

COLLEGE OF TECHNOLOGY

Dean:

John C. Dugger
150 Sill Hall
734.487.0354

Associate Dean:

Konnie G. Kustron
150 Sill Hall
734.487.0354

Administrative Associate:

Nancy Harris
150 Sill Hall
734.487.00354

Schools and Departments:

- Engineering Technology
- Technology Studies
- Military Science and Leadership

MISSION STATEMENT

The College of Technology's mission is to cultivate a learning community dedicated to learning, research and public engagement while committed to excellence in technology programs. More specifically, the College of Technology meets the need for well-prepared individuals for a variety of business and industrial positions, teachers of business and industrial education and commissioned officers for the United States Army. In addition to the bachelor of science degree, the college offers a bachelor of business education for those students satisfying the requirements for programs in business services technology education, marketing education and a bachelor of applied science. Baccalaureate and graduate programs provide a solid foundation in mathematics, science, technology management and human relations in order to effectively serve the educational aspirations of their students. Students learn to apply sound theory to practical problems and have opportunities for laboratory and cooperative work experiences. Graduates are prepared for engineering technology and technology management positions in design, production, research and marketing for business and industry. Also included within the college is the University's long-standing military science program, which promotes leadership qualities for and entry into the active Army, Army Reserve or National Guard as a commissioned officer. The college currently is composed of the Schools of Engineering Technology and Technology Studies and the Department of Military Science. Inherent in the interdisciplinary program is the use of existing courses and personnel throughout the University. Students in the pre-architecture and pre-engineering professional programs are advised by faculty in SET. Specific programs have been designed as collaborative efforts with other colleges including Arts and Sciences and Business.

The college also is the home for several centers and institutes including the Center for Regional and National Security, the Coatings Research Institute, the Center for Product Research and Development, and the Textiles, Research and Training Institute. The college also supports three units from grant funding through the state of Michigan: Business Professionals of America, DECA and FCCLA.

The College of Technology emphasizes relevant, real-life, hands-on-learning activities, a solid interdisciplinary foundation, close relationships with business and industry, teamwork and individual professional competence. Students are encouraged to be tomorrow's leaders by refining the knowledge and skills necessary to understand, adapt to and influence change.

See page 265 for College of Technology interdisciplinary courses.

SCHOOLS AND DEPARTMENTS

School of Engineering Technology

- Applied Technology
- Computer Aided Design
- Computer Engineering Technology
- Construction Management
- Electronics Engineering Technology
- Interior Design
- Manufacturing Engineering Technology
- Manufacturing Technology
- Mechanical Engineering Technology
- Polymers and Coatings

School of Technology Studies

- Administrative Management
- Apparel, Textiles and Merchandising
- Aviation Flight Technology
- Aviation Management Technology
- Business Services and Technology Education
- Communication Technology
- Hotel and Restaurant Management
- Industrial Distribution
- Legal Assistant (Paralegal) Studies
- Marketing Education
- Network and Information Technology Administration
- Technology and Design Education
- Technology Management
- Vocational Education

CENTERS AND INSTITUTES

The College of Technology has four centers and institutes which interface with business, industry and governmental agencies to provide applied research and continuing education. These centers and institutes are:

The Center for Product Research and Development

The Center for Product Research and Development (CPRD) is dedicated to helping manufacturing and construction businesses grow. The CPRD assists innovators to develop concepts into products. The professional services, prototyping, manufacturing facilities and entrepreneurial ideas can add to success in the highly competitive marketplace.

The mission of CPRD is to provide a vital link between University activities and manufacturing and construction industries through applied research and education.

Through collaboration with the Michigan Small Business Development Center, the Center for Product Research and Development can assist companies and inventors in the development of a product as well as the assistance to establish a business and bring the product to market.

The CPRD's goals are to serve the workforce, product, innovators and manufacturing and construction industries:

- Create new processes; develop new business through product design, prototype and testing; expand sponsored research programs; integrate technological innovations into economic-development efforts; offer training and educational programs; provide patent process assistance.

The Center for Regional and National Security

The mission of the Center for Regional and National Security is to support citizenship security through excellence and innovation in teaching and research. The center was founded in 2003 with three service components, Information Assurance, Law Enforcement/School Safety and Homeland Security. While traditionally we have served the law enforcement and fire communities we have imitated new initiatives directed as business and industry.

Information Assurance combines the very successful graduate program in Information Security, Computer Forensics and Cyber Crime Investigation. These concentrations combine a cohesive unit where individuals can study and research the problems of our country in areas of information warfare, cyber security, digital analysis and the emerging science of computer forensics. Business continuity is critical for today's ecommerce and sustainability.

Law Enforcement and School Safety unites the very successful School of Police Staff and Command, which has been delivered across the state to more than 1,500 law enforcement executive officers. The School of First Line Supervision addresses issues of leadership and communications for the first line supervisor. The component School Safety builds upon successes in Intervention Strategies for School Violence and the Team 8 Consortium where eight communities formed a coalition to address the gang violence, substance abuse and juvenile crime.

Homeland Security integrates the School of Fire Staff and Command with programs in Incident Command, First Response to Terrorist Bombing, GIS, Weapons of Mass Destruction, Emergency Management, Hazardous Materials, joining this platform is the Applied Health Care concentration in Biological Terrorism.

The Center for Regional and National Security is dedicated to providing solutions to some of the tough problems facing our nation in the Information Security, Law Enforcement, Fire Management, and our regional and national response to Homeland Security.

The Coatings Research Institute (CRI)

The CRI's two-fold mission is to be a leading academic organization that develops relevant scientific knowledge for understanding and for expanding the science and technology of paints, coatings, inks, adhesives and related nano-based materials. Two consequences of the mission statement will be to a) enlarge the pool of scientists and technologists proficient in coatings and allied industry personnel. Our research activities, our support

of undergraduate, graduate and post-doctoral candidate students, and our collaborations with government, industry and other educational institutions are consistent with the mission of the College of Technology and the mission of the University.

CRI is dedicated to providing solutions to some of the tough problems facing the coatings industry such as reducing VOCs in paint and coatings. The institute's competencies include the following:

- Synthesize new types of polymers and emulsions of potential value to coatings research,
- Improve and advance polymer and coatings characterization, analysis and test methods,
- Expand the knowledge base of coatings and technology through research on chemical and physical phenomena involved in paints and coatings,
- Provide and increased pool of well-trained coatings professionals to the coatings industry and provide continuing education opportunities to coatings industry personnel through relevant polymer and coatings technology short courses.

The Textile Research and Training Institute

The Textiles Research and Training Institute (TRTI) mission is to be a leading research and academic organization that provides relevant and creative research in the area of and “applied textiles” that match across multi-disciplines and industries. The TRTI will provide a variety of educational training programs for industries that use textiles for various applications.

Laboratories

Our computer labs are housed in Roosevelt Hall on the main campus of Eastern Michigan University in Ypsilanti, Mich. All software is state-of-the-art and currently being utilized in the active furniture and apparel industries.

Software includes: 2-D pattern design software, pattern grading, marking and nesting systems for optimal fabric utilization, CNC industrial cutter, CutWorks Software, product data management software for costing and manufacturing specialty sheets, merchandising, and CAD package.

The Dyeing and Weaving lab is located in Sherzer Hall on the main campus of Eastern Michigan University.

The lab includes:

- Looms, dyeing and finishing, physical testing laboratory, tensile testing of yarns and fabrics, abrasion test, wrinkle recovery, fabric flammability, color fastness to crocking and near infrared analysis.

Typical Research and Training Projects

Some of our recent projects include the following:

- Anti-bacterial/Protective fabrics, “Smart Fabric” involving sensors within the fabric
- Environmentally friendly polymer textiles “Green Textiles”
- Protective garments for security purposes i.e. bullet-proof vests, contract digitizing
- 2-D digitizing via the Gerber AcuuMark system for over work or pattern development
- Industrial cutting services, high speed, single-ply cutting on a DCS2500 Cutter with CutWorks software

Pattern development, prototyping services are offered, training on Gerber platform software is also offered.

SCHOOL OF ENGINEERING TECHNOLOGY

Campus Address: 118 Sill Hall

Internet: it.emich.edu

Telephone: 734.487.2040

E-mail: blahidji@emich.edu

See pages 255, 257, 262, 280, 286, 288, 303, 319, 320 and 343 for course descriptions.

The School of Engineering Technology offers the following majors: applied technology, computer aided design, computer engineering technology, construction management, electronics engineering technology, interior design, mechanical engineering technology, manufacturing engineering technology, manufacturing technology, and polymers and coatings. In addition, a pre-architectural program is offered.

The construction management program has been accredited by the American Council for Construction Education, the Interior Design Program is accredited by the Foundation for Interior Design Education Research (FIDER), and the Computer-Aided Design and Manufacturing Technology programs are accredited by the National Association of Industrial Technology.

The advising procedure is posted in the school offices in Roosevelt and Sill halls. Majors are responsible for meeting the requirements for graduation. It is strongly recommended that students see their adviser each semester to review their program of study. Students not assigned to an adviser should call the office for an appointment with an advisor.

APPLIED TECHNOLOGY MAJOR — TRANSFER (ATTF)

The applied technology major is designed to serve those individuals who wish to continue their technology-related community college education. The program offers the flexibility of accepting a block of up to 34 credits of technical courses as transfer credit. Articulation agreements have been established with several community colleges to ensure the maximum transfer of credits. Students transferring from other four-year higher education institutions with a technical major may also find this major suitable.

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

General Education Requirements48 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. ENGL324 Principles of Technical Communication (3 hrs)
4. MATH170 Elementary Statistics (3 hrs)
5. CADM105 Computer Applications for Industry (3 hrs)

Area II Science and Technology

1. CHEM117/118 Fundamentals of Chemistry with lab (4 hrs)
2. PSY101 General Psychology (3 hrs)
3. PHY221 Mechanics, Sound and Heat (4 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirement	2 hours
Additional Requirements	9 hours
MATH105 College Algebra (3 hrs)	
MATH107 Plane Trigonometry (2 hrs)	
PHY222 Electricity and Light (4 hrs)	
Major Requirements	55 hours
Restricted Elective Courses	6 hours
<i>Select six hours of restricted electives in consultation with an adviser.</i>	
Restricted MFG Elective Courses	15 hours
<i>Select 15 hours at the 300- and 400-level in consultation with an adviser.</i>	
Technical Courses	34 hours
<i>Up to 34 hours of transferred technical courses may be applied to this major.</i>	
Minor Requirements	0 hours
<i>No minor is required.</i>	
University Elective Courses	10 hours
Program Total	124 hours

COMPUTER-AIDED DESIGN MAJOR (CAD)

Students majoring in CAD are prepared for a wide range of CAD-related job opportunities. The applications of CAD are becoming more diverse, and are found in many areas, such as architecture, medicine, geographic information systems, facilities management, product presentation and computer animation.

In the CAD courses, you will gain knowledge and hands-on experience in the following four technical areas:

1. CAD applications involving an extensive knowledge of all major CAD applications;
2. Interactive 2-D and 3-D wire frame drawing, geometric dimensioning and tolerancing, solid modeling and surfacing;
3. Interactive 2-D graphics programming for business graphics, animation and CAD drawings involving menu and icon development along with software customization;
4. Applied mechanics, kinematics and design and finite element analysis;
5. Product data management.

Graduates from our CAD program are employed in industry as CAD engineers, product designers, application programmers, technical support engineers, CAD/CAM systems managers, training consultants and entry-level designers, as well as in equipment sales and support.

