42 to June ‘44 he was a ME for Mission Mfg. Co., Houston, TX, manufacturing of war equipment for the Navy, from July ‘44 to September ‘46 Served in the U.S. Navy as Ensign and Lt. (j.g.); from July ‘44 to November ‘44 Naval Officer Training at U. of Arizona and Tactical Radar School in Hollywood, Florida; from December ‘44 to August ‘45 CIC Officer on USS Lacerta (AKA-29) in the Pacific; in August and September ‘45 Training for invasion of Japan at Pearl Harbor; from October ‘45 to August ‘46 CIC Officer on USS Quick (DMS-32) in the Pacific; September ‘46 Discharged; from January ‘47 to December ‘50 Design Engineer for Stewart & Stevenson Services, Houston, in manufacture of industrial power units; from July ‘51 to October ‘77 Project Engineer and Senior Engineer for Reynolds Metals Co. at the San Patricio Aluminum Reduction Plant at Corpus Christi, Texas; from November ‘77 to April ‘82 Engineering Manager for Reynolds Metals Co. at the home office in Richmond, Virginia; retired.

Joe Beaman
Educational Background: BSME, MSME at UT, ScD at MIT
Residence: Austin, TX
Age: 52
Professional Career: Professor of ME, Chairman of the Department of Mechanical Engineering, and Engineering Consultant.

Bill Boren
Educational Background: BSME 1949

Douglass Lee Brazell
Educational Background: Hubbard High School - Hubbard, TX Class of 1940; BSME 1948 University of Texas
Residence: Bartlesville, OK
Age: 81
Professional Career: My entire professional career (37+ years) (1948-85) was with Phillips Petroleum Company (Phillips 66). My assignments included Process Design, Construction, Operation and Management of Natural Gas Processing Facilities, Crude Oil Refining Facilities and Petroleum Products Marketing. These assignments involved considerable travel including residences in the USA, Italy and England with prolonged visits to Japan, Alaska, Canada, and Nigeria. I am now retired and living in Bartlesville, Oklahoma for the third time over a period spanning forty seven years.

Scott C. Brown
Residence: Round Rock, TX
Age: 34
Professional Career: 10 years of Semiconductor manufacturing and technology for two companies (Motorola SPS and Siemens Microelectronics), including 1 year living/working overseas in Taiwan and 1 year in Germany; Took 2 years off work in 1999-2000 to live in Seattle, do environmental volunteer work, and study economics.

Wesley A. Brubaker
Educational Background: BSME May 2003
Residence: Austin, TX
Age: 23
Professional Career: I coop-ed with Dell Computers in Round Rock, TX (1999-2000); I interned with Procter and Gamble in Sherman, TX (2001); and I have accepted a full time job offer with ChevronTexaco in Bakersfield, CA (2003).

Joe Case
Educational Background: BSME, The University of Texas at Austin, 2000
Residence: Dearborn Heights, MI
Age: 26
John M. Casstevens
**Educational Background:** BSME 1974, MSME Univ. of Texas at Austin
**Residence:** Rockwall, Texas
**Age:** 58
**Professional Career:** Worked as a Mechanical Engineer for Fluor Engineers and Constructors after graduation from UT. Left Fluor to work for Union Carbide Nuclear Div. At Oak Ridge, Tennessee at the Oak Ridge Y-12 Plant which is the largest nuclear weapons fabrication facility in the US. Worked on various nuclear weapons as a member of the Development division. Also built the national flywheel test facility for testing flywheel energy storage devices for use in electric vehicles. The major work at Oak Ridge was in the area of super precision machining of optical components for use in laser weapon systems in support of the Strategic Defense Initiative (SDI) "Star Wars". Left Oak Ridge and established a super precision optical fabrication capability for a military optics company in Dallas, Texas called Optic-Electronic Corp. After ten years in the optics business left OEC as Vice Pres. of Advanced Products Div. to found Dallas Optical Systems, Inc. in 1991.

Ken Cockrell
**Educational Background:** BS ME U. Texas, Austin, 1972; MS Aero Systems, U. of W. Florida, Pensacola, 1974
**Residence:** Houston, TX
**Age:** 52
**Professional Career:** After graduation from Texas, I joined the Navy and became a pilot, flying A-7 Corsairs in the '70's and F-18 Hornets in the '80's. In the Navy, I got my masters degree during flight training and completed test pilot training in 1979. I was on active duty for 15 years, during which I made 650 carrier landings and did a variety of flight test work. In 1987, I left active duty and went to work for NASA as a research pilot. In 1990, I was selected as an Astronaut, and have flown five shuttle missions, the last three as the mission commander.

William B. Crook
**Educational Background:** High school - Birmingham, MI; UT Austin - BSME 1950
**Residence:** Austin, TX
**Age:** 76
**Professional Career:** I have worked for Air Conditioning/ Mechanical Contractors since graduation. In 1980, I began my current employment with UT's Physical Plant.

