



ME363 Manufacturing Technology (Required Course)

Code and Name: ME363 Manufacturing Technology

Credit Hours: 3 (Lecture: 3, Tutorial: 0)

Textbook:

- Principles of Modern Manufacturing, Mikell P. Groover, 4th Edition, John Wiley & Sons, Inc., 2011.

Other References:

- Manufacturing Engineering Handbook, Hwaiyu Geng, McGraw-Hill Handbooks, 2004

Course Description:

Relationship between product engineering and manufacturing engineering. Casting processes (solidification and melting, furnaces, expendable and permanent mold casting). Bulk deformation processes (hot and cold forming processes, workability and limits of forming). Sheet metal processes (formability of sheets and sheet forming processes, processing of polymers). Joining & welding processes. Metal powders and ceramics. Welding processes. Heat treatment of metals. Principles of metal cutting (machining processes, types of chips, process sheet).

Pre-requisites: GE103 Engineering Graphics and Design, ME211 Material Science and Engineering

Co-requisites: None

Course Learning Outcomes:

With relation to ABET Student Outcomes (SOs: 1-7)

1. Apply basic knowledge of mathematics, science, and engineering. (1)
2. Design and conduct a manufacturing process. (1, 6)
3. Design a system, component, or process to achieve a certain product. (2)
4. Function on multidisciplinary team in a production process (1, 5)
5. Identify, formulate and solve engineering problems (1)
6. Understanding of professional and ethical responsibility (4)
7. Communicate effectively in oral, written, graphical and visual forms (3)
8. Understand the impact of engineering solutions in a global/societal context (1, 2, 6)
9. Recognize of the need for and an ability to be motivated to seek knowledge and pursue further education and life-long learning (7)

Topics to be covered:

- Introduction and overview of manufacturing.
- Fundamentals of metal casting.
- Metal casting processes.
- Shaping processes for polymers.
- Powder metallurgy.
- Fundamentals of metal forming.
- Bulk deformation processes in metalworking.
- Sheet metalworking.
- Theory of metal cutting + machining operations and machine tools.
- Machining operations and machine tools + cutting tool technology.
- Grinding and other abrasive processes.
- Welding and mechanical assembly.
- Heat treatment of metals.





Grading Policy:

The grading for the course are 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.