General Education Requirements	48 hours
<i>Area I Symbolics and Communication</i>	
1. See page 23	
2. CTAS121 Fundamentals of Speech (2 hrs)	
3. ENGL324 Principles of Technical Communication (3 hrs)	
4. MATH170 Elementary Statistics (3 hrs)	
5. CADM105 Computer Applications for Industry (3 hrs)	
<i>Area II Science and Technology</i>	
1. CHEM117/118 Fundamentals of Chemistry with lab (4 hrs)	
2. PSY101 General Psychology (3 hrs)	
3. PHY221 Mechanics, Sound, and Heat (4 hrs)	
<i>Area III Social Sciences</i>	
1. See page 24	
2. See page 24	
3. ECON201 Principles of Macroeconomics (3 hrs)	
4. ECON202 Principles of Microeconomics (3 hrs)	

<i>Area IV Arts and Humanities</i>
1. See page 25
2. See page 25
3. See page 25
4. See page 25

Additional Requirements	9 hours
MATH105 College Algebra (3 hrs)	
MATH107 Plane Trigonometry (2 hrs)	
PHY222 Electricity and Light (4 hrs)	

Physical Education/Graduation Requirement	2 hours
--	----------------

Major Requirements	65 hours
Required Courses	57 hours
CADM122 Engineering Graphics I (3 hrs)	
CADM223 Engineering Graphics II (3 hrs)	
CADM231 Computer Graphic Programming for Industry (3 hrs)	
CADM324 3-D Solid Modeling (3 hrs)	
CADM325 Applied Mechanics, Kinematics, and Design (3 hrs)	
CADM331 Product Design Data Management I (3 hrs)	
CADM387 Cooperative Education in CAD/CAM Technology (3 hrs)	
CADM432 3-D Feature-Based Modeling and Surfacing Techniques (3 hrs)	
CADM433 Advanced Computer-Aided Design (3 hrs)	
CADM435 Finite Element Analysis (3 hrs)	
CADM491 Design Capstone (3 hrs)	
COS205 Computer Hardware and Software Systems (3 hrs)	
COS246 Programming in C++ (3 hrs)	
MFG111 Materials (3 hrs)	
MFG123 Manufacturing Processes and Methods I (3 hrs)	
MFG124 Manufacturing Processes and Methods II (3 hrs)	
MFG203 Industrial Operation (3 hrs)	
MFG290 GDNT Metrology (3 hrs)	
MFG316 Design for Manufacturing and Tooling (3 hrs)	
Restricted Elective Courses	6 hours
<i>Eight hours selected in consultation with a CAD adviser.</i>	

Minor Requirements	0 hours
<i>No minor is required.</i>	

Program Total	124 hours
----------------------------	------------------

CONSTRUCTION MANAGEMENT MAJOR (CNST)

The construction major includes course work in general education with specified science and mathematics courses, recommended business courses electives (a list of recommended course electives that require the prior approval of a construction or facility management adviser) and technical courses. A minor is not required. A C- or better is required for all major courses.

The construction management major is designed to prepare men and women for middle- and upper-level management in construction contracting. The major has been developed in cooperation with experts from the construction industry, guidelines established by major construction associations and feedback from employers and graduates. The construction management major reflects the current needs and trends in the construction industry.

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

General Education Requirements	49 hours
<i>Area I Symbolics and Communication</i>	
1. See page 23	
2. CTAS124 Fundamentals of Speech (3 hrs)	
3. ENGL324 Principles of Technical Communication (3 hrs)	
4. MATH170 Elementary Statistics (3 hrs)	
5. CADM105 Computer Applications for Industry (3 hrs)	

Area II Science and Technology

1. CHEM117/118 Fundamentals of Chemistry with lab (4 hrs)
2. PSY101 General Psychology (3 hrs)
3. PHY221 Mechanics, Sound, and Heat (4 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. *One course from the following:*
PHIL220 Ethics (3 hrs)
PHIL221 Business Ethics (3 hrs)
4. See page 25

Additional Requirements.....5 hours

- MATH105 College Algebra (3 hrs)
MATH107 Plane Trigonometry (2 hrs)

Physical Education/Graduation Requirement2 hours**Major Requirements.....67 hours****Required Courses 58 hours**

- CNST125 Introduction to Construction (2 hrs)
CNST201 Construction Systems (3 hrs)
CNST202 Construction Materials (3 hrs)
CNST206 Surveying (3 hrs)
CNST213 Construction Safety (3 hrs)
CNST228 Construction Graphics (3 hrs)
CNST229 Analysis of Commercial Prints (3 hrs)
CNST302 Contract Documents, Regulations, and Specifications (3 hrs)
CNST303 Electrical, Mechanical, and Equipment Systems (3 hrs)
CNST304 Construction Estimating and Bidding (3 hrs)
CNST361 Planning and Scheduling (3 hrs)
CNST387 Cooperative Education in Construction Management (3 hrs)
CNST403 Production Control (2 hrs)
CNST406 Construction Law (2 hrs)
CNST412 Fundamentals of Structural Design (3 hrs)
CNST450 Fundamentals of Construction Project Management (3 hrs)
ESSC110 Physical Geology (4 hrs)
ACC130 Accounting for Nonbusiness Majors (3 hrs)
LAW293 Legal Environment of Business (3 hrs)
MGMT384 Human Resource Management (3 hrs)

Math/Science Restricted Elective 3 hours*Three hours selected in consultation with the adviser.***Business Restricted Elective 6 hours***Six hours from the following selected in consultation with the adviser:*

- FIN350 Principles of Finance (3 hrs)
FIN352 Financial Management for Entrepreneurs (3 hrs)
FIN358 Analysis of Financial Statements (3 hrs)
LAW393 Law of Business Enterprises (3 hrs)
LAW403 Employment Law (3 hrs)
MGMT202 Business Communication (3 hrs)
MGMT386 Organizational Behavior and Theory (3 hrs)
MGMT460 Management Skills (3 hrs)
MGMT484 Management-Union Relations (3 hrs)
MKTG360 Principles of Marketing (3 hrs)
IS215 End-User Computing (3 hrs)
DS265 Business Statistics I (3 hrs)

Minor Requirements0 hours*No minor is required.***University Elective Courses 1 hour****Program Total124 hours****ENGINEERING TECHNOLOGY PROGRAMS**

The engineering technology programs are based on engineering theory with emphasis on application and implementation skills. The curriculum includes University general education, the engineering technology core, and majors in computer engineering technology (CET), electronic engineering technology (EET), manufacturing engineering technology (MfgET) and mechanical engineering technology (MET). With a common general education and engineering technology core, students may investigate career options and personal preferences at the beginning of their studies and change majors without loss of credits toward program completion.

COMPUTER ENGINEERING TECHNOLOGY MAJOR (CET)

The computer engineering technology program applies scientific, computer, and engineering knowledge; combined with technical skills, in support of computerized activities. The computing field is one of the fastest growing segments of industry, and the program is developed to include many application aspects of computer engineering technology. The graduates generally apply the theories and principles to design, analyze, produce, operate, program and maintain computer and digital control systems. In addition, the curriculum includes the study of engineering database management and engineering information technology. Graduates are employed in industry as computer engineers, computer architecture designers, software engineers and engineering information technologists.

General Education Requirements50 hours*Area I Symbolics and Communication*

1. See page 23
2. CTAS121 Fundamentals of Speech (2 hrs)
3. ENGL324 Principles of Technical Communication (3 hrs)
4. MATH120 Calculus I (4 hrs)
5. COSC246 Programming in C++ (3 hrs)

Area II Science and Technology

1. CHEM121/122 General Chemistry I with lab (4 hrs)
2. PSY101 General Psychology (3 hrs)
3. PHY223 Mechanics and Sound (5 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirement2 hours**Major Requirements.....72 hours****Required Courses 66 hours**

- ET100 Introduction to Engineering Technology (3 hrs)
CADM122 Engineering Graphics I (3 hrs)
MATH121 Calculus II (4 hrs)
PHY224 Electricity and Light (5 hrs)
COSC211 Programming Data Structures (3 hrs)
COSC311 Algorithms and Data Structures (3 hrs)
ELEC200 Circuit Analysis I (3 hrs)
ELEC214 Digital Circuit Analysis (3 hrs)
ELEC215 Computer-Aided Electronics (3 hrs)
ELEC218 Motors and Controls (3 hrs)
ELEC300 Analog Circuit Analysis I (3 hrs)
ELEC320 Microcomputer Circuits (3 hrs)
CET251 Engineering Software and Applications (3 hrs)

- CET353 Web Development for Engineering Applications (3 hrs)
- CET387 Cooperative Education in Computer Engineering Technology (3 hrs)
- CET427 Programmable Logic Controller (3 hrs)
- CET451 Engineering Database Development (3 hrs)
- CET453 Engineering Programming (3 hrs)
- CET491 Senior Design Capstone (3 hrs)
- POM374 Introduction to Product/Operation Management (3 hrs)
- IS380 Introduction to Databases (3 hrs)

Restricted Electives 6 hours

Six hours from the following selected in consultation with the adviser:

- CET426 Engineering Product Information (3 hrs)
- ELEC314 Digital Circuit Analysis II (3 hrs)
- ELEC420 Advanced Microprocessors (3 hrs)
- CADM223 Engineering Graphics II (3 hrs)
- MET312 Applied Dynamics Principles (3 hrs)
- MFG111 Engineering Materials (3 hrs)
- MFG123 Manufacturing Processes and Methods (3 hrs)
- MATH122 Elementary Linear Algebra (3 hrs)
- MATH325 Differential Equations (3 hrs)
- COSC221 Computer Organization I (3 hrs)
- COSC321 Computer Organization II (3 hrs)
- IS315 Applied Data Structures (3 hrs)
- or adviser approved courses

Minor Requirements0 hours

No minor is required.

University Elective Courses0 hours

Program Total124 hours

ELECTRONIC ENGINEERING TECHNOLOGY MAJOR (EET)

The electronic engineering technology major is designed to prepare students for interesting and challenging positions in the diverse field of electronics. The curriculum provides for a strong foundation in electronics to support future changes in technology or the career roles of the individual. The graduate may find employment on engineering teams in product design and development, in production and automation, in instrumentation and communications or in technical sales and operations.

General Education Requirements50 hours

Area I Symbolics and Communication

1. See page 23
2. CTAS121 Fundamentals of Speech (2 hrs)
3. ENGL324 Principles of Technical Communication (3 hrs)
4. MATH120 Calculus I (4 hrs)
5. COSC246 Programming in C++ (3 hrs)

Area II Science and Technology

1. CHEM121/122 General Chemistry I with lab (4 hrs)
2. PSY101 General Psychology (3 hrs)
3. PHY223 Mechanics and Sound (5 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 24
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirement2 hours

Major Requirements72 hours

Engineering Technology Core Courses 18 hours

- CADM122 Engineering Graphics I (3 hrs)
- ELEC200 Circuit Analysis I (3 hrs)
- MATH121 Calculus II (4 hrs)
- PHY224 Electricity and Light (5 hrs)
- MET312 Applied Dynamics Principles (3 hrs)

EET Major Courses 54 hours

- ET100 Introduction to Engineering Technology (3 hrs)
- CADM426 Manufacturing Communication Systems (3 hrs)
- CET427 Programmable Logic Controllers (3 hrs)
- COSC238 Computer Science II (3 hrs)
- ELEC210 Circuit Analysis II (3 hrs)
- ELEC214 Digital Circuit Analysis I (3 hrs)
- ELEC215 Computer-Aided Electronics (3 hrs)
- ELEC218 Motors and Controls (3 hrs)
- ELEC300 Analog Circuit Analysis I (3 hrs)
- ELEC310 Analog Circuit Analysis II (3 hrs)
- ELEC314 Digital Circuit Analysis II (3 hrs)
- ELEC320 Microcomputer Circuits (3 hrs)
- ELEC387 Cooperative Education in Electronic Technology (3 hrs)
- ELEC415 Communication Circuits (3 hrs)
- ELEC420 Advanced Microprocessors (3 hrs)
- ELEC450 Senior Design Project (3 hrs)
- MATH122 Elementary Linear Algebra (3 hrs)
- QUAL320 Industrial Quality Control (3 hrs)

Minor Requirements0 hours

No minor is required.

University Elective Courses0 hours

Program Total124 hours

MANUFACTURING ENGINEERING TECHNOLOGY MAJOR (MFGET)

The Manufacturing Engineering Technology program prepares the student for the development, design, analysis, planning, supervision and construction of methods and equipment for the production of industrial and consumer goods. Students receive a unique blend of knowledge which directly corresponds to modern applications used in manufacturing. Graduates can become certified as manufacturing engineers by the Society of Manufacturing Engineers.