Keys Curry
**Educational Background:** BSME 1958

Jerome DeLaCruz
**Educational Background:** BSME @ UT Austin, May 1985
**Residence:** Dubai, United Arab Emirates
**Age:** 39
**Professional Career:** Started as a Facilities Engineer with ARCO Oil & Gas Company and lived/worked in Houston and Corpus Christi. Main responsibilities including Surface and Subsurface engineering responsibilities for new and existing production wells and facilities, both on onshore and offshore sites. Left ARCO in 1991 and joined Conoco Inc. I lived/worked for Conoco in New Orleans, Lafayette, Houston, Midland, and now Dubai on an expatriate position. My main responsibilities including facilities and project engineering progressing to project management and supervision. My current assignment is Supervisor of the Facilities Engineering group responsible for a group of 40 engineers, technicians, designers, draftsmen, and administrative support. My experience has ranged from onshore to offshore facilities in exploration/production and natural gas processing.

David Donaldson
**Educational Background:** BSME 1947

Michael Easton, BSME 1969
**Residence:** Austin, Texas
**Age:** 56
**Professional Career:** GE Power Systems

Gary Finch
**Educational Background:** BSME 1973

Edgar Figueroa
**Educational Background:** AS Mathematics, Bee County College 1990, BSME UT 1994, MS Technology Commercialization, University of Texas 1998
**Residence:** Austin, Texas
**Age:** 34
**Professional Career:** I manage a product support group for a network software startup company focused on voice and video over IP.

Mark Finley
**Educational Background:** BSME 1963 University of Texas; MBA 1965 Stanford University
**Residence:** Austin, TX
**Age:** 61
**Professional Career:** Varied

R. Don Foster
**Educational Background:** BSME 1948
Charles R. Frederick
Educational Background: BSME 1944

Emil E. Friberg
Educational Background: BSME 1958, ROTC Commission as 2nd Lieutenant
Residence: Arlington, TX
Age: 67
Professional Career: Began work for Texas Electric Service Company in a power plant in Wichita Falls. Later transferred to Commercial Dept. in Wichita Falls and then to Marketing Dept. in Ft. Worth. Joined consulting engineering firm in 1969 and continue to work full time.

Edward M. Galle
Educational Background: BSME – University of Texas, Jan 1950; MSME – Rice University, May 1959
Residence: Friendswood, Texas
Age: 74
Professional Career: Upon graduation from UT, I was employed as a Technical Consultant to the Air Force in the area of communication intelligence. I accepted a direct commission as an Officer in the Air Force during the Korean War working in communication intelligence. Upon discharge from the Air Force following the Korean War, I was employed by the Hughes Tool Company in Houston, Texas as a Mechanical Engineer working in Research and Development of specialized tools for finding and production of petroleum. My career with Hughes spanned 35 years, rising to the position of Senior Vice President – Research and Engineering.
I was elected a UT Distinguished Engineering Graduate in 1990. I retired from Hughes Tool Company in 1988 and since that time have done engineering consulting work for various Companies in the Petroleum Industry. I am actively engaged in this type of work at the present time.

Forrest Gober
Educational Background: Entered UT 09/39 after one year at John Tarleton, then a branch of A&M. I graduated in 1942.
Age: 82
Professional Career: BSME ’42(August). Went directly to work for Humble Oil & Refining Co. at Baytown, TX refinery at salary of $165/mo, just a few weeks short of 21st b’day on 09/01/42. Company applied for 2A deferment (essential to war effort) which was granted and renewed for entire war. Effort to enter armed forces was denied because of minor physical problem. Continued to work for Humble and its successor Exxon until 10/01/77 with several assignments including a year in Sicily as an affiliate and five years with the Aleyska pipeline in the Houston office.

Werner Goldsmith
Educational Background: BSME 1944, MSME 1945 UT Austin, PhD Univ. of California, Berkeley, 1949
Residence: Berkeley, CA
Age: 78

Marcel Gres
Educational Background: BSME 1946

Fred D. Griffin
Educational Background: BSME 1942, Univ. of Texas
Residence: Lufkin, TX
Age: 82
Professional Career: 2 years, Douglas Aircraft; 2 years US Navy aboard US Cowpens; 38 years, Lukin Industries, retired as VP of Engineering.

William Grimes
Educational Background: BSME 1943, MS in EM 1950
Residence: Houston, TX
Age: 81
Professional Career: 1 year with GE as Test Engineer; 2 years in USNR; 38 years with Humble/Exxon.

David Gris
Educational Background: BSME 1958
Ronald Miller Guinn  
**Educational Background:** BS in ME UT 1954, B.D. 1959  
Austin Presbyterian Theological Seminary, Austin; ThM. APTS 1963  
**Residence:** Austin, Texas  
**Age:** 71  

Gerald Gustafson  
**Educational Background:** BSME 1940

Sandy Hagan  
**Educational Background:** BSME 1949  
**Residence:** Tyler, TX  
**Age:** 86  
**Professional Career:** I worked in petrochemicals; atomic energy, and aerospace.

