

Masters Degree – Product Development Engineering Progressive Degree Option

The MS in Product Development Engineering is an interdisciplinary degree program jointly offered by the Aerospace and Mechanical Engineering and the Daniel J. Epstein Industrial and Systems Engineering Departments. The Daniel J. Epstein Industrial and Systems department manages this joint degree program

Developing new products is the essence of human intelligence in general, and engineering professions in particular. The growth of our economy has been largely determined by the engineer's performance and effectiveness in new product developments. The ever-increasing demands for product functions, coupled with low cost, high quality, and short lead-time requirements have made product development a very complex and inter-disciplinary activity. The recent high-tech revolutions and stringent environmental concerns have further contributed to the complexity of modern product development. There exists a great human resource need in the areas of new product developments.

There are three interrelated disciplines in product development: art, management, and engineering. The MS in Product Development Engineering program focuses on the engineering discipline, ranging from management to technology. From the engineering viewpoint, product development can be seen as a process from invention, design, planning, production, to service phases. Three types of knowledge are needed for an engineer to go through these phases:

- knowledge to generate new product ideas
- knowledge to evaluate these ideas
- knowledge to structure and manage the development process

This innovative degree program provides students with an integrated education experience, including modern theories and practical experiences, to acquire this knowledge systematically so that they can accomplish these phases efficiently.

All students are required to take the (2) core courses. Then you will choose which Specialization (Management or Technology) and complete those requirements.

Core Courses (8 units)

- ISE 445 Principles and Practices of Global Innovation Units: 4
- ISE 501 Innovative Conceptual Design for New Product Development Units: 4

Management Specialization **8 units**

- ISE 515 Engineering Project Management Units: 4
- ISE 544 Leading and Managing Engineering Teams Units: 4
- **Or**
- ISE 585 Strategic Management of Technology Innovation Units: 4

Management Specialization Technical Electives **Units:4**

- AME 504 Mechatronic Systems Engineering Units: 4
- AME 510 Advanced Computational Design and Manufacturing Units: 4
- ISE 514 Advanced Production Planning and Scheduling Units: 4
- ISE 525 Design of Experiments Units: 4
- ISE 527 Quality Management for Engineers Units: 4
- ISE 544 ISE 544 Leading and Managing Engineering Teams Units: 4 **
- ISE 561 Economic Analysis of Engineering Projects Units: 4
- ISE 562 Decision Analysis Units: 4
- ISE 580 Performance Analysis with Simulation Units: 4
- ISE 583 Enterprise Wide Information Systems Units: 4
- ISE 585 Strategic Management of Technology Units: 4 **
- ISE 610 Advance Design of Experiments and Quality Engineering Units: 4

**** Choose one that is not included as a specialization required course****

***Total Units Required for the Management Specialization PDP degree: 20**