General Education Requirements50 hours

Area I Symbolics and Communication

1. See page 23
2. CTAS121 Fundamentals of Speech (2 hrs)
3. ENGL324 Principles of Technical Communication (3 hrs)
4. MATH120 Calculus I (4 hrs)
5. COSC246 Programming in C++ (3 hrs)

Area II Science and Technology

1. CHEM121/122 General Chemistry I with lab (4 hrs)
2. PSY101 General Psychology (3 hrs)
3. PHY223 Mechanics and Sound (5 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Additional Requirements	12 hours
MATH121 Calculus II (4 hrs)	
MATH170 Elementary Statistics (3 hrs)	
PHY224 Electricity and Light (5 hrs)	
Physical Education/Graduation Requirement	2 hours
Major Requirements	63 hours
ET100 Introduction to Engineering Technology (3 hrs)	
MFG111 Materials (3 hrs)	
CADM122 Engineering Graphics I (3 hrs)	
MFG123 Manufacturing Processes and Methods I (3 hrs)	
MFG124 Manufacturing Processes and Methods II (3 hrs)	
ELEC200 Circuit Analysis (3 hrs)	
MFG203 Industrial Operations (3 hrs)	
MET211 Statics (3 hrs)	
MET313 Applied Mechanics of Materials (3 hrs)	
MET319 Fluid Mechanics (3 hrs)	
ELEC218 Motors and Controls (3 hrs)	
CADM223 Engineering Graphics II (3 hrs)	
MFG290 GD&T and Metrology (3 hrs)	
MFG306 Plastics Processing (3 hrs)	
MFG316 Design for Manufacturing and Tooling (3 hrs)	
QUAL320 Industrial Quality Control (3 hrs)	
MFG361 Computer Numerical Control (3 hrs)	
MFG387 Cooperative Education (3 hrs)	
MFG421 Manufacturing Engineering and Analysis (3 hrs)	
MFG470 Integrated Product and Process Design (3 hrs)	
MFG490 Manufacturing Enterprise Capstone (3 hrs)	
Minor Requirements	0 hours
<i>No minor is required.</i>	
Program Total	127 hours

MECHANICAL ENGINEERING TECHNOLOGY MAJOR (MET)

The mechanical engineering technology major offers the opportunity to prepare for rewarding and responsible careers in support of technical and engineering activities. The program is designed to provide graduates with a strong technical foundation that integrates the methods, materials, machinery and power resources found in modern industry. Students receive both lecture and hands-on laboratory training in manufacturing processes, engineering mechanics, thermo-fluid sciences and machine design, culminating in a senior design capstone project.

General Education Requirements	50 hours
<i>Area I Symbolics and Communication</i>	
1. See page 23	
2. CTAS121 Fundamentals of Speech (2 hrs)	
3. ENGL324 Principles of Technical Communication (3 hrs)	
4. MATH120 Calculus I (4 hrs)	
5. COSC246 Programming in C++ (3 hrs)	
<i>Area II Science and Technology</i>	
1. CHEM121/122 General Chemistry I with lab (4 hrs)	
2. PSY101 General Psychology (3 hrs)	
3. PHY223 Mechanics and Sound (5 hrs)	
<i>Area III Social Sciences</i>	
1. See page 24	
2. See page 24	
3. ECON201 Principles of Macroeconomics (3 hrs)	
4. ECON202 Principles of Microeconomics (3 hrs)	
<i>Area IV Arts and Humanities</i>	
1. See page 25	
2. See page 25	
3. See page 25	
4. See page 25	

Physical Education/Graduation Requirement	2 hours
Major Requirements	72 hours
ET100 Introduction to Engineering Technology (3 hrs)	
MFG111 Materials (3 hrs)	
MATH121 Calculus II (4 hrs)	
CADM122 Engineering Graphics I (3 hrs)	
MFG123 Manufacturing Processes and Methods I (3 hrs)	
MFG124 Manufacturing Processes and Methods II (3 hrs)	
MET211 Statics (3 hrs)	
CADM223 Engineering Graphics II (3 hrs)	
ELEC200 Circuit Analysis I (3 hrs)	
PHY224 Electricity and Light (5 hrs)	
MET312 Applied Dynamics Principles (3 hrs)	
MET313 Applied Mechanics of Materials (3 hrs)	
MET314 Applied Thermodynamics and Heat Transfer (3 hrs)	
MFG316 Design for Manufacturing and Tooling (3 hrs)	
MET319 Fluid Mechanics (3 hrs)	
MET387 Cooperative Education (3 hrs)	
MET411 Mechanical/Machine Design (3 hrs)	
ELEC218 Motors and Controls (3 hrs)	
MET434 Finite Element Analysis for Engineering Applications (3 hrs)	
MET437 Kinematics of Machines (3 hrs)	
MET470 Mechanical Vibrations (3 hrs)	
MET492 Senior Design Project I (3 hrs)	
MET493 Senior Design Project II (3 hrs)	

Minor Requirements	0 hours
<i>No minor is required.</i>	

University Elective Courses	0 hours
--	----------------

Program Total	124 hours
----------------------------	------------------

Note:

**This course satisfies both a general education and a major requirement.*

INTERIOR DESIGN PROGRAM (IDE)

The interior design program offers a Foundation for Interior Design Education Research (FIDER) accredited, four-year studio based curriculum, culminating in a bachelor's of science degree. The program's mission is to academically prepare students to enable them to creatively solve problems related to the function and quality of interior environments.

The program promotes critical thinking by requiring a balance between broad liberal arts courses, specific courses in fine arts, management, marketing, construction, textiles; and an intense curriculum of interior design courses. The interior design curriculum provides experiential educational opportunities to investigate the interaction of humans and environments through the integration of theory, knowledge and technical skills, preparing students to achieve in the challenging profession of interior design. Central to our mission of preparing students to achieve as professional interior design practitioners is our goal to impart to our students: a holistic view of people and their environments in multi-cultural, multi-racial and multi-ethnic settings; a sensitivity to environmentally conscious design issues; a consideration of the needs of all people, regardless of age, stature or ability; and the ability to creatively analyze design problems in order to create interior environments that meet human needs and fulfill human aspirations.

Before students may enter courses at the 300- or 400-level, the following standards must be met:

1. The student must receive a C or better in a) identified courses in the major and b) identified general education courses;
2. The student must achieve a GPA of 2.7 or above as calculated from the grades in a) identified courses in the major and b) identified general education courses; and
3. The student must successfully complete a portfolio review by a minimum of two interior design faculty members and one interior design practitioner who has not taught courses in the interior design program in the previous two years.

General Education Requirements48 hours

Area I Symbolics and Communication

1. ENGL121 Composition II: Researching the Public Experience (3 hrs)
2. See page 23
3. *One course from the following:*
 - ENGL324 Principles of Technical Communication (3 hrs)
 - CTAC224 Public Speaking (3 hrs)
 - CTAC225 Listening Behavior (3 hrs)
 - CTAC226 Non-Verbal Communication (3 hrs)
 - CTAC227 Interpersonal Communication (3 hrs)
 - CTAC374 Intercultural Communication (3 hrs)
 - CTAC375 Interracial/Interethnic Communication (3 hrs)
4. CADM105 Computer Applications for Industry (3 hrs)
5. See page 23

Area II Science and Technology

1. See page 24
2. PSY101 General Psychology (3 hrs)
3. See page 24

Area III Social Sciences

1. See page 24
2. See page 24
3. *Choose one of the following:*
 - SOCL105 Introductory Sociology (3 hrs)
 - ANTH135 Introduction to Cultural Anthropology (3 hrs)
4. See page 24

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. ART123 Drawing I (3 hrs)

Additional Requirements3 hours

- ART122 Two-Dimensional Design (3 hrs)

Physical Education/Graduation Requirement2 hours

Major Requirements73 hours

- | | |
|---|-----------------|
| Required Courses | 70 hours |
| †IDE110 Interior Design Studio I (4 hrs) | |
| †IDE111 Human Factors and Special Needs (2 hrs) | |
| †IDE120 Interior Design Studio II (4 hrs) | |
| †IDE121 Interior Design Materials and Components (2 hrs) | |
| †IDE122 Design Theory II (2 hrs) | |
| †IDE131 Design Theory I (2 hrs) | |
| †IDE210 Interior Design Studio III (4 hrs) | |
| †IDE213 Computers for Interior Design (2 hrs) | |
| IDE217 History of Interiors: Ancient – 1800 (2 hrs) | |
| †IDE220 Interior Design Studio IV (4 hrs) | |
| IDE224 Interior Building Codes and ADA (2 hrs) | |
| IDE228 History of Interiors: 1800 – Present (2 hrs) | |
| IDE310 Interior Design Studio V: Residential (4 hrs) | |
| IDE314 Computers for Interior Design II (2 hrs) | |
| IDE317 Lighting for Interiors (2 hrs) | |
| IDE320 Interior Design Studio VI: Contract (4 hrs) | |
| IDE322 Interior Design Space Planning and Specification (2 hrs) | |
| IDE324 Lighting for Interiors (2 hrs) | |
| IDE410 Interior Design Studio VII: Contract (4 hrs) | |
| IDE411 Internship in Interior Design (1 hr) | |
| IDE420 Interior Design Studio VIII: Contract (4 hrs) | |
| IDE422 Professional Practice in Interior Design (2 hrs) | |
| ATM378 Interior Design Textiles (2 hrs) | |
| †CNST201 Construction Systems (3 hrs) | |
| MGMT386 Organizational Behavior and Theory (3 hrs) | |
| MKTG360 Principles of Marketing (3 hrs) | |

Restrictive Elective Courses 3 hours

Any one hour IDE 100- or 200-level course not taken above and any two hour IDE 300- or 400-level course not taken above. Selected in consultation with the interior design adviser.

Minor Requirements0 hours

No minor is required.

University Elective Courses0 hours

Program Total126 hours

Note:

**This course satisfies both a general education and a major requirement.*

†Course must be completed with a grade of C or better prior to completion of second year review process.

MANUFACTURING TECHNOLOGY MAJOR (MFG)

The rapid increase in complexity of manufacturing technology and operations has caused the education of most engineers to become increasingly theoretical. This has produced a demand for manufacturing professionals who have applied technical skills. Our graduates, who are educated in applied technologies, help to meet that demand. Students majoring in manufacturing are prepared for a wide range of professional positions in industry. Graduates are employed as manufacturing engineers; manufacturing operations managers; computer applications integrators; product, process and tool designers; and in many other technical and managerial positions. The manufacturing technology major includes a core of fundamental manufacturing courses designed to produce a well-rounded graduate with hands-on experience. In advanced courses, students gain knowledge and skills in mechanical and tool design, fluid power systems, quality control, robotics and control technologies for machines, processes and manufacturing operations management. A number of our graduates have become certified as manufacturing technologists or manufacturing engineers by the Society of Manufacturing Engineers.

General Education Requirements48 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. ENGL324 Principles of Technical Communication (3 hrs)
4. MATH170 Elementary Statistics (3 hrs)
5. CADM105 Computer Applications for Industry (3 hrs)

Area II Science and Technology

1. CHEM117/118 Fundamentals of Chemistry with lab (4 hrs)
2. PSY101 General Psychology (3 hrs)
3. PHY221 Mechanics, Sound, and Heat (4 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Additional Requirements9 hours

- MATH105 College Algebra (3 hrs)
- MATH107 Plane Trigonometry (2 hrs)
- PHY222 Electricity and Light (4 hrs)

Physical Education/Graduation Requirement2 hours

Major Requirements60 hours

- MFG111 Materials (3 hrs)
- CADM122 Engineering Graphics I (3 hrs)
- CADM223 Engineering Graphics II (3 hrs)
- CADM325 Applied Mechanics, Kinematics, and Design (3 hrs)
- MFG361 Computer Numerical Control (3 hrs)

MFG425 Advanced Manufacturing Methods (3 hrs)
 ELEC200 Circuit Analysis I (3 hrs)
 ELEC218 Motors and Controls (3 hrs)
 MFG123 Manufacturing Processes and Methods I (3 hrs)
 MFG124 Manufacturing Processes and Methods II (3 hrs)
 MFG203 Industrial Operation (3 hrs)
 MFG290 GD&T and Metrology (3 hrs)
 MFG306 Plastic Processing (3 hrs)
 MFG316 Design for Manufacturing and Tooling (3 hrs)
 MFG387 Cooperative Education in Manufacturing Technology (3 hrs)
 MFG421 Manufacturing Engineering Analysis (3 hrs)
 MFG470 Integrated Product and Process Design (3 hrs)
 MFG490 Manufacturing Enterprise Capstone (3 hrs)
 QUAL320 Industrial Quality Control (3 hrs)

One course from the following:

ACC130 Accounting for Nonbusiness Majors (3 hrs)
 ACC240 Principles of Financial Accounting (3 hrs)

Minor Requirements 0 hours

No minor is required.

University Elective Courses 5 hours

Program Total 124 hours

POLYMERS AND COATINGS TECHNOLOGY CURRICULUM (PLCT)

The polymers and coatings curriculum is designed to provide the background necessary for graduates to find employment in companies that manufacture and use paints, coatings, rubber, plastics, polymers, adhesives and inks, or in companies that manufacture raw materials for these industries. Students completing this curriculum have met the major and minor requirements for graduation. No outside minor is needed.