Alice Hatfield  
**Educational Background:** BSME, UT Austin 1985  
**Residence:** Austin, TX  
**Age:** 40  
**Professional Career:** Immediately after graduation, I went to work at Tracer Aerospace, involved primarily with development of missile countermeasures. After a few years, I moved to Montreal, Canada and worked for a subsidiary of Allied-Signal. The major projects were night vision equipment (goggles for military personnel, although we provided a few to the RCMP for security at the Calgary Olympics) and the fuel control system for the V-22 Osprey. Following a 2 year "motherhood break," I returned to work, not as an engineer, but as a product marketing manager for an electronic component (semiconductors, etc.) distributor; eventually transferring back to their Austin sales office. In my last (and hopefully final) career change, I returned to The University as a computer systems analyst, currently developing and maintaining applications for the Budget Office.

George Helland  
**Educational Background:** BSME at UT, ’59; MBA at Harvard, ’61  
**Residence:** Houston, Texas  
**Age:** 65 last week  
**Professional Career:** Many positions at Cameron Iron Works, both in Houston and in the UK, between 1961 and 1977; final position Executive Vice President and Chief Operating Officer. President and CEO of Weatherford International, Houston, until 1979; President & CEO of The McEvoy Company, Houston, until 1986; consulting for four years during which time I was also President of McCall Industries, Houston, and President and COO of Lockwood International, Gering, Nebraska, until 1990. Deputy Assistant Secretary of Energy in the first Bush Administration. Vice President of Dresser Industries, Dallas, from 1993 through 1997 responsible for Dresser’s activities in the former Soviet Union, China and Vietnam. Senior Associate, Cambridge Energy Research Associates since then. Also general management consulting and various corporate and not-for-profit directorships since then.

Debra K. Hentz (Debra Wolgamuth when I graduated)  
**Educational Background:** BSME 1989  
**Residence:** Vancouver, WA  
**Age:** 48  
**Professional Career:** Joined Hewlett Packard after graduation (Jan 1990) as an R&D Design Engineer in their medical products division in McMinnville, Oregon. I was placed on new product development in a team of 5 ME’s chartered to design, test, qualify, obtain FDA approval, and transfer into local production a Defibrillator named “CodeMaster”. My responsibility was the recorder (or printer) in the Defibrillator and the product was released in 1993. Upon release, I followed the product into production and became the sole Manufacturing Engineer in charge of the product and process and eventually was given responsibility for two other product lines as well (electrocardiographs and holter monitors). I supported current production as well as field failure and returns.

In 1995, I transferred to HP’s Inkjet Printer Design Center in Vancouver, WA. I started as a Mfg Product Engineer responsible for DFM & DFA for a new printer in development (DeskJet 712). This was high volume production (as opposed to medical’s low volume) so design margin and ability to mfg high volumes at high speed were my main objectives. In 1997, I was promoted to Mfg Engr Project Manager. My team completed the DJ712’s introduction production ramp, transferred the product overseas, and started working on DFX for the next generation products (DJ800 and DJ900 series). In 1999, I become the Product Program Manager responsible to lead a cross-functional team (finance, marketing, engineering, safety, etc) through the definition, implementation, and release of the DJ800 series products. In 2000, I transferred to R&D and became the R&D Project Manager in charge of Product Design, Chassis, Industrial Design, and Human Factors on a high-end Deskjet printer in development (DJ1500).
By mid year, my assignment changed and I was leading a joint team on the same DeskJet printer product but responsible for both R&D design and manufacturing DFX and production start-up for the Carriage (subsystem responsible for ink cartridges and their motion) and the Ink Delivery System. We successfully released and ramped the product at which time I was transferred to R&D Project Manager in charge of the Design Center Paper Path Team (2001). This team is responsible for architecture, development, and start-up production for paper motion mechanisms in all DeskJet printers (a cross-divisional team with technology depth in one area). I am with the same team today; however, our charter has changed over time. Today, we are focused on moving “all types of media” in DeskJet printers and investigating new, off-schedule technologies and inventive new ideas for the DeskJet business. We are looking to the future and excited about the possibilities.

Michelle Holt
Educational Background: Graduated High School; Freshman at UT
Residence: Austin, TX
Age: 19

David C Hughes
Educational Background: Graduated University of Texas at Austin, 1972 with BSME
Residence: Missouri City, Texas
Age: 53
Professional Career: 30 Years at Dow Chemical Houston office, started as Mechanical Engineer, became Manager over Mechanical/Pressure Vessel Department, Project Engineer for several projects. Lived in South Korea for 2 years, Netherlands – 1 year.

Sockalingam (Sam) Kannappan
Educational Background: MSME 1970 UT at Austin
Residence: Houston, Texas
Age: 58
Professional Career: Mechanical Design Engineer doing pipe stress analysis.

Ike Kibbe
Educational Background: BSME 1941

Carey King
Educational Background: Temple High School, Temple, TX; BSME 1997 UT; currently in PhD at UT (ME)
Residence: Austin, TX
Age: 28
Professional Career: Independent engineering consultant for 1.5 years now, grad student since Fall 1998.

Henry S. Kleespies
Educational Background: BSME 1942

John Knobelsdorf
Educational Background: BSME 1952
Residence: San Antonio, TX

Mary Jo (Ross) Knobelsdorf
Educational Background: BSME 1952
Residence: San Antonio, TX

Stanley Kuenstler
Educational Background: BSME 1944

Ronald Keith La Niear
Educational Background: Fall 2000 BSME
Residence: Houston, TX
Professional Career: I’m w/ KBR, a wholly owned subsidiary of Halliburton, in the New Business Value Group of the Operations & Maintenance Department.

