
MANUFACTURING ENGINEERING TECHNOLOGY

MANUFACTURING ENGINEERING TECHNOLOGY MS

College of Science, Engineering & Technology
Department of Automotive and Manufacturing Engineering Technology
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Chair and Graduate Coordinator: Harry Petersen, Ph.D., P.E.

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Paul Sullivan, Ph.D.

Manufacturing Engineering Technology is a Master of Science program intended for students with an undergraduate degree in engineering technology or engineering who have a desire to obtain a specialized education in modern manufacturing. Students with other undergraduate majors may also enter the program but may have a considerable number of deficiencies which must be made up at the undergraduate level. The emphasis of the program is the technology and organization of manufacturing in a competitive global world.

Admission. Students seeking admission to the Manufacturing program must be admitted to the College of Graduate Studies and Research and in addition must have completed undergraduate coursework which includes: Calculus I, Calculus II, a Computer Science programming language, Electronic Circuit Analysis, Computer Aided Design (CAD), Materials Processing, and Metallurgy I, Statics, Materials Processing II, and Manufacturing Automation.

Applicants who do not have the prerequisites completed will be conditionally admitted to the program with the undergraduate courses listed as deficiencies. These deficiencies must be made up before the student submits a plan of study before the completion of the first 16 graduate credits.

Financial Assistance. The department typically has one to two graduate assistants. Duties include assisting research and laboratory supervision. Application forms are available from the College of Graduate Studies and Research or from the Department of Automotive and Manufacturing Engineering Technology. Completed forms and any support materials should be sent to the department chairperson. Applications can be completed at any time. The department typically makes its decision in May for assistantships which begin in August.

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(Thesis Plan - 32 credits)

(Alternate Plan Paper - 34 credits)

Required Core (16 credits)

MET 525 Project and Value Management (4)

MET 600 Manufacturing Research Methods (2)

MET 645 CAD Applications (2)

AND one of the following:

MET 678 Manufacturing Processes (2)

MET 692 Manufacturing Seminar (1-3)

MET 697 Internship (1-4)*

*No more than four internship credits may apply toward the 16 MET core credits

Choose additional electives in MET to total 16 credits.

Required Concentration (10 credits)

Choose 10 credits in a concentration area in another department such as automotive engineering technology, business, computer science, or one of the natural sciences. The area chosen should reflect the background and occupational goals of the individual and must be approved by the student's graduate committee.

Required Electives (6-8 credits)

These courses can be from any graduate level courses.

Required Thesis or Alternate Plan Paper

MET 694 or AET 694 Alternate Plan Paper (2)

MET 699 or AET 699 Thesis (3-4)

Additional Requirements:

Each student must obtain practical experience in manufacturing through an internship, independent study, alternate plan paper or manufacturing work experience. A minimum of 50% of all graduate level coursework applied toward the degree must be at the 600

level, excluding thesis/alternate plan paper credits. Each student must successfully complete a final presentation of their thesis or alternate plan paper.

COURSE DESCRIPTIONS

MET 507 (4) Manufacturing Resource Planning and Control

Planning and control of plant resources in globally competitive manufacturing environments. Studies include hard and soft technology assets applied to systematic resource management in the manufacturing supply chain. Approaches to manufacturing problems related to design integration, production scheduling, staffing, plant layout, material flow and inventory issues are examined.

MET 523 (4) Ergonomics & Work Measurement

Investigation of work place design and environmental stress from heat, noise, vibration, repetitive motion, and illumination in personal machine systems and human-machine interaction.

MET 524 (2) Industrial Safety

Techniques of developing safety practices in an industrial and construction environment. Topics include OSHA, current legislation, cost analysis, minimization, depreciation and economic worth, personal protection, employee selection, psychological aspects, product safety, hazard materials, and catastrophe control.

MET 525 (4) Project & Value Management

A study of the optimal relationship between value and function of products and the cost and availability of resources. Topics include valuation, appraisal and capital budgeting, cost minimization, depreciation and economics worth, rates and rate bases, original and reproduction costs, and engineering economics.

MET 526 (2) Logistics & Transportation

Fundamentals of Logistics and supply chain management: control of materials, WIP, finished goods; costs of logistics. Theory and step-by-step procedures used to analyze logistic systems, packaging and transportation, including global logistics.

MET 527 (3) Quality Management Systems

This course is focused on quality assurance systems, management philosophies, methodology, function and impact of quality systems in manufacturing operations. Development and application of statistical process control tools. PRE: MET 407, MATH 121

MET 592 (1-3) Seminar: Manufacturing

Selected manufacturing topics. May be repeated for credit with different topics, with advisor's approval.

MET 600 (2) Manufacturing Research Methods

Research topics and methods related to manufacturing. The course will look at the current state of manufacturing and explore the research methods and experimental design procedures that are used in the area of manufacturing. Students will evaluate past research and will also design a research project in manufacturing.

MET 645 (1-3) CAD Applications

An advanced graphics course which emphasizes the study of ProE® software, related software, and CAD applications. Emphasis is on CAD systems, software customizing, and a review of current trends in CAD as used in contemporary industry.

MET 677 (1-4) Individual Study

MET 678 (2) Manufacturing Processes

A study of modern manufacturing processes. The recent developments in manufacturing affect everyone in the factory, from the designers and manufacturing engineers to the machine operators. New technologies, automation, the use of the computers in design, process control, and inspection create complex industrial or plant environment.

MET 692 (1-3) Seminar: Manufacturing

Selected manufacturing topics. May be repeated for credit with different topics, with advisor's approval.

MET 694 (1-2) Alternate Plan Paper

A total of two credits is required to complete the APP option.

MET 697 (1-5) Internship: Industrial

Manufacturing work experience in an area pertinent to the student's objective. Registration required prior to beginning employment.

MET 699 (2-4) Thesis

A total of three credits is required to complete the thesis option.