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

General Education Requirements 50 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. ENGL324 Principles of Technical Communication (3 hrs)
4. MATH120 Calculus I (4 hrs)
5. INDT201 Microcomputer Applications in Technology (3 hrs)

Area II Science and Technology

1. CHEM121/122 General Chemistry I with lab (4 hrs)
2. BIOL105 Introductory Biology for Non-Majors (4 hrs)
3. PHY221 Mechanics, Sound, and Heat (4 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Additional Requirements 15 hours

CHEM123/124 General Chemistry II (4 hrs with lab)
 CHEM381 Instrumentation of Chemical Technology (2 hrs)
 MATH105 College Algebra (3 hrs)
 MATH107 Plane Trigonometry (2 hrs)
 PHY222 Electricity and Light (4 hrs)

Physical Education/Graduation Requirements 2 hours

Major Requirements 54 hours

Required Courses 42 hours

CHEM281 Quantitative Analysis (4 hrs)
 INDT310 Polymers for Engineers and Technologists (3 hrs)
 CHEM361 Fundamentals of Physical Chemistry (3 hrs)
 CHEM371 Organic Chemistry I (3 hrs)
 CHEM372 Organic Chemistry II (3 hrs)
 CHEM373 Organic Chemistry Laboratory (2 hrs)
 INDT387 Cooperative Education in Interdisciplinary Technology (3 hrs)
 INDT400 Polymers and Coatings Technology I (3 hrs)
 INDT401 Polymers and Coatings Technology I Laboratory (3 hrs)
 INDT402 Polymers and Coatings Technology II (3 hrs)
 INDT403 Polymers and Coatings Technology II Laboratory (3 hrs)
 INDT405 Coating Processes I (3 hrs)
 INDT460 Advanced Coatings Topics (3 hrs)
 INDT479 Special Topics: Introduction to Coating Raw Materials (3 hrs)

Elective Courses 12 hours

Twelve hours from the following:

CHEM241 Materials Science (3 hrs)
 CHEM340 Introduction to Industrial Chemistry (3 hrs)
 CHEM415 Environmental Chemistry (3 hrs)
 CHEM478 Special Topics (2 hrs)
 INDT377/378/379 Special Topics (3 hrs)
 INDT416 Water-Based Coatings (3 hrs)
 INDT477/478/479 Special Topics (3 hrs)
 INDT487 Cooperative Education in Interdisciplinary Technology (1 hr)

Minor Requirements 0 hours

No minor is required.

University Elective Courses 3 hours

Program Total 124 hours

CONSTRUCTION MANAGEMENT MINOR (CNST)

This minor is designed to provide a background in fundamental technical applications for students with majors outside the department who expect to work in industry. Employment opportunities are enhanced for persons with technical course work.

University elective courses in the minor are selected to relate to the student's major subject area. Academic advising to determine elective course choices is provided by the School of Engineering Technology. A maximum of six hours may be transferred from outside the department.

Required Courses 23 hours

CNST125 Introduction to Construction (2 hrs)
 CNST201 Construction Systems (3 hrs)
 CNST202 Construction Materials (3 hrs)
 CNST228 Construction Graphics (3 hrs)
 CNST229 Analysis of Commercial Prints (3 hrs)
 CNST361 Planning and Scheduling (3 hrs)
 CNST302 Contract Documents, Regulations, and Specifications (3 hrs)
 CNST304 Construction Estimating and Bidding (3 hrs)

Minor Total 23 hours

HUMAN ENVIRONMENTS MINOR (HENV)

Required Courses.....6 hours

- IDE111 Human Factors and Special Needs (2 hrs)
- IDE131 Orientation to Interior Design (2 hrs)
- IDE122 Interior Design Theory (2 hrs)

Restricted Elective Courses.....14 hours

Fourteen hours from the following:

- IDE110 Interior Design Studio I (4 hrs)
- IDE120 Interior Design Studio II: Sketching (2 hrs)
- IDE121 Interior Design Materials and Components (2 hrs)
- IDE190 Interior Design II: Perspectives and Rendering (2 hrs)
- IDE224 Interior Build Codes/ADA (2 hrs)
- IDE213 Computers in Interior Design I (2 hrs)
- IDE222 History of Interiors (2 hrs)
- IDE317 Lighting for Interiors (2 hrs)
- IDE310 Interior Design Studio III (4 hrs)
- IDE314 Computers in Interior Design II (2 hrs)
- IDE322 Interior Design Space Planning (2 hrs)

Minor Total.....20 hours

MANUFACTURING MINOR (MFG)

The manufacturing minor is designed to provide majors in business and science with an introduction to manufacturing engineering. Employment opportunities typically increase for persons with this minor.

University elective courses in the minor are selected to relate to the student's major. Academic advising to determine elective course choices is provided by a manufacturing adviser in the School of Engineering Technology.

Required Courses12 hours

- MFG111 Materials (3 hrs)
- MFG123 Manufacturing Processes and Methods I (3 hrs)
- MFG124 Manufacturing Processes and Methods II (3 hrs)
- MFG203 Industrial Operation (3 hrs)

Restricted Electives9 hours

- MFG112 Plastics (3 hrs)
- CADM122 Engineering Graphics I (3 hrs)
- CADM223 Engineering Graphics II (3 hrs)
- MFG316 Design for Manufacturing and Tooling (3 hrs)
- QUAL320 Industrial Quality Control (3 hrs)
- MFG290 GD&T and Meteorology (3 hrs)
- MFG306 Plastic Processing (3 hrs)
- MFG361 Computer Numerical Control (3 hrs)
- MFG421 Manufacturing Engineering Analysis (3 hrs)
- MFG425 Advanced Manufacturing Methods (3 hrs)
- MFG470 Integrated Product and Process Design (3 hrs)
- MFG490 Manufacturing Enterprise Capstone (3 hrs)

Minor Total.....21 hours

PRE-ARCHITECTURE PROGRAM (PARC)

This program is designed for students who wish to transfer to an architecture program at another university. Students are strongly advised to consult with the school to which they plan to transfer for specific requirements. Courses taken may apply to other majors at the University if the student chooses to remain on this campus to complete a bachelor's degree.

Department advisers in these areas maintain contact with universities that offer related four-year programs in order to maximize the value of the transfer program of study at the University to other universities. Students planning to transfer to four-year programs should not complete EMU's general education requirements.

Required Courses.....57 hours

- ENGL121 Composition II: Researching the Public Experience (3 hrs)
- CTAS121 Fundamentals of Speech (2 hrs)
- MATH120 Calculus I (4 hrs)
- MATH121 Calculus II (4 hrs)
- COSC111 Introduction to Programming (3 hrs)
- CHEM117/118 Fundamentals of Chemistry with lab (4 hrs)
- PHY223 Mechanics and Sound (5 hrs)
- PHY224 Electricity and Light (5 hrs)
- PLSC112/113 American Government (3 hrs)
- HIST123 The United States to 1877 (3 hrs)
- ECON201 Principles of Macroeconomics (3 hrs)
- ECON202 Principles of Microeconomics (3 hrs)
- PHIL130 Introduction to Logic (or approved alternative) (3 hrs)
- ART123 Drawing I (3 hrs)
- ART231 Three-Dimensional Design (3 hrs)
- Two literature courses (6 hrs)

Recommended Course (course may not transfer).....2 hours

- CNST125 Introduction to Construction (2 hrs)

SCHOOL OF TECHNOLOGY STUDIES

Campus Address: 122 Sill Hall

Internet: www.emich.edu/sts

Telephone: 734.487.1161

FAX: 734.487.7690

E-mail: morell.boone@emich.edu

See pages 250, 251, 301, 304, 312 and 357 for course descriptions.

The School of Technology Studies; newly formed from the Departments of Business and Technology Education, and Interdisciplinary Studies, with two programs from human, environmental and consumer resources offers undergraduate and graduate programs. The undergraduate programs lead to a bachelor of science degree in administrative management, apparel, textiles and merchandising, aviation flight technology, aviation management technology, business services and technology education, communication technology, hotel and restaurant management, industrial distribution, legal assistant (paralegal) studies, marketing education, network and information technology administration, technology and design education, technology management and vocational education. Individuals who complete these professional curriculums should find many career opportunities open to them.

Professional Programs

Students majoring in one of the professional programs listed above should follow the general education guidelines in the catalog under which they entered the University. Students must include a course in cross cultural or international studies within the general education. Please see the College of Technology undergraduate adviser in Sill Hall (109 C) for advice regarding the general education requirements and guidelines for these College of Technology programs and for prerequisite course requirements. Specific program requirements are noted below.

Students without appropriate background or course prerequisites that are identified for courses in the majors are responsible to take those prerequisites. Transfer students should see the program adviser in their major to determine where transfer credit will be used on the major.

ADMINISTRATIVE MANAGEMENT MAJOR (ADMG)

The administrative management major focuses on the technical and management skills, concepts and principles needed to assume responsibility for executive office administration. Administrative managers are vital members of executive teams and assume supervisory, organizational and communicative roles in the coordination of administrative services.

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

This program is under review. Contact the department for current program requirements.

General Education Requirements 47 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. See page 23
4. MATH118 Linear Models and Probability (3 hrs)
5. BEDU201 Microcomputers for Business Applications (3 hrs)

Area II Science and Technology

1. See page 24
2. See page 24
3. See page 24

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements 2 hours

Major Requirements 50 hours

Administrative and Information Management Concepts 21 hours

- BEDU395 Administering Workplace Systems and Technology (3 hrs)
- BEDU396 Information and Media Administration (3 hrs)
- BEDU495 End-User Systems: Implementation and Evaluation (3 hrs)
- BEDU496 Records Administration Using Database (3 hrs)
- MGMT384 Human Resource Management (3 hrs)
- MGMT485 Human Resource Development (3 hrs)

One course from the following:

- MKTG374 Business to Business Marketing (3 hrs)
- BEDU387 Cooperative Education in Business Education (3 hrs)

Business Foundations 21 hours

- BEDU100 Contemporary Business (3 hrs)
- ACC240 Principles of Financial Accounting (3 hrs)
- ACC241 Principles of Managerial Accounting (3 hrs)
- ACC342 Managerial Cost Accounting (3 hrs)
- LAW293 Legal Environment of Business (3 hrs)
- MKTG360 Principles of Marketing (3 hrs)
- DS265 Business Statistics I (3 hrs)

Information Processing 8 hours

- BEDU123 Word Processing/Keyboarding Applications (2 hrs)
- BEDU210 Concepts of Network and Business Technology (3 hrs)
- BEDU224 Computer-based Business Mathematics (3 hrs)

Minor Requirements 0 hours

No minor is required.

University Elective Courses 26 hours

Program Total 124 hours

APPAREL, TEXTILES AND MERCHANDISING MAJOR (ATM)

The apparel, textiles and merchandising curriculum offers practical career-oriented knowledge and skills as well as theoretical foundations of marketing fashion apparel and accessories. A minor in art, communication, service, journalism, management, marketing or theatre is required.

General Education Requirements 47 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. See page 23†
4. See page 23
5. See page 23

Area II Science and Technology

1. See page 24
2. See page 24
3. See page 24

Area III Social Sciences

1. See page 24
2. See page 24
3. See page 24
4. See page 24

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25†

Physical Education/Graduation Requirement 2 hours

Major Requirements 45 hours

Required Courses 21 hours

- ATM145 Introduction to Apparel and Textile Merchandising (3 hrs)
- ATM235 Introductory Textiles (3 hrs)
- ATM255 Apparel Analysis (3 hrs)
- ATM345 Merchandise Planning and Control (3 hrs)
- ATM355 Application of Merchandising Practices (3 hrs)
- ATM437 Professional Seminar (3 hrs)
- ATM487 Field Experience (3 hrs)

Elective Courses 24 hours

Twenty-four hours from the following:

- ATM105 Integrated Arts (3 hrs)
- ATM118 Apparel Studio (3 hrs)
- ATM119 Early American Textiles (3 hrs)
- ATM135 Cultural Study of Dress (3 hrs)
- ATM210 Display Techniques (3 hrs)
- ATM265 Merchandising of Interior Furnishings (3 hrs)
- ATM302 Fashion Manufacturing Techniques (3 hrs)
- ATM380 Fashion of the Haute Couture (3 hrs)
- ATM390 Visual Merchandising (3 hrs)
- ATM392 Pattern Design (3 hrs)
- ATM404 Advanced Textiles (3 hrs)
- ATM439 Fashion Markets (3 hrs)
- ATM460 Tailoring (3 hrs)

Minor Requirements 21 hours

Select a minor from the following:

- art
- communication
- journalism
- management
- marketing
- theatre
- physical science

University Elective Courses9 hours

Program Total 124 hours

Note:
†General education requirement may be restricted depending on choice of minor.