Roger K. Lee
Educational Background: BSME UT Austin 1997; MBA Sam Houston State University 2001
Residence: The Woodlands, Tx.
Age: 28
Professional Career: Design engineering for oilfield service company.

Jack Liefer
Educational Background: BSME, MIT, 1987; MSME, UT, 1989; PhD, UT, 1995
Residence: Paducah, KY
Age: 37
Professional Career: Assistant Professor of Mechanical Engineering, University of Kentucky
Daniel D. Lindner
Residence: El Lago, TX (Houston Metro)
Age: 38
Professional Career: Work at NASA Johnson Space Center. Started as a Flight Controller for the Space Shuttle Robotic Arm (work in MCC etc.). I am now the Chief of the Robotics Operations Branch at Johnson Space Center and have responsibility for planning and executing Robotic tasks for both the Space Shuttle and Space Station missions. This includes training the astronauts, creating procedures for the astronauts, engineering analyses for Robotic tasks, and staffing the Mission Control Center (MCC) with specialists trained on the Robotic systems.

William E. (Bill) Ludlow
Educational Background: B.A. Austin College, Sherman, TX – 1990 (Mathematics); BSME–University of Texas, 1992
Residence: Jenks, OK
Age: 34
Professional Career: I work for CardinalHealth Medical Products and Services. We manufacture needles and special procedure trays for the medical industry. CardinalHealth is a 47 Billion dollar a year company and is currently number 27 on the Fortune 500 list. I am a project engineer in the manufacturing side. I develop and incorporate cost savings through process improvements as well as supporting Research and Development.

Bill Luedecke
Educational Background: BSME 1940

Kurt Lyell
Educational Background: BSME, 1997
Residence: Austin, TX
Age: 29
Professional Career: I am currently a field engineer for Applied Materials. Other interests include diamond synthesis, carbon nanotube applications, and (of course) finding a better energy solution.

John McGill
Educational Background: BSME 1949

Bill McGinnis
Educational Background: BSME 1940

Michael B. McShane
Educational Background: BSME – ’68
Residence: Austin, Texas
Age: 58
Professional Career: Practicing engineer since graduation in the semiconductor industry.

James L. Malone
Educational Background: 1931 Grad. Carthage (TX) HS No. 2 in class of 50; 1936 Grad. College of Marshall (TX), a junior college; 1940 Grad. UT Austin BSME; 1949 Grad. Temple U. School of Law JD; 1959 ++ U of PA, Wharton School; Graduate Courses in Applied Economics
Residence: Kennett Square, PA
Age: 89

Scott J. Mason
Educational Background: BSME, UT 1993, MSE, UT, 1995, PhD (Industrial Engineering), Arizona State University, 2000
Residence: Fayetteville, AR
Age: 32
Professional Career: Assistant Professor and Director of Graduate Studies, Department of Industrial Engineering, University of Arkansas.

James L. Miller (not Jay as the Texas-Ex people have it)
Educational Background: BSME, UT, 1985
Residence: Garland, TX
Age: 45
Professional Career: CAD jockey

Beal Moore
Educational Background: BSME 1940

Jim Moritz
Educational Background: BSME 1986
Residence: San Antonio, TX
Age: 40
Professional Career: Started work at an Indy Car race engine shop. Currently working at a test lab conducting engine test to evaluate engine oil.
Rafael Moras, Ph.D., P.E.
**Educational Background:** BS Industrial Engr (Monterrey Tech, Mexico) 1980; MS OR/IE (UT) 1983; PhD OR/IE (UT) 1986
**Residence:** San Antonio, TX
**Age:** 44
**Professional Career:** Professor of Industrial Engineering Consulting Services in IE

Leslie Morrill
**Educational Background:** BSME 1985
**Residence:** Houston, TX
**Age:** 42
**Professional Career:** Mechanical Design Engineer - Medical Industry; Also worked in Harm Missile Manufacturing and Semiconductor Process Equipment.

Troy Morris
**Educational Background:** BSME 1948

Richard (Dick) Morton
**Educational Background:** BS-RTF, Texas, 1976; BS-Mech Eng, Texas 1983; MSE, Purdue, 1995
**Residence:** Dearborn, Michigan
**Age:** 47
**Professional Career:** 3 years Aero/defense R&D work at Tracor (Austin), then 17 years automotive (engine design and manufacturing) – Cummins Engine (North Carolina and Indiana), Doehler-Jarvis Castings (Toledo), Ford Motor Co (Dearborn) for the 10 years and continuing. The last 2 years in Engine performance development. Received PE in Indiana.

