Manufacturing Engineering Courses

Courses

MFG 5195. Graduate Seminar.
Graduate Seminar (1-0) Lectures and discussions of various topics in Manufacturing Engineering by faculty, graduate students, and speakers from industry and other institutions. Required for all non thesis graduate students during each semester of full-time enrollment they are in the graduate program. This seminar will be counted only once toward graduate degree requirements.

1 Credit Hour
1 Total Contact Hour
0 Lab Hour
1 Lecture Hour
0 Other Hour

MFG 5291. Individual Studies.
Individual Studies (0-0-2) Individual variable-credit for non-thesis related research, design or analysis on advanced phases of manufacturing engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. degree.

2 Credit Hours
2 Total Contact Hours
0 Lab Hours
0 Lecture Hours
2 Other Hours

MFG 5311. Design for Manufacturability.
Design for Manufacturability (3-0) Theoretical and practical aspects of the implications that the manufacturing process has on the design activities will be studied. Issues such as rapid prototyping, tolerancing, geometric modeling, capabilities of manufacturing processes, design for quality and maintainability and others will be covered. The course will consist of lectures, class discussions, and student projects.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

MFG 5312. Strategic Design-Mfg Processes.
Strategic Design of Manufacturing Processes (3-0) Strategic and tactical aspects of the design of manufacturing processes will be covered in this course. Techniques such as concurrent engineering, quality function deployment, group technology, process planning and others will be covered. The course will consist of lectures, class discussions, and student projects.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

Robotics and Flexible Automation (3-0) Modern concepts of robotics and flexible automation including power and control mechanisms, flexible material handling systems, programmable controllers, interfacing and end-of-arm tooling.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

MFG 5315. Analysis-Mat'l Handling System.
Analysis of Material Handling Systems (3-0) Study of the most recent developments in research and applications of material handling systems. Special emphasis will be placed on models and techniques that allow a good design of integrated material handling systems in a discrete production environment. The course will consist of lectures, class discussions, and student projects.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours
MFG 5320. Tooling Engineering.
Tooling Engineering (3-0) Design of tooling for various manufacturing processes such as plastic injection, metal casting, stamping, forming, etc. Materials properties, tolerances, cost and tool interchange ability are covered.
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

Modeling and Analysis of Manufacturing Processes (3-0) This project-oriented course is designed to be a capstone course for the graduate students of manufacturing engineering. The student will be expected to use the analytical tools to formulate, model, and solve real-life manufacturing problems. At the end of the course the student will give an open presentation of the results of the term project.
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

Prerequisite(s): (MFG 5312 w/C or better ) AND (MFG 5313 w/C or better)

MFG 5350. Reliability & Maintainability.
Reliability and Maintainability (3-0) This course deals with the application of reliability theory in engineering design. In particular, the course covers reliability functions and gives broad guidelines for designing reliability into a given situation and for determining the appropriate level of reliability. Accelerated testing, reliability management, the relationship between reliability and quality and maintainability and its management will also be covered.
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

Computer-Aided Manufacturing (3-0) Modern concepts of using computers for manufacturing, including the theory of computer numerical control (CNC) and direct numerical control (DNC), CNC mailing, CNC turning and computer-aided process design.
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

The course introduces fundamental concepts of green energy and environmentally conscious (benign) manufacturing. This course also acquaints students with the energy and environmental issues surrounding product and process design decisions. Identification and development of strategies, techniques, and methods that can be used to make more environmentally responsible decisions are discussed. The life cycle assessment of (LCA) is implemented and illustrated with software and case studies.
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

MFG 5390. Special Topics.
Special Topics (3-0) Advanced topics of contemporary interest in mechanical engineering. May be repeated for credit when topic varies.
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours
MFG 5391. Individual Studies.
Individual Studies (0-0-3) Individual variable-credit for non-thesis related research, design or analysis on advanced phases of manufacturing engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. degree.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

MFG 5394. Graduate Research.
Graduate Research (0-0-3) Individual variable-credit research of contemporary topics in manufacturing engineering.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

MFG 5397. Graduate Projects.
Graduate Projects (0-0-3) Individual research, design or analysis on advanced phases of manufacturing engineering problems conducted under the direct supervision of a faculty member. The courses, including a written report, are required of all students in the non-thesis option.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

Prerequisite(s): (MFG 5396 w/P or better)

MFG 5398. Thesis.
Thesis (0-0-3) Initial work on the thesis.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

MFG 5399. Thesis.
Thesis (0-0-3) Continuous enrollment required while work on the thesis continues.

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

Prerequisite(s): (MFG 5398 w/P or better)