AVIATION FLIGHT TECHNOLOGY CURRICULUM (AVFT)

This program is designed to prepare individuals for positions as entry-level professional pilots in the aviation industry. Based upon the needs of the aviation industry, the program encompasses a program of study that takes an individual from student pilot to certified flight instructor. It also includes a number of specialized courses that incorporate aviation business and management skills, safety, human factors, aerodynamics, aviation law and regulations, and crew resource management. The program includes a general education curriculum designed to provide a well-rounded knowledge foundation.

The Aviation Flight Technology program has amendments to the basic aviation program designed to accommodate ROTC students planning on applying for military pilot training. The accommodations include the Eastern Michigan University U.S. Army ROTC program and the Air Force or Naval ROTC programs located at the University of Michigan which may be attended by Eastern Michigan University students. Please contact the Aviation Flight Technology program coordinator for further information.

General Education Requirements 48-49 hours

Area I Symbolics and Communication

- 1. See page 23
2. See page 23
3. See page 23
4. Choose one option from the following:
MATH107 Plane Trigonometry (2 hrs) and MATH119 Applied Calculus (3 hrs)
MATH120 Calculus I (4 hrs)
5. INDT201 Microcomputer Applications in Technology (3 hrs)

Area II Science and Technology

- 1. PHY221 Mechanics, Sound, and Heat (4 hrs)
2. See page 24
3. INDT150 Understanding Technology (3 hrs)

Area III Social Sciences

- 1. PLSC112 American Government (3 hrs)
2. See page 24
3. See page 24
4. See page 24

Area IV Arts and Humanities

- 1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirement2 hours

PEGN210 Lifetime Wellness and Fitness (2 hrs)

Major Requirements67 hours

- INDT100 Introduction to Air Transportation (3 hrs)
INDT110 Aircraft Maintenance I (3 hrs)
INDT120 Flight Operations I (3 hrs)
INDT170 Aviation Ground Instruction (3 hrs)
INDT208 Aviation Human Factors (3 hrs)
INDT263 Aircraft Systems (3 hrs)
INDT220 Flight Operations II (3 hrs)
INDT303 Aviation Law and Insurance (3 hrs)
INDT313 Aviation Industry Regulations (3 hrs)
INDT320 Aviation Safety (3 hrs)
INDT321 Cockpit and Crew Resource Management (3 hrs)
ESSC324 Weather (3 hrs)

- †INDT251 Basic Flight (solo) (2 hrs)
†INDT261 Basic Flight II (private) (2 hrs)
†INDT271 Basic Flight III (50 hours Cross-Country) (2 hrs)
INDT341 Instrument Ground Instruction (2 hrs)
INDT342 Commercial Ground Instruction (2 hrs)
†INDT351 Advanced Flight I (Instrument flight) (2 hrs)
†INDT361 Advanced Flight II (Instrument flight) (2 hrs)
†INDT371 Advanced Flight III (Commercial) (2 hrs)
INDT382 Flight Instructor Ground Instruction (3 hrs)
INDT384 Multi-Engine/Aircraft Systems Ground Instruction (2 hrs)
†INDT426 Advanced Flight IV (Multi-engine) (2 hrs)
†INDT427 Advanced Flight V (CFI-A) (2 hrs)
INDT419 High Airspeed Aerodynamics/High Altitude Flight (3 hrs)
INDT422 Senior Seminar (3 hrs)

Minor Requirements0 hours

No minor is required.

University Elective Courses6-7 hours

Program Total 124 hours

Note:
†This course is a flight course involving flight activities conducted at the Eagle Flight Center.

AVIATION MANAGEMENT TECHNOLOGY CURRICULUM (AVMG)

The aviation management technology curriculum is designed to prepare individuals for entry-level management and supervisory positions in the field of aviation technology. The program has a foundation of aviation-related and basic business course work.

General Education Requirements40 hours

Area I Symbolics and Communication

- 1. See page 23
2. See page 23
3. See page 23
4. One course from the following:
*MATH118 Linear Models and Probability
*MATH119 Applied Calculus
5. INDT215 End-User Computing*

Area II Science and Technology

- 1. See page 24
2. See page 24
3. INDT150 Understanding Technology (3 hrs)

Area III Social Sciences

- 1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

- 1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements2 hours

Major Requirements69 hours

- INDT100 Introduction to Air Transportation (3 hrs)
INDT110 Aircraft Maintenance I (3 hrs)
INDT120 Flight Operations I (3 hrs)
INDT170 Aviation Ground Instruction (3 hrs)
INDT210 Aircraft Maintenance II (3 hrs)
INDT220 Flight Operations II (3 hrs)
INDT303 Aviation Law and Insurance (3 hrs)

INDT313 Aviation Industry Regulations (3 hrs)
 INDT315 Airport Management (3 hrs)
 INDT320 Aviation Safety (3 hrs)
 INDT387 Cooperative Education in Interdisciplinary Technology (3 hrs)
 INDT422 Senior Seminar in Aviation Management (3 hrs)
 MGMT384 Human Resource Management (3 hrs)
 MGMT386 Organizational Behavior and Theory (3 hrs)
 *MATH118 Linear Models and Probability (3 hrs)
 *MATH119 Applied Calculus (3 hrs)
 DS265 Business Statistics I (3 hrs)
 ACC240 Principles of Financial Accounting (3 hrs)
 ACC241 Principles of Managerial Accounting (3 hrs)
 FIN350 Principles of Finance (3 hrs)
 MKTG360 Principles of Marketing (3 hrs)
 *IS215 End-User Computing (3 hrs)
 LAW293 Legal Environment of Business (3 hrs)

Minor Requirements 0 hours
No minor is required.

University Elective Courses 13 hours

Program Total 124 hours

Note:

**This course satisfies both a general education and a major requirement.*

BUSINESS SERVICES AND TECHNOLOGY EDUCATION (BSTE)

Secondary Teacher Certification

At this writing the BSTE program is being reviewed. Students will be admitted to this program until the end of 2004-2005 academic year. The new BMT program should be in place by the 2005-2006 academic year.

The business services and technology education major leads to a Michigan Department of Education Secondary Provisional Certificate and, upon meeting the requirements according to the current Michigan State Plan, a vocational endorsement. The program prepares prospective teachers in the areas of information processing and management, administrative services, accounting and computing, and basic business such as economics, consumer economics, business law, business management, computer literacy and introduction to business.

This major can be completed only in conjunction with the bachelor of business education curriculum. Successful completion of this course of studies, in the context of other program requirements, qualifies the student for recommendation for certification for the Michigan Department of Education Secondary Provisional Certificate endorsed in business education, certification code GX, and, with appropriate work experience, certification code VB. The Michigan Test for Teacher Certification (MTTC) covering this field is #32, "Business Education."

General Education Requirements 37 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. See page 23
4. MATH118 Linear Models and Probability (3 hrs)
5. BEDU201 Microcomputers for Business Applications*

Area II Science and Technology

1. See page 24
2. PSY101 General Psychology (3 hrs)
3. See page 24

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics*
4. ECON202 Principles of Microeconomics*

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements 2 hours

Major Requirements 58 hours

BEDU100 Contemporary Business (3 hrs)
 BEDU123 Word Processing/Keyboarding Applications (2 hrs)
 *BEDU201 Microcomputers for Business Applications (3 hrs)
 *ECON201 Principles of Macroeconomics (3 hrs)
 *ECON202 Principles of Microeconomics (3 hrs)
 BEDU210 Concepts of Network and Business Technology (3 hrs)
 BEDU220 Word/Information Processing Operations (3 hrs)
 BEDU224 Computer-based Business Mathematics (3 hrs)
 ACC240 Principles of Financial Accounting (3 hrs)
 ACC241 Principles of Managerial Accounting (3 hrs)
 ACC244 Personal Tax Accounting (2 hrs)
Two courses from the following:
 ACC340 Intermediate Accounting (3 hrs)
 ACC342 Managerial Cost Accounting (3 hrs)
 ACC344 Principles of Taxation (3 hrs)
 or other approved Accounting courses
 BEDU250 Personal Finance (3 hrs)
 LAW293 Legal Environment of Business (3 hrs)
 BEDU310 Word/Information Processing Administration (3 hrs)
 MKTG360 Principles of Marketing (3 hrs)
 BEDU395 Administering Workplace Systems and Technology (3 hrs)
 BEDU396 Information and Media Administration (3 hrs)
 BEDU496 Records Administration Using Database (3 hrs)

Professional Studies 40 hours

Pre-Admission Phase: The Learner and the Community: 11 hours

Courses that may be taken before formal admission to the teacher education program

- One-hundred clock hours of approved pre-student teaching field experiences
- EDPS322 Human Development and Learning (4 hrs)
- FETE201 Field Experience I (1 hr)
- SPGN251 Education of Students with Exceptionalities (3 hrs)
- BEDU200 Principles of Marketing and Office Education (3 hrs)

Courses that require formal admission to the teacher education program.

Phase I: Curriculum, Assessment and the Social Context: 9 hours

- SOFD328 Schools in a Multicultural Society (3 hrs)
- EDPS340 Introduction to Assessment and Evaluation (3 hrs)
- BEDU363 Curriculum for Business Services and Technology (3 hrs)

Phase II: Content Methods, Literacy and Technology: 8 hours

- RDNG311 Teaching Reading in the Secondary School (3 hrs)
- FETE402 Field Experience III: Secondary (1 hr)
- BEDU364 Methods of Teaching General Business Subjects (2 hrs)
- BEDU365 Methods of Teaching Office Education (2 hrs)

Phase III: Capstone Experience: 12 hours

- EDUC492 Student Teaching (12 hrs)

Minor Requirements 0 hours

No minor is required.

University Elective Courses 0 hours

Program Total 137 hours

Note:

**This course satisfies both a general education and a major requirement.*

MARKETING EDUCATION (MKTE)

Secondary Teacher Certification

The bachelor of business education may be also be earned by pursuing the marketing education program. This program leads to a Michigan Department of Education Secondary Provisional Certificate (GM and GX) and vocational marketing education endorsement (VD) qualifying the prospective teacher in such areas as sales, retailing, marketing and advertising. Both the Michigan Department of Education Secondary Provisional Certificate (GM) and the vocational endorsement (VD) are required to earn the BBE with a major in marketing education

This major can be completed only in conjunction with the bachelor of business education curriculum, included in the marketing education program listed below. Successful completion of this course of studies, in the context of other program requirements, qualifies the student for recommendation for certification for the Michigan Department of Education Secondary Provisional Certificate endorsed in business education (GX), distributive education (GM), and, with appropriate work experience the vocational marketing endorsement (VD). The Michigan Test for Teacher Certification (MTTC) covering this field is #36, "Marketing (Distributive Education)."