P. Barry Niland
**Educational Background:** BSME 1940
**Place of Current Residence (City, State):** Austin, TX

Peraphol Nithichaval
**Educational Background:** M.S. Operations Research and Industrial Engineering
**Residence:** Austin, TX
**Age:** 23
**Professional Career:** Industrial Engineer

Murat Numan
**Educational Background:** MS in ME
**Residence:** Heidelberg, Germany
**Age:** 27
**Professional Career:** TenFold Corp, SAP AG

James R. Partin
**Educational Background:** BSME 58, MSME 60; PhD 65 at UT
**Residence:** Stillwater, OK
**Age:** 66
**Professional Career:** My first employment after PhD was North American Aviation and the Apollo Space Program. I retired from The Boeing Company after ten years working on the International Space Station. In between, I was a pioneer of ground or earth source heat pumps, and hold three patents in the technology.

Brian Pillittere
**Educational Background:** BS Mechanical Engineering, 1986, UT Austin. My first semester was Fall 1981 and I graduated in May 1986.
**Residence:** Jemison, Alabama
**Age:** 39
**Professional Career:** I have been involved in Electric Power Generation Engineering for 16 years. I began my career as a plant engineer with Texas Utilities (now TXU). I worked at 2 of their plants and in the corporate office located in Dallas. I relocated to the central valley of California in 1992 to help operate and maintain a small power plant fueled by agricultural and industrial wood waste. I relocated to central Alabama in 2002 after accepting an engineering position at a combined cycle gas-fired power plant that is currently under construction.

Cal Porcher
**Educational Background:** BSME 1948

Jay L. Poth
**Educational Background:** BSME 1962

Frank Pugsley
**Educational Background:** BSME 1942

Shad Rahman
**Educational Background:** MSME UT-Austin (1993), BSME UT-Austin (1991), MBA Finance (1999)
**Residence:** New Orleans, LA
**Age:** 33

Rick Relyea
**Educational Background:** BSME 70 MBA 83 UT Austin
**Residence:** Austin, Texas
**Age:** 55
**Professional Career:** Entrepeneur, Buy businesses, improve and then sell.
Bill Robertson
**Educational Background:** BSME 1942

Tom Ryan
**Educational Background:** Antonian College Prep High School, SA, TX; 3rd year at UT as ME.
**Residence:** Austin, TX
**Age:** 21

Nathan Rylander
**Educational Background:** Bachelor of Science Mechanical Engineering May 2002
**Residence:** Galveston, TX
**Age:** 23
**Professional Career:** I am currently attending medical school at UTMB (University of Texas Medical Branch)

Raul Saenz
**Educational Background:** BSME 1958
**Professional Career:** Immediately after graduation from UT in June 1958, Raul went to work for General Dynamics in Fort Worth as a design engineer. He worked primarily on the B-58 supersonic bomber system. In March of 1962, Raul left General Dynamics and went to work for the U.S. Air Force at the San Antonio Air Logistics Center as a GS-11 project engineer. While there he progressed from section chief to division chief and ultimately to the position of the SA-ALC Chief Scientist/Engineer (a GM-15), serving as a technical advisor to the Commander of the Air Logistics Center. After his retirement, Raul went to work part time for Arinc Research Co. and has been working there to date as Principal Engineer.

Javier Saucedo
**Educational Background:** BSME UT-Austin, Fall '98
**Residence:** Houston, TX
**Age:** 28
**Professional Career:** In my 3rd year at Stewart & Stevenson Services as my 2nd job out of school. I’ve worked in oilfield equipment design since graduation.

Eric Schafer
**Educational Background:** BSME 2000
**Residence:** Austin, TX
**Age:** 31
**Professional Career:** Electronics technician in military/US Coast Guard - 4yrs; Various manufacturing and education jobs in Austin while going to school.

Charles Corey Scott
**Educational Background:** 1996, BSME, High Honors, UT-Austin; 1999, MSME – Stanford University
**Residence:** Pearland, TX
**Age:** 28
**Professional Career:** I completed my BSME at UT with over 20 credit hours each in Theatre and Anthropology, reflecting how little focus I initially had. I also completed the co-operative engineering program working for Amoco Petroleum and worked the Texas Shakespeare Festival as a technician. During my career at UT, I worked in five different labs, including Dr. Diller’s and Dr. Barr’s, discovering bioengineering as a fascinating and quick-paced field. From UT, I went on to Stanford with a Whitaker Fellowship to obtain a Ph.D., but decided to pursue a Ph.D., M.D. instead. So, I finished an MSME at Stanford in 1999, and transferred to Baylor College of Medicine in Houston, where I completed two years of medical school, including rotations in internal medicine and surgery in 2001. I have since then worked toward a Ph.D. in Bioengineering at Rice University. I expect to complete the Ph.D. in two to three years with one more year of medical school to follow.

John Scott
**Educational Background:** BSME 1940
**Age:** 86
**Residence:** Waco, TX
**Professional Career:** Worked at Reed Roller Bit Co., in Houston, TX from 1940 to 1941; Remington Arms Co., Inc., in Independence, MO from 1941 to 1944; United States Navy from 1944 to 1946; Star Engraving Co., in Houston, TX from 1946 to 1970; Robinson Orifice Fitting Co., in Houston, TX, from 1970 to 1973 and Perry Equipment Corp in Mineral Wells, TX from 1973 to 1983.

