

**MANUFACTURING ENGINEERING TECHNOLOGY MS**

*College of Science, Engineering & Technology*  
*Department of Automotive and Manufacturing Engineering Technology*  
205 Trafton Science Center E • 507-389-6383 •  
Fax: 507-389-5002

Chair and Graduate Coordinator: Harry Petersen, Ph.D.

Ann Goebel, MS; Bruce Jones, Ph.D.; Andrzej Markowski, Ph.D.; Gary Mead, MS;  
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 and Metallurgy, Statics, Materials Processing 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 research assisting 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.

**MANUFACTURING ENGINEERING TECHNOLOGY MS**

(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)

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 Alternate Plan Paper (1-2)

MET 699 Thesis (2-4)

**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 written comprehensive examination.

**COURSE DESCRIPTIONS****MET 507 (4) Manufacturing Resource Planning and Control**

A study of industrial plant layout for maximum facility utilization. Topics include: factory layout, materials storage and handling, industrial equipment selection, and mechanization.

**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. Topics: human-machining

**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: 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**

Organization, methodology, and responsibilities of quality assurance programs, primarily in manufacturing industries. Statistical analysis of quality current topics of quality.

**MET 592 (1-3) Seminar: Manufacturing**

Selected manufacturing topics.

**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 AutoCad® software, related software, and their 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 engines 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.

**MET 694 (1-2) Alternate Plan Paper****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**