This program is in review. Please contact the department for current program requirements

General Education Requirements41 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. See page 23
4. MATH118 Linear Models and Probability (3 hrs)
5. BEDU201 Microcomputers for Business Applications (3 hrs)

Area II Science and Technology

1. See page 24
2. PSY101 General Psychology (3 hrs)
3. See page 24

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics*
4. ECON202 Principles of Microeconomics*

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements2 hours

Major Requirements50 hours

- ACC240 Principles of Financial Accounting (3 hrs)
- ACC241 Principles of Managerial Accounting (3 hrs)
- BEDU100 Contemporary Business (3 hrs)
- *ECON201 Principles of Macroeconomics (3 hrs)
- *ECON202 Principles of Microeconomics (3 hrs)
- LAW293 Legal Environment of Business (3 hrs)
- MGMT386 Organizational Behavior and Theory (3 hrs)
- MKTG360 Principles of Marketing (3 hrs)
- MKTG261 Contemporary Selling (3 hrs)
- MKTG363 Retailing (3 hrs)
- MKTG365 Consumer Behavior (3 hrs)

Six hours from the following:

- LAW393 Law of Business Enterprises (3 hrs)
- MGMT384 Human Resource Management (3 hrs)
- MGMT388 Introduction to Entrepreneurship (3 hrs)
- MGMT485 Human Resource Development (3 hrs)
- MKTG368 Marketing Strategy (3 hrs)
- MKTG369 Advertising (3 hrs)
- MKTG374 Business to Business Marketing (3 hrs)
- MKTG461 Sales Management (3 hrs)

Eleven hours from the following:

- BEDU123 Word Processing/Keyboarding Applications (2 hrs)
- BEDU224 Computer-based Business Mathematics (3 hrs)
- BEDU250 Personal Finance (3 hrs)
- BEDU387 Cooperative Education in Business Education (3 hrs)
- BEDU487 Cooperative Education in Business Education (3 hrs)
- BEDU497/498/499 Independent Study (1/2/3 hrs)
- ATM145 Introduction to Apparel and Textile Merchandising (3 hrs)
- ATM235 Introductory Textiles (3 hrs)
- ATM255 Apparel Analysis (3 hrs)
- ATM439 Fashion Markets (3 hrs)
- TEDU452 Principles of Vocational Education (3 hrs)
- BTED568 Coordination of Cooperative Education Programs (2 hrs)
- Four thousand clock hours (or equivalent) of recent work experience in the field of marketing (0 hrs)

Professional Studies45 hours

Pre-Admission Phase: The Learner and the Community:15 hours

Courses that may be taken before formal admission to the teacher education program

- 100 clock hours of approved pre-student teaching field experiences
- EDPS322 Human Development and Learning (4 hrs)
- FETE201 Field Experience I (1 hr)
- SPGN251 Education of Students with Exceptionalities (3 hrs)
- BEDU200 Principles of Marketing and Office Education (3 hrs)
- BEDU368 Management of Marketing Education Programs (2 hrs)
- BEDU461 Projects and Simulations in Marketing Education (2 hrs)

Courses that require formal admission to the teacher education program.

Phase I: Curriculum, Assessment and the Social Context:6 hours

- SOFD328 Schools in a Multicultural Society (3 hrs)
- EDPS340 Introduction to Assessment and Evaluation (3 hrs)

Phase II: Content Methods, Literacy and Technology:12 hours

- RDNG311 Teaching Reading in the Secondary School (3 hrs)
- FETE402 Field Experience III: Secondary (1 hr)
- EDMT330 Instructional Applications of Media and Technology (2 hrs)
- BEDU364 Methods of Teaching General Business Subjects (2 hrs)
- BEDU366 Methods of Teaching Marketing Education (2 hrs)
- BEDU367 Curriculum in Marketing Education (2 hrs)

Phase III: Capstone Experience: 12 hours

- EDUC492 Student Teaching (12 hrs)

Minor Requirements0 hours

No minor is required.

University Elective Courses0 hours

Program Total138 hours

Note:

**This course satisfies both a general education and a major requirement.*

COMMUNICATION TECHNOLOGY CURRICULUM (CMTC)

Communication technology is a joint program offered by the Department of Interdisciplinary Technology and the Department of Communication and Theatre Arts. This curriculum is designed to provide the background necessary for graduates to find employment as managers in communication-based industries. The program emphasis is on having the student acquire those business, manufacturing, media, computer and communication skills necessary for employment in today's communication technology industries and business organizations.

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

General Education Requirements44 hours*Area I Symbolics and Communication*

1. See page 23
2. See page 23
3. *One course from the following:*
ENGL324 Principles of Technical Communication (3 hrs)
*CTAC227 Interpersonal Communication
CTAC374 Intercultural Communication (3 hrs)
4. MATH118 Linear Models and Probability (3 hrs)
5. *One course from the following:*
INDT201 Microcomputer Applications in Technology (3 hrs)
IS215 End-User Computing (3 hrs)

Area II Science and Technology

1. See page 24
2. PSY101 General Psychology (3 hrs)
3. INDT150 Understanding Technology (3 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. *One course from the following:*
PHIL220 Ethics (3 hrs)
PHIL221 Business Ethics (3 hrs)
4. See page 25

Physical Education/Graduation Requirements2 hours**Major Requirements62 hours****Media Production9 hours**

- CTAT130 Introduction to Telecommunications and Film (3 hrs)
CTAT141 Introduction to Radio-TV-Film Production (3 hrs)

One course from the following:

- CTAT331 Fundamentals of Radio Production and Direction (3 hrs)
CTAT332 Fundamentals of Television Production and Direction (3 hrs)

Transmission Systems6 hours

- ELEC200 Circuit Analysis I (3 hrs)
INDT305 Communication Transmission Systems (3 hrs)

Computer Technology12 hours*Choose one option from the following:***Option I Computer Programming**

- COSC138 Computer Science I (3 hrs)
COSC238 Computer Science II (3 hrs)
COSC239 Assembly and Machine Language (3 hrs)
COSC255 Introduction to Computer Hardware and Software Systems (3 hrs)

Option II Information Management

- IS219 File Processing and COBOL Programming (3 hrs)
IS380 Database Concepts (3 hrs)
IS420 Business Data Communications & Computer Networks (3 hrs)

One course from the following:

- IS442 Information Resource Management (3 hrs)
IS417 Systems Analysis and Design (3 hrs)

Option III Graphic Applications

- INDT205 PhotoTechnology (3 hrs)
INDT301 Multimedia Authoring (3 hrs)
INDT421 Web Publishing Technology (3 hrs)
INDT436 Electronic Publishing Technology (3 hrs)

Communication Theory and Practice6 hours

- *CTAC227 Interpersonal Communication (3 hrs)
CTAC354 Organizational Communication (3 hrs)

Business and Investment Skills6 hours

- MKTG360 Principles of Marketing (3 hrs)
PSY205 Quantitative Methods in Psychology (3 hrs)

Management Skills6 hours

- ACC130 Accounting for Non-Business Majors (3 hrs)
MGMT202 Business Communication (3 hrs)

Interdisciplinary Technology17 hours

- INDT121 Graphic Communication (3 hrs)
INDT231 Introduction to Computer Graphic Systems (3 hrs)
INDT387 Cooperative Education in Interdisciplinary Technology (3 hrs)
INDT409 Emerging Technologies in Storage and Retrieval (3 hrs)
INDT425 Communication Technology and Social Change (3 hrs)
INDT470 Senior Seminar in Communication Technology (2 hrs)

Minor Requirements0 hours*No minor is required.***University Elective Courses16 hours****Program Total124 hours***Note:***This course satisfies both a general education and a major requirement.*

HOTEL AND RESTAURANT MANAGEMENT MAJOR (HRM)

Hotel and restaurant management is a comprehensive program that integrates principles of hotel and restaurant management with club and resort management. The hotel and restaurant management program provides experiential educational opportunities in a wide variety of hospitality organizations through co-op or internships. A wide variety of minors are available to meet the diverse needs of our students in meeting their career objectives. The program offers a bachelor of science and master of science degree.

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

General Education Requirements47 hours*Area I Symbolics and Communication*

1. ENGL121 Composition II: Researching the Public Experience (3 hrs)
2. See page 23
3. See page 23
4. MATH118 Linear Models and Probability (3 hrs)
5. BEDU201 Microcomputers for Business Applications (3 hrs)

Area II Science and Technology

1. See page 24
2. PSY101 General Psychology (3 hrs)
3. See page 24

Area III Social Sciences

1. PLSC112/113 American Government (3 hrs)
2. See page 24
3. *One course from the following:*
ECON201 Principles of Macroeconomics (3 hrs)
SOCL105 Introductory Sociology (3 hrs)
4. See page 24

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirement2 hours

Major Requirements 53 hours

- Specialization Courses** 41 hours
- HRM103 Introduction to the Hospitality Industry (3 hrs)
 - HRM150 Sanitation in the Hospitality Industry (2 hrs)
 - HRM180 Foundations of Food Preparation (3 hrs)
 - HRM251 Meal Service Management (3 hrs)
 - HRM289 Co-op Education in Hotel and Restaurant Management (3 hrs)
 - HRM368 Hotel Information Systems (3 hrs)
 - HRM376 Legal Aspects of the Hospitality Industry (3 hrs)
 - HRM389 Co-op Education in Hotel and Restaurant Management (3 hrs)
 - HRM410 Human Resource Issues in the Hospitality Industry (3 hrs)
 - HRM430 Seminar in Hospitality Management (3 hrs)
 - HRM440 Cost Controls In the Hospitality Industry (3 hrs)
 - HRM441 Commercial Purchasing (3 hrs)
 - HRM470 Hospitality Industry Marketing (3 hrs)
 - HRM496 Strategies in Hospitality Management (3 hrs)

Elective Courses 12 hours

Twelve hours from the following:

- HRM177/178/179 Special Topics (1/2/3 hrs)
- HRM270 People Skills for the Hospitality Industry (3 hrs)
- HRM277/278/279 Special Topics (1/2/3 hrs)
- HRM350 Lodging Facilities Management (3 hrs)
- HRM377/378/379 Special Topics (1/2/3 hrs)
- HRM396 Club and Resort Management (3 hrs)
- HRM400 Franchising and Contract Management (3 hrs)
- HRM420 Quality Service Management (3 hrs)
- HRM450 Conference in Catering Management (3 hrs)
- HRM475 International Hospitality Management (3 hrs)
- HRM479/480/481 Special Topics (1/2/3 hrs)
- HRM480 Gaming and Casino Management (3 hrs)
- HRM497/498/499 Independent Study (1/2/3 hrs)

Minor Requirements 21 hours

Minor in management is recommended. Consult an adviser for other appropriate minors.

University Elective Courses 1 hour

Program Total 124 hours

INDUSTRIAL DISTRIBUTION (INDS)

The industrial distribution program is designed to provide graduates with the theoretical as well as practical applications today's industry is seeking. It develops graduates for career opportunities in industrial and technical sales, sales management, materials planning, quality assurance, purchasing, inventory control and branch/operations management. This program has been accredited by the National Association of Industrial Technology. Advising or additional information is available within the school.

This program is under review. Contact the department for current program requirements .

General Education Requirements 47 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. See page 23
4. See page 23
5. INDT201 Microcomputer Applications in Technology (3 hrs)

Area II Science and Technology

1. See page 24
2. See page 24
3. INDT150 Understanding Technology (3 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. See page 24
4. See page 24

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements 2 hours

Major Requirements 45 hours

Required Courses 18 hours

- INDT240 Profit Strategies in Distribution (3 hrs)
- INDT340 Relationships in Wholesaling (3 hrs)
- INDT387 Cooperative Education in Interdisciplinary Technology (3 hrs)
- INDT391 Wholesale Account Development (3 hrs)
- INDT440 Inventory Strategies in Distribution (3 hrs)
- INDT444 Quality Planning in Distribution (3 hrs)

Concentrations 27 hours

Students may select concentrations from many subject areas, with adviser approval. However, no more than 30 hours in the College of Business may be taken by non-business majors.

Minor Requirements 20 hours

University Elective Courses 10 hours

Program Total 124 hours

LEGAL ASSISTANT (PARALEGAL) MAJOR (LEGL)

The legal assistant major focuses on the skills necessary for an individual to assist the attorney, under the supervision and direction of the attorney, and with the understanding that the practice of law by lay persons is strictly prohibited. Skills include proficiency in legal research and analysis, drafting legal instruments and pleadings, interviewing clients and witnesses, doing discovery, preparing for trial and using computer-assisted research tools. Employment opportunities are excellent in law firms, corporations, banks, human resource offices, hospitals, state and federal governments and court systems. This major offers professional training and lays a foundation for a career in the legal field. It also qualifies as a prelaw major. This program is approved by the American Bar Association.

For students who have earned a prior degree, the legal assistant major can be pursued through a second bachelor's degree.

Active articulation agreements exist between this program and several community colleges. For further details, see the Articulation Agreements section, page 13.

Secondary Admission and Retention Policy

Students who wish to be legal assistant (paralegal) studies program majors must apply for admission to the program. Students may be admitted to the program in the fall or winter terms. Applications for a winter term will be due by Dec. 1 of the preceding fall term. Applications for a fall term will be due by April 1 of the preceding winter term. Admission to the program is competitive. A limited number of admissions is available.

Program Admission Requirements

Program admission criteria are:

1. Admission to the University as an undergraduate or second bachelor's degree candidate
2. Completion of ENGL121 with a grade of B or higher*
3. Completion of LEGL211 Introduction to Paralegalism and Legal Terminology, with a grade of B- or higher

4. Completion of LEGL304 Legal Writing, Research and Analysis I with a grade of C+ or higher
5. A cumulative GPA of at least 2.5 on a 4.0 scale

Students satisfying these criteria are eligible to apply for admission to the program, but admission is not guaranteed.