Nat I. Shapiro
**Educational Background:** BSME UT 1957 and continued schooling - now up to 240 semester hours
**Residence:** Dickinson, TX
**Age:** 73
**Professional Career:** Sales Engineer (self-employed 30 years); Real estate developer (Developed high-rise condos, apartment complexes, etc); investor (25 years).

Eric Schafer
**Educational Background:** BSME 2000
**Residence:** Austin, TX
**Age:** 31
**Professional Career:** Electronics technician in military/US Coast Guard - 4yrs; Various manufacturing and education jobs in Austin while going to school.

William F. Schneider
**Educational Background:** 93’ B.S.M.E. University of Texas at Austin; 95’ M.S.M.E. Georgia Tech
**Residence:** Lancaster, CA
**Age:** 31
**Professional Career:** I work for Lockheed Martin Aeronautics Company on Advanced Development Projects (The Skunk Works). I am a Structural Dynamicist specializing in vibration analysis, shock dynamics and landing gear dynamics.

Byron Elliott Short, Jr.
**Educational Background:** BSME ’73 (UT); MSME & MSAeroE ’77 (U. Ariz.); PhD ’94 (SMU)
**Residence:** Fairview, TX
**Age:** 53
**Professional Career:** 1973-83: US Army (Commanded Combat Engineer companies in Korea (2d ID) and Hawaii (25th ID), Assistant Division Engineer (25th ID), Project Engineer in the San Antonio Area Office of the Corps of Engineers Ft. Worth District). 1983-present: Mechanical Design Engineer at Texas Instruments and Raytheon (3 yrs as mechanical design engineer for radar systems; and 17 yrs as thermal design engineer for a wide range of military
and commercial electronics for radar systems, infrared vision enhancement systems, communications and antenna systems (ground, airborne, and satellite), military computer systems, and digital display systems. Applications have required all modes of heat transfer, fluid dynamics, computational fluid dynamics, and testing.

Kevin Shotts
Educational Background: BSME 2004
Residence: Cedar Hill, TX
Age: 24
Professional Career: F-16 Design Engineer for Lockheed Martin

Terrell J. Small
Educational Background: BSME UT 1938-42; Graduate Program/Reserve Officers Naval Architecture Group at Univ of Michigan 1944/45; Graduate School UT 1947/48; Air Conditioning & Refrigeration Engineering Training/York Corporation, York Penna. 1949
Residence: Ft. Worth, TX
Age: 81
Professional Career: Design Engineer for Douglas Aircraft Co, El Segundo, Ca 1942-44; Employed in Sales & Engineering for Air Conditioning Distributor in Austin, Tx 1949-52; Originated and was Manager of Air Conditioning Division for Lennox Industries, Ft. Worth, TX 1952-55; Owned and Operated a Manufacturer’s Representative organization from 1955-85 selling engineered components to refrigeration and air conditioning OEM mfg’s and wholesalers in Texas, Oklahoma, Arkansas, and Louisiana; Founder in 1975 of Mertex Products, Inc., Fort Worth, TX, a manufacturer of residential air conditioning coils, blowers & air handlers. Succeeded in the business by three sons while remaining semi-retired as a consultant.

Ruell Solberg, Jr.
Educational Background: BSME UT-Austin 1962; MSME UT-Austin 1967; MBA Trinity Univeristy 1977
Residence: San Antonio, TX
Age: 63
Professional Career: Research Engineer positions, Defense Research Laboratory (later named Applied Research Laboratories), Austin, TX, 1962-67; Research Engineer to Principal Engineer, Southwest Research Institute, San Antonio, TX, 1967-2000.

William E Spears, Jr.
Educational Background: BSME ’58
Residence: Houston, TX
Age: 68
Professional Career: 26 years with manufacturing companies serving the oilfield service industry; 12 years with a consumer product company; All employment required technical expertise.

Randall S. Speir
Educational Background: A.S. Mathematics, B.S. Mechanical Engineering
Residence: Carrolton, TX
Age: 31
Professional Career: Automotive Design Engineer.

William Staton
Educational Background: BSME 1943

Wes Stone
Educational Background: BSME 1988

Karen A. Thole
Educational Background: 1982 BSME University of Illinois; 1984 MSME University of Illinois; 1992 PhD University of Texas
Residence: Blacksburg, VA
Age: 42
Professional Career: After receiving her PhD from the University of Texas in 1992, Dr. Thole was a post-doctoral researcher for two years at the University of Karlsruhe in Germany. In 1995 she began as an Assistant Professor at the University of Wisconsin. In 1999, she moved to Virginia Tech where she was promoted to an Associate Professor in 2000. In her VT Experimental and Computational Convection Lab (VTExCL) she and her graduate students perform heat transfer, flow and thermal field studies relevant to heat exchangers, gas turbines, and electronic power modules. These studies include both experimental and computational aspects. United Technologies-Pratt & Whitney, the Department of Energy, the US Air Force, Modine Manufacturing, and the National Science Foundation provide funding for these studies.

