



# INDUSTRIAL ENGINEERING AND MANAGEMENT

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## Track Description

Industrial engineering (IE) is an interdisciplinary profession focused on the optimization of complex systems (e.g., logistics), processes (e.g., manufacturing), or organizations. Industrial engineers develop and apply quantitative and data driven tools to help people and organizations make better decisions. Fundamentally, IE is an engineering approach to systems-based decision making, hence can be applied in virtually every sector (e.g., manufacturing, service, retail, technology, healthcare). Engineering management is a discipline that addresses the management of engineering projects. This includes leading the technical and economic aspects of a project to ensure that it is aligned with the organization's objectives, safely implemented, finished on time, and completed within the budget. Together, Industrial Engineering & Management (IEM) help companies make the best use of their resources and identify the most attractive opportunities.

**IEM students must take 4 courses from the lists below. At least 1 of these must be an ORI undergraduate course.**

## Undergraduate Courses (select 1 to 4)

ME 365D: Data Science for Engineers  
ME 366L/ORI 366: Operations Research Models  
ME 367S/ORI 367: Simulation Modeling  
ME 369P: App. Programming for Engineers  
ME 379M/ORI 370: Statistical Methods in Manufacturing  
ME 377K: Projects in Mechanical Engineering  
SDS 322E: Elements of Data Science  
ARE 323K: Project Management & Economics (typically only available as a Maymester)

## Faculty Mentors

Erhan Kutanoglu, [erhank@austin.utexas.edu](mailto:erhank@austin.utexas.edu)  
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## ORI Graduate Courses (select up to 3)\*

ORI 390Q.2: Production & Inventory Control  
ORI 390R.1: Applied Probability  
ORI 390R.17: Decision Analysis I  
ORI 390R.18: Decision Analysis II  
Other ORI grad courses may be counted; speak with advisors and faculty for more information.

**McCombs Courses (select up to 2)\*\*** Any upper-division McCombs course may be counted.

\*\* No more than 2 McCombs courses can be counted towards the ME CGE requirement.

## Organizations & Societies

INFORMS, [www.informs.org](http://www.informs.org)  
IISE, [www.iise.org](http://www.iise.org)

\* Please contact faculty mentors for approval or to petition other courses. For course descriptions visit the University Catalog.

## Industry Applicability

Industrial Engineering & Management incorporates transferable skills that are highly applicable in numerous industries. Here are a few examples of the types of jobs that typically employ students specializing in IEM:

- Design, plan, & operation of manufacturing & service systems (e.g. logistics, warehousing, delivery)
- Revenue management & pricing (e.g. airlines, hospitality)
- Data analytics in industries such as technology & finance
- Strategic management of large engineering projects (e.g. energy)

## Selected Examples

1. Financial Engineering: Financial companies have access to tremendous amounts of data about their customers. Using this information, they need to decide which products to offer (e.g., new credit cards, loans) so as to maximize profitability while managing risk.

2. Energy Investment: Energy companies must spend significant amounts of capital in order to bring energy projects to the market. Energy prices are volatile and these investments are risky. These companies need help modeling their investment opportunities and making the right choice.

3. Public Policy: Public policy decisions can have significant benefits and costs that involve complex tradeoffs. For example, a policy to impose a carbon tax may decrease the use of fossil fuels, thereby reducing potential climate damage, but will also impose a cost on consumers by making energy more expensive. IEM methods are used to model these decisions and help policymakers make the best choice.