Program Retention Policy

In addition to secondary admission requirements, Program majors will be required to:

1. Complete each program core course (e.g., all courses having an LEGL prefix [except LEGL211 and LEGL304 — see above]), with a minimum grade of C
2. Maintain a cumulative GPA of at least 2.5 on a 4.0 scale†
3. Maintain a GPA within the major of at least 2.5 on a 4.0 scale†

*Students applying for admission to the program as second bachelor's degree candidates must present evidence of having completed an acceptable college-level English composition course with a grade of B or higher. A remedial English composition or writing course is not an acceptable college-level English composition course.

†A student whose cumulative GPA or cumulative major GPA falls below 2.5 will be placed on program probation for the next succeeding term. If the student fails to raise his or her cumulative GPA or cumulative major GPA, or both, as the case may be, to 2.5 or higher with the grades earned during the probationary term, the student will be dismissed from the program. For purposes of this policy, a student who is placed on program probation as the result of a deficient GPA at the close of a winter term will have until the close of the next fall term to raise his or her GPA to 2.5 or higher. If a student earns lower than a C in any program core course (except LEGL211 and LEGL304 - see above), the student will be allowed to repeat the course two times. If the student fails to earn a C or better in the repeated courses, the student will be dismissed from the program.

General Education Requirements44 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. LEGL304 Legal Writing, Research and Analysis I*
4. See page 23
5. BEDU201 Microcomputers for Business Applications (3 hrs)

Area II Science and Technology

1. See page 24
2. See page 24
3. See page 24

Area III Social Sciences

1. See page 24
2. See page 24
3. *One course from the following:†*
 ECON201 Principles of Macroeconomics (3 hrs)
 SOCL105 Introductory Sociology (3 hrs)
4. *One course from the following:†*
 ECON202 Principles of Microeconomics (3 hrs)
 SOCL202 Social Problems (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements2 hours

Major Requirements59 hours

Required Courses 33 hours

- LEGL211 Introduction to Paralegalism and Legal Terminology (3 hrs)
- LEGL212 Law Office Administration and Technology (3 hrs)
- *LEGL304 Legal Writing, Research and Analysis I (3 hrs)

- LEGL305 Advanced Legal Writing, Research, and Analysis II (3 hrs)
- LEGL306 Advanced Legal Writing, Research, and Analysis III (3 hrs)
- LEGL311 Probate, Estates, and Wills (3 hrs)
- LEGL313 Family Law (3 hrs)
- LEGL404 Court Rules, Forms, and Drafting Contracts (3 hrs)
- LEGL405 Civil Litigation, Investigation, and Procedure I (3 hrs)
- LEGL406 Civil Litigation, Investigation and Procedure II (3 hrs)
- LEGL416 Legal Assistant Internship (Paralegal) (3 hrs)

Restricted University Elective Courses 15 hours

Fifteen hours from the following:

- CTAC357 Interviewing as Communication (3 hrs)
- LEGL417 Legal Assistance Center Clinical Experience (3 hrs)
- LEGL415 Bankruptcy Law (3 hrs)
- BEDU497/498/499 Independent Study (1/2/3 hrs)
- PLSC301 The American Legal System (3 hrs)
- PLSC341 International Law (3 hrs)
- PLSC456 Criminal Law I (3 hrs)
- LAW293 Legal Environment of Business (3 hrs)
- LAW393 Law of Business Enterprises (3 hrs)
- LAW403 Employment Law (3 hrs)

Business and Information Processing Core 11 hours

- BEDU123 Word Processing/Keyboarding Applications (2 hrs)
- BEDU224 Computer-based Business Mathematics (3 hrs)
- BEDU496 Records Administration Using Database Systems (3 hrs)
- ACC240 Principles of Financial Accounting (3 hrs)

Minor Requirements0 hours
No minor is required.

University Elective Courses19 hours

Program Total124 hours

Note:

*Course satisfies both a general education and a major requirement
 †If ECON201 is selected, students must take ECON202; if SOCL105 is selected, students must take SOCL202.

NETWORK AND INFORMATION TECHNOLOGY ADMINISTRATION MAJOR (NITA)

The major in network and information technology administration addresses changing demands to administer information and its delivery systems. The program is designed to prepare individuals for positions in network administration, client/customer support and training and other positions in the career path. Confidentiality, integrity and availability of information and networks are emphasized.

General Education Requirements47 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. ENGL324 Principles of Technical Communication (3 hrs)
4. See page 23
5. BEDU201 Microcomputers for Business Applications (3 hrs)

Area II Science and Technology

1. See page 24
2. See page 24
3. See page 24

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements2 hours

Major Requirements51 hours

Systems and Automation Concepts 24 hours

- BEDU210 Concepts of Network and Business Technology (3 hrs)
- BEDU344 Administration of Computer Systems (3 hrs)
- BEDU422 End-User Systems: Planning and Design (3 hrs)
- BEDU495 End-User Systems: Implementation and Evaluation (3 hrs)
- BEDU496 Records Administration Using Database Systems (3 hrs)
- INDT305 Communication Transmission Systems (3 hrs)
- IS420 Business Data Communication and Computer Networks (3 hrs)

One course from the following:

- BEDU387 Cooperative Education in Business Education (3 hrs)
- BEDU479 Capstone Seminar (3 hrs)

Business and Technology Education 18 hours

- ACC240 Principles of Financial Accounting (3 hrs)
- BEDU224 Computer-Based Business Mathematics (3 hrs)
- BEDU396 Information and Media Administration (3 hrs)
- COSC111 Introduction to Programming (3 hrs)
- LAW293 Legal Environment of Business (3 hrs)
- MKTG360 Principles of Marketing (3 hrs)

Restricted Elective Courses 9 hours

- Select restricted electives in consultation with Network and Technology Administration program advisers:*
- COSC211 Programming Data Structures (3 hrs)
 - COSC205 Managing Computer Hardware & Software (3 hrs)
 - BEDU379/479 Special Topics (3 hrs)
 - BEDU487 Cooperative Education in Business Education (3 hrs)
 - BEDU497/498/499 Independent Study (1/2/3 hrs)

Minor Requirements0 hours

No minor is required.

University Elective Courses24 hours

Program Total124 hours

TECHNOLOGY MANAGEMENT MAJOR (TCMG)

The technology management program is designed for transfer students with an associate of applied science degree. The interdisciplinary curriculum provides the necessary foundation to meet the changing needs of management in a variety of fields; ranging from business and health, to criminal justice, environmental sciences, automotive technology and computer service technology.

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

General Education Requirement47 hours

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. ENGL324 Principles of Technical Communication (3 hrs)
4. MATH118 Linear Models and Probability (3 hrs)
5. INDT201 Microcomputer Applications in Technology (3 hrs)

Area II Science and Technology

1. See page 24
2. See page 24
3. INDT150 Understanding Technology (3 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. ECON201 Principles of Macroeconomics (3 hrs)
4. ECON202 Principles of Microeconomics (3 hrs)

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements2 hours

Major Requirements70 hours

Core Courses 15 hours

- INDT130 Introduction to Technology Management (3 hrs)
- INDT212 The Management of Technological Change (3 hrs)
- INDT311 Information Technology Management and Organizations (3 hrs)
- INDT314 A Socio-Technical Systems Approach to Process Improvement (3 hrs)
- INDT415 Senior Seminar in Technology Management (3 hrs)

Technology Management Elective Courses 12-15 hours

12 to 15 hours from the following:

- ACC130 Accounting for Non-business Majors (3 hrs)
- ACC240 Principles of Financial Accounting (3 hrs)
- ACC241 Principles of Managerial Accounting (3 hrs)
- LAW293 Legal Environment of Business (3 hrs)
- LAW403 Employment Law (3 hrs)
- FIN350 Principles of Finance (3 hrs)
- FIN358 Analysis of Financial Statements (3 hrs)
- MKTG360 Principles of Marketing (3 hrs)
- MKTG369 Advertising (3 hrs)
- MKTG473 Marketing and Product Innovation (3 hrs)
- MGMT384 Human Resource Management (3 hrs)
- MGMT386 Organizational Behavior and Theory (3 hrs)
- MGMT480 Management Responsibility and Ethics (3 hrs)
- INDT387 Cooperative Education (3 hrs)

Technical Concentration up to 46 hours

The following technical specializations from two-year institutions may be transferable into this concentration. These technical specializations will include, but are not limited to, the following areas:

- Automotive service technology
- Biomedical engineering technology
- Computer service technology
- Correctional science
- Criminology
- Emergency medical technician
- Environmental technology
- Fire technology
- Fluid power technology
- Graphic design technology
- Health information technology
- Laser-electro optics
- Photographic technology
- Public Safety technology
- Refrigeration and air conditioning technology
- Telecommunication technology

Minor Requirements0 hours

No minor is required.

University Elective Courses5 hours

Program Total124 hours

TECHNOLOGY AND DESIGN EDUCATION (TCDE)

K-12 Teacher Certification

The technology and design major prepares teachers of technology education for grades K-12. All graduates with this major qualify for a Michigan Department of Education Secondary Provisional Certificate with an endorsement in technology and design. Graduates may also qualify for a vocational endorsement by completing 36 hours of directly related technical course work and have two years of occupational experience in employment related to the area of study. Options for cooperative work experience are available to students as partial credit toward that occupational requirement.

This major must be completed in conjunction with the technology education curriculum. Successful completion of this course of studies, in the context of other program requirements, qualifies the student for recommendation for certification for the Michigan Department of Education Secondary Provisional Certificate endorsed in technology and design, certification code TX. The Michigan Test for Teacher Certification (MTTC) covering this field is #88 “Technology and Design.”

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

General Education Requirements49 hours

Area I Symbolics and Communication

1. ENGL121 Composition II: Researching the Public Experience (3 hrs)
2. See page 23
3. *One course from the following:*
ENGL324 Principles of Technical Communication (3 hrs)
ENGL326 Research Writing (3 hrs)
4. *One course from the following:*
MATH110 Mathematical Reasoning (3 hrs)
MATH118 Linear Models and Probability (3 hrs)
MATH120 Calculus I (4 hrs)
5. *One course from the following:*
BEDU201 Microcomputers for Business Applications (3 hrs)
INDT201 Microcomputer Applications in Technology (3 hrs)
CADM105 Computer Applications for Industry (3 hrs)

Area II Science and Technology

1. See page 24
2. PSY101 General Psychology (3 hrs)
3. *One course from the following:*
PHY221 Mechanics, Sound, and Heat (4 hrs)
PHY223 Mechanics and Sound (5 hrs)

Area III Social Sciences

1. See page 24
2. See page 24
3. See page 24
4. See page 24

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Physical Education/Graduation Requirements2 hours

Major Requirements36 hours

- TEDU103 Structures and Design in Technology (3 hrs)
- TEDU106 Processing Technology (3 hrs)
- TEDU114 Information and Control Technology (3 hrs)
- TEDU118 Energy and Transportation Technology (3 hrs)
- INDT121 Graphic Communication (3 hrs)
- MFG123 Manufacturing Processes and Methods I (3 hrs)
- CNST201 Construction Systems (3 hrs)
- ELEC200 Circuit Analysis I (3 hrs)
- TEDU246 Safety in Technology and Vocational Education (2 hrs)
- TEDU250 Foundations of Technology and Industrial Vocational Education (3 hrs)

TEDU350 Curriculum in Technology and Industrial Vocational Education (3 hrs)

TEDU450 Solving Technological Problems (3 hrs)

Elective in technology (requires adviser permission) (1 hr)

Minor Requirements 15-25 hours

Select a minor from the approved list of minors for secondary, K-12 and special education-secondary programs.