Hui-tzeng Ting
Educational Background: PhDME 1972
Residence: Bronx, NY
Professional Career: Proprietor - Ting Company

Natalie A. Vaughn
Educational Background: Graduated from highschool in Anchorage, AK, attended Lamar University for the first half of my degree and transferred to UT for the second half. While I was at UT I was a NCAA Div-I athlete, participating in the Women’s Rowing program. (There were only 3 engineering students in the rowing program while I was rowing.)
Residence: Austin, TX
Age: 28
Professional Career: A series of project management activities. Everything from managing the launch of different subsystems for the new Ford Taurus and Explorer to the largest transmission upgrade for the Texas Transmission Grid in the history of the State.
Nathan Vollrath
Educational Background: BSME 1996
Residence: Houston, TX
Age: 29

Warren R. Waggoner
Educational Background: BSME 1974
Residence: Kingwood, TX
Age: 51
Professional Career: Following graduation from the University in 1974, I joined what was then Exxon Company, U.S.A., in New Orleans. Ten years later, after several drilling, reservoir and production engineering assignments, I changed my career focus to Information Systems. Currently, in my position of Manager, Systems Software-Global Services, I manage a portion of the firm’s global computing operation in Houston. Additionally, since 1997, I have served as ExxonMobil’s UT Engineering Recruiting Team Captain. I am a Registered Professional Engineer and a past College of Engineering Graduation Commencement Speaker.

Susan Wang
Educational Background: BSME 1993
Professional Career: University Relations Manager for an Oil Services Organization

Gary W. Watt
Educational Background: McCallum High School, Austin, TX, 1965; BSME, UT@Austin, 1970; Program for Management Development, Harvard Business School, Cambridge, MA, 1982; PE in CO and TX
Residence: Woodridge, IL (Chicago suburb)
Age: 55
Professional Career: 1970-1972: USAF pilot; 1973-1982: Production Operators, Inc. (oilfield services), Houston, TX and Denver, CO, last as VP Sales & Marketing; 1983-1985: DSI Transports, Inc. (chemical tank trucks), Houston, TX, Exec. VP Sales & Marketing; 1986-1989: United Transport Tankers Ltd. (chemical tank trucks), Chestpaw, Wales, United Kingdom, Managing Director; 1990-1992: United Transport Containers, Inc. (marine container services), Houston, TX, President; 1993-1996: DSI Transports, Inc. (chemical and petroleum tank trucks), Houston, TX, Exec. VP Sales & Marketing; 1997: entrepreneurial ventures, Houston, TX; 1998: Production Operators, Inc. (then a division of Schlumberger; oilfield services), Houston, TX, VP Sales & Marketing; 1999-present: Superior Bulk Logistics, Inc. (chemical and food products tank trucks); Oak Brook, IL; Sr. VP – Sales & Marketing.

Joseph Wier
Educational Background: BSME 1942
Residence: Fort Worth, TX
Age: 85

Mark E. Williams
Educational Background: BSME 1962, MSME 1965-both at UT
Residence: Seguin, TX
Age: 65
Professional Career: Every job I have had has utilized my degree. I started with a steel mill in Seguin and after 7 years started my own business as a supplier to Motorola when they put a plant in Seguin (their first outside the Midwest.) I have spent the rest of my career in that field of metal stampings, most recently operating my own tool and die shop making progressive dies, living and working in Monterrey, Mexico. I recently moved back to Seguin and do consulting work in that field for companies in Mexico.

Mark Williamson
Educational Background: BBA Finance, Univ. of Oklahoma, 1984; BSME, Univ. of Texas, 1991; MBA, Rice University 1997
Residence: Santa Fe, NM
Age: 41
Professional Career: My career has taken many turns, finally arriving at my true passion, professional stone sculptor. After receiving my BSME, I worked for 2 years as the technical support Manager for a Houston manufacturer of rack & pinion construction elevators called Champion Elevator, acting as the liaison between engineering and sales for projects. In 1994, I left Champion to start a business in Budapest, Hungary importing sporting goods into Hungary and establishing a network of wholesale distribution for a US brand of inline skates. Competition swarmed in 1995; I entered graduate school in the Summer back in Houston. After graduation, I attempted several other entrepreneurial ventures, and in 1999, I accepted a position with Intermost Corporation, a Chinese provided internet technology, and moved to Shenzhen, China then later to New York City, finally departing the company in 2001 after the collapse of both the company and industry. In the Fall of 2001, I began a permanent transition back to my roots, becoming a professional stone sculptor and engaging in an elite Hungarian manufacturer of fine hand-painted porcelain in the creation of a new (and very expensive) customized porcelain bust product. As part of this transition, I moved to Santa Fe in Summer 2002. My completed marble busts have sold to several private collections of wealthy noted members of Dallas community. Currently, efforts to obtain representation in London, Santa Fe, and Dallas are underway.
Susan Wang  
**Educational Background:** BSME 1993  
**Residence:** Houston, TX  
**Age:** 31  
**Professional Career:** University Relations Manager for an Oil Services Organization

W. Raymond Woolrich  
**Educational Background:** BSME 1943

Linda Saia Woosley  
**Educational Background:** BSME 1979 The University of Texas; MSIE 1987 Lamar University  
**Residence:** Pasco, WA  
**Age:** 45  
**Professional Career:** Worked as an odd-job consultant in the tight job market of the early 80s. Attended Lamar University grad school. Started my own business in general home maintenance in order to pay bills. Taught classes at Lamar in Drafting, Dynamics, and Kinematics of Machines. A month after graduation (8/87), I interviewed with Washington Public Power Supply System, among others. I started work in December 1987 as a simulator engineer doing real-time computer modeling. In 1992 I transferred to Quality Assurance and performed audits and surveillances of operations and engineering. In 1997, I transferred to Reactor Fuels when I was the only person left in the company with knowledge of a particular project, and I am still on that project. The company is now called Energy Northwest. I am principal engineer in the fuel design group, working in safety analysis.

