PROCEED PROJECT IDEAS

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Core Course	**Project Descriptions**	**Resources**
ME 324 Kinematics and Dynamics	*Robotics – Simulation and Physical System Experiments.* Project theme could span the semester. Begin with simulation of kinematics, include graphical animations, students plan robot paths and kinematics. Run simulations to determine feasibility. Run on physical robot after satisfactory simulations. Proceed to simulation of dynamics. Students add various payloads to their paths. Determine dynamic loads. Adjust as necessary through simulation. Run on physical system after satisfactory simulation.	Equipment: Small tabletop industrial robot with controller. Recommend planar robot such as Adept Cobra 600. Ancillary instrumentation and tooling. Personnel: First semester oversight by Robotics Research Group and 1 RRG fulltime TA to setup and administer. Subsequent semesters part time TA to administer.
ME 344 Dynamic Systems and Controls Or ME 244 Dynamic Systems and Controls Lab	*Single-Axis Motion Control – Simulation and Physical System Experiments.* Project theme could span the semester. Begin with modeling of electro-mechanical system. Perform experiments with physical system to obtain physical model parameters for plant. Proceed from modeling to control. Add basic controllers. Simulate response for controllers. Include animations with simulations. Implement controllers on physical system. Measure behavior of physical system under various basic control actions. Compare with simulation results.	Equipment: Single actuator servo module with open architecture controls to allow controller modification. Computer. Ancillary electronics and instrumentation. Personnel: First semester fulltime TA to setup and administer. Subsequent semesters part time TA to administer.