Jeriad Marcus Zoghby  
**Educational Background:** BS in Applied Mathematics with Statistics at Texas A&M; MS & PhD in Operations Research & Industrial Engineering at the University of Texas  
**Residence:** San Antonio, TX  
**Age:** 33  
**Professional Career:** Currently the Lead Quantitative Analyst for HEB Grocery. I have also worked in the semiconductor (AMD & Fujitsu) and e-commerce (Garden.com) industries.
Acknowledgements

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1930’s: Russell D. Hicks (BSME ’34)
1940’s: Karl Bartels (BSME ’42), Bill Boren (BSME ’49), Douglass L. Brazell (BSME ’48), David Donaldson (BSME ’47), R. Don Foster (BSME ’48), Charles R. Frederick (BSME ’44), Forrest Gober (BSME ’42), Werner Goldsmith (BSME ’44), Marcel Gres (BSME ’46), Fred Griffin (BSME ’42), William Grimes (BSME ’43), Gerald Gustafson (BSME ’40), Sandy Hagan (BSME ’49), Ike Kibbe (BSME ’41), Henry Kleespies (BSME ’42), Stanley Kuenstler (BSME ’44), Bill Luedecke (BSME ’40), John McGill (BSME ’49), Bill McGinnis (BSME ’40), James L. Malone (BSME ’40), Beal Moore (BSME ’40), Troy Morris (BSME ’48), P. Barry Niland (BSME ’40), Cal Porcher (BSME ’48), Frank Pugsley (BSME ’42), Bill Robertson (BSME ’42), John Scott (BSME ’40) in memoriam, Terrell Small (BSME ’42), William Staton (BSME ’43), Joseph Wier (BSME ’42), W. Raymond Woolrich (BSME ’43)
1950’s: William B. Crook (BSME ’50), Keys Curry (BSME ’58), Emil Friberg (BSME ’58), Ed Galle (BSME ’50), David Gris (BSME ’58), Ronald Gunn (BSME ’54), George Helland (BSME ’59), John Knobelsdorf (BSME ’52), Mary Jo (Ross) Knobelsdorf (BSME ’52), James Partin (BSME ’58), Nat Shapiro (BSME ’57), Bill Spears (BSME ’58)
1960’s: Michael Easton (BSME ’69), Mark Finley (BSME ’63), Mike McShane (BSME ’68), Jay L. Poth (BSME ’62), Ruell Solberg, Jr. (BSME ’62), Mark Williams (BSME ’62)
1970’s: Joe Beaman (BSME ’72), John Casstevens (BSME ’74), Ken Cockrell (BSME ’72), Gary Finch (BSME ’73), David Hughes (BSME ’72), Sockalingam Kannapan (MSME ’70), Rick Relyea (BSME ’70), Byron Elliott Short (BSME ’73), Hui-tseng Ting (PhDME ’72), Warren Waggoner (BSME ’74), Susan Wang (BSME ’93), Gary Watt (BSME ’70), Linda Woosley (BSME ’79)
1980's: Ted Aanstoos (BSME '80), Rudy Acevedo (BSME '83), Jerome DeLaCruz (BSME '85), Alice Hatfield (BSME '85), Debra Hertz (BSME '89), Daniel Lindner (BSME '87), James Miller (BSME '85), Rafael Moras (MSME '83), Jim Moritz (BSME '86), Leslie Morrill (BSME '85), Dick Morton (BSME '83), Brian Pillittere (BSME '86), Wes Stone (BSME '88)

1990's: Scott Brown (BSME '91), Charles Scott (BSME '96), Edgar Figueroa (BSME '94), Roger Lee (BSME '97), Jack Leifer (MSME '89, PhD '95), Bill Ludlow (BSME '92), Kurt Lyell (BSME '97), Scott Mason (BSME '93), Shad Rahman (BSME '91), Murat Numan (MSME '99), Javier Saucedo (BSME '98), William Schneider (BSME '93), Karen Thole (BSME '82, PhD '92), Natalie Vaughan (BSME '98), Nathan Vollrath (BSME '96), Mark Williamson (BSME '91), Jeriad Zogby (BSME '97)

2000's (includes current students): Wesley Brubaker (BSME '03), Justin Case (BSME '00), Taylor Green (projected BSME '04), Michelle Holt, Carey King (BSME '97, working on PhD), Ronald K. LaNiear, Peraphol Nithichaval, Tom Ryan, Nathan Rylander (BSME '02), Eric Schafer (BSME '00), Kevin Shotts (projected BSME '04), Randall Speir ('02), Jonathan Rylander (projected BSME '05)