Professional Studies33 hours

Pre-Admission Phase: The Learner and the Community:8 hours

Courses that may be taken before formal admission to the teacher education program

One hundred clock hours of approved pre-student teaching field experiences

EDPS322 Human Development and Learning (4 hrs)

FETE201 Field Experience I (1 hr)

SPGN251 Education of Students with Exceptionalities (3 hrs)

Courses that require formal admission to the teacher education program:

Phase I: Curriculum, Assessment and the Social Context:6 hours

SOFD328 Schools in a Multicultural Society (3 hrs)

EDPS340 Introduction to Assessment and Evaluation (3 hrs)

Phase II: Content Methods, Literacy and Technology: 7 hours

RDNG311 Teaching Reading in the Secondary School (3 hrs)

FETE402 Field Experience III: Secondary (1 hr)

TEDU460 Methods of Teaching Technology and Vocational Education (3 hrs)

Phase III: Capstone Experience:

12 hours

EDUC492 Student Teaching (12 hrs)

University Elective Courses0 hours

Program Total135 hours

VOCATIONAL EDUCATION (IVCE)

Secondary Teacher Certification

The vocational major is designed to prepare teachers of vocational subjects for senior high school and community college vocational education programs. Graduates who complete this major and have a minimum of two years work experience in a certifiable occupational area will qualify for the Temporary Vocational Authorization to teach in a specific occupational area. Options for cooperative work experience studies are available to the student as partial credit toward the occupational requirement.

This major must be completed in conjunction with the technology education curriculum. This major qualifies individuals to teach only in select occupational areas. The temporary vocational authorization is valid for six years. By that time, individuals must have completed additional requirements to qualify for the occupational education certificate.

This major provides favorable opportunities for community college transfer students who have completed a technical major at the community college and who wish to teach in a specific occupational subject area in the senior high school or community college. Individuals currently teaching in an vocational subject area under the annual vocational authorization would also find this major to be a desirable option.

Successful completion of this course of studies, in the context of other program requirements, qualifies the student for recommendation for certification for the Michigan Department of Education Secondary Provisional Certificate endorsed in vocational trades, certification code VT. There is currently no certification test for this area.

An active articulation agreement exists between this program and a community college. For further details, see the Articulation Agreements section, page 13.

General Education Requirements49 hours

Area I Symbolics and Communication

1. ENGL121 Composition II: Researching the Public Experience (3 hrs)

- 2. See page 23
 - 3. *One course from the following:*
 - ENGL324 Principles of Technical Communication (3 hrs)
 - ENGL326 Research Writing (3 hrs)
 - 4. *One course from the following:*
 - MATH110 Mathematical Reasoning (3 hrs)
 - MATH118 Linear Models and Probability (3 hrs)
 - MATH120 Calculus I (4 hrs)
 - 5. *One course from the following:*
 - BEDU201 Microcomputers for Business Applications (3 hrs)
 - INDT201 Microcomputer Applications in Technology (3 hrs)
 - CADM105 Computer Applications for Industry (3 hrs)
- Area II Science and Technology*
- 1. See page 24
 - 2. PSY101 General Psychology (3 hrs)
 - 3. *One course from the following:*
 - PHY221 Mechanics, Sound, and Heat (4 hrs)
 - PHY223 Mechanics and Sound (5 hrs)
- Area III Social Sciences*
- 1. See page 24
 - 2. See page 24
 - 3. See page 24
 - 4. See page 24
- Area IV Arts and Humanities*
- 1. See page 25
 - 2. See page 25
 - 3. See page 25
 - 4. See page 25

Physical Education/Graduation Requirements2 hours

Major Requirements50 hours

- Required Courses 14 hours**
- INDT150 Understanding Technology (3 hrs)
 - TEDU246 Safety in Technology and Vocational Education (2 hrs)
 - TEDU250 Foundations of Technology and Industrial Vocational Education (3 hrs)
 - TEDU350 Curriculum in Technology and Industrial Vocational Education (3 hrs)
 - TEDU452 Principles of Vocational Education (3 hrs)

Concentration 36 hours

The occupational specialization in which the student will seek vocational authorization. Approval may be sought for community college, other technical school course work as transfer credit, or a technical/occupational certification test if it properly represents a certifiable occupational area. Recent, paid work experience of 4,000 hours in the occupational specialization is also required.

Professional Studies33 hours

Pre-Admission Phase: The Learner and the Community:8 hours
Courses that may be taken before formal admission to the teacher education program

- One hundred clock hours of approved pre-student teaching field experiences
- EDPS322 Human Development and Learning (4 hrs)
- FETE201 Field Experience I (1 hr)
- SPGN251 Education of Students with Exceptionalities (3 hrs)

Courses that require formal admission to the teacher education program.

Phase I: Curriculum, Assessment and the Social Context:6 hours

- SOFD328 Schools in a Multicultural Society (3 hrs)
- EDPS340 Introduction to Assessment and Evaluation (3 hrs)

Phase II: Content Methods, Literacy and Technology: 7 hours

- RDNG311 Teaching Reading in the Secondary School (3 hrs)
- FETE402 Field Experience III: Secondary (1 hr)
- TEDU460 Methods of Teaching Technology and Vocational Education (3 hrs)

Phase III: Capstone Experience: 12 hours

- EDUC492 Student Teaching (12 hrs)

Minor Requirements0 hours
No minor is required.

University Elective Courses0 hours

Program Total134 hours

ADMINISTRATIVE MANAGEMENT MINOR (AD)

Required Courses.....12 hours

- BEDU395 Administering Workplace Systems and Technology (3 hrs)
- BEDU396 Information and Media Administration (3 hrs)
- BEDU310 Word/Information Processing Administration (3 hrs)
- BEDU387 Cooperative Education (3 hrs)

Restrictive Elective Courses9 hours

- Nine hours from the following:*
- BEDU210 Concepts of Network and Business Technology (3 hrs)
 - BEDU220 Word/Information Processing Administration (3 hrs)
 - LEGL211 Introduction to Paralegalism and Legal Terminology (3 hrs)
 - LEGL212 Law Office Administration and Technology (3 hrs)
 - MGMT388 Introduction to Entrepreneurship (3 hrs)
 - MGMT480 Management Responsibility and Ethics (3 hrs)
 - MGMT488 Field Studies in Entrepreneurship (3 hrs)
 - HLAD305 The U.S. Health Care System (3 hrs)
 - HLAD310 Administration of Health Care Organizations (3 hrs)
 - HLAD425 Decision Making for Health Administrators (3 hrs)
 - BEDU496 Records Administration Using Database (3 hrs)
 - MKTG464 Supply Chain Management (3 hrs)
 - LAW293 Legal Environment of Business (3 hrs)

Minor Total21 hours

APPAREL, TEXTILES AND MERCHANDISING MINOR (ATM)

Required Courses.....12 hours

- ATM118 Apparel Studio (3 hrs)
- ATM145 Introduction to Apparel and Textile Merchandising (3 hrs)
- ATM235 Introductory Textiles (3 hrs)
- ATM255 Apparel Analysis (3 hrs)

Restricted Elective Courses12 hours

One course from each of the following areas:

- I. Construction skills
 - ATM302 Fashion Manufacturing Techniques (3 hrs)
 - ATM392 Pattern Design (3 hrs)
 - ATM460 Tailoring (3 hrs)
- II. Methodology
 - ATM390 Visual Merchandising (3 hrs)
 - HECR499 Directed Study (3 hrs)
- III. Social-psychological-historical
 - ATM135 Cultural Study of Dress (3 hrs)
 - ATM380 Fashion of the Haute Couture (3 hrs)
- IV. Textiles application
 - ATM119 Early American Textiles (3 hrs)
 - ATM404 Advanced Textiles (3 hrs)
 - ATM265 Merchandising of Interior Furnishings (3 hrs)

Minor Total24 hours

AVIATION FLIGHT TECHNOLOGY MINOR (AVFT)

The aviation flight technology minor is designed to develop flight skills as a pilot for various fields of aviation. Students who complete the minor will have earned their private pilot certificate and their commercial pilot certificate with an instrument rating, will be certified for flying for personal and business interests.

Required Courses	26 hours
INDT170 Aviation Ground Instruction (3 hrs)	
INDT251 Basic Flight I (2 hrs)	
INDT261 Basic Flight II (2 hrs)	
INDT271 Basic Flight III (2 hrs)	
INDT341 Instrument Ground Instruction (2 hrs)	
INDT342 Commercial Ground Instruction (2 hrs)	
INDT351 Advanced Flight I (2 hrs)	
INDT361 Advanced Flight II (2 hrs)	
INDT110 Aircraft Maintenance I (3 hrs)	
INDT208 Aviation Human Factors (3 hrs)	
INDT320 Aviation Safety (3 hrs)	

Minor Total **26 hours**

GRAPHIC COMMUNICATION MINOR (GRCM)

This minor is designed to provide technical communication skills to majors in fields such as graphic design and journalism. The electives in the minor are diverse and extensive enough to allow for individual flexibility.

Required Courses	11 hours
INDT104 Introduction to Communication Technology (2 hrs)	
INDT121 Graphic Communication (3 hrs)	
INDT204 Photographic Communication (3 hrs)	
INDT207 Photographic Reproduction (3 hrs)	
Elective Courses	12 hours
<i>Twelve hours from the following:</i>	
INDT201 Microcomputer Applications in Technology (3 hrs)	
INDT304 Advanced Photographic Communication (3 hrs)	
INDT318 Graphic Arts Workshop (3 hrs)	
INDT404 Photo Communication Workshop (3 hrs)	
CADM231 Computer Graphic Programming for Industry (3 hrs)	
ART165 Graphic Design for Non-majors (3 hrs)	
or courses from journalism, marketing or management selected in consultation with an adviser.	

Minor Total **23 hours**

NETWORK AND INFORMATION TECHNOLOGY ADMINISTRATION MINOR (NITA)

Required Courses	18 hours
BEDU210 Concepts of Network and Business Technology (3 hrs)	
BEDU224 Computer-based Business Mathematics (3 hrs)	
BEDU344 Administration of Computer Systems (3 hrs)	
BEDU395 Administering Workplace Systems and Technology (3 hrs)	
BEDU396 Information and Media Administration (3 hrs)	
BEDU496 Records Administration Using Database (3 hrs)	
Restricted Elective Course	3 hours
<i>One business education (BEDU) course selected in consultation with the program adviser.</i>	

Minor Total **21 hours**

Note:

Students must complete BEDU201 Microcomputers for Business Applications to meet course prerequisites in the minor (BEDU210, BEDU224, and BEDU396). Students who have met the general education requirement for computer literacy through some other course should consult the program advisor about whether the requirement for BEDU201 can be waived.

TECHNOLOGY AND DESIGN EDUCATION MINOR (TCDE)

Elementary and Special Education-Elementary Teacher Certification

Successful completion of this 24 credit-hour minor, in the context of other program requirements, qualifies the student for recommendation for endorsement in technology and design, certification code TX. The Michigan Test for Teacher Certification (MTTC) covering this field is #88 "Technology and Design."

Required Courses **24 hours**

TEDU250 Foundations of Technology and Vocational Education (3 hrs)	
†TEDU253 Technology Education for Children (3 hrs)	
TEDU354 Experiences in Technology for Children (2 hrs)	
TEDU355 Seminar in Technology for the Elementary School (2 hrs)	

Twelve hours from the following:

INDT121 Graphic Communication (3 hrs)	
TEDU103 Structures and Design in Technology (3 hrs)	
TEDU106 Processing Technology (3 hrs)	
TEDU114 Information and Control Technology (3 hrs)	
TEDU118 Energy and Transportation Technology (3 hrs)	

Select a minimum of two hours from the following:

INDT204 Photographic Communication (3 hrs)	
TEDU152 Arts and Crafts (3 hrs)	
TEDU350 Curriculum in Technology and Vocational Education (3 hrs)	
TEDU452 Principles of Vocational Education (3 hrs)	
TEDU497 Directed Study — Technology Education (1 hr)	

Minor Total **24 hours**

Note:

†Satisfied in professional studies in elementary program.

TECHNOLOGY AND SOCIETY MINOR (TCSO)

This minor is interdisciplinary in nature and provides students majoring in science or technology with an understanding of the societal impact of existing and emerging technologies. While housed in the Department of Interdisciplinary Technology, the minor utilizes contributions from several departments including biology, chemistry, computer science, economics and history.

Required Courses **15 hours**

One course from the following:

COSC101 Computer Science Concepts and Practical Applications (3 hrs)	
COSC145 Introduction to FORTRAN Programming (3 hrs)	
HIST290 Introduction to the History of Technology (3 hrs)	
INDT150 Understanding Technology (3 hrs)	
INDT308 Seminar in Technological Impacts (3 hrs)	
INDT495 Technology, Values, and the Future (3 hrs)	

Restricted Elective Courses **9 hours**

Three courses from the following, with at least one course from each sub-group, A and B:

Subgroup A:

- BIOL224 Principles of Conservation (3 hrs)
- CHEM415 Environmental Chemistry (3 hrs)
- ECON337 Energy Economics and Policies (3 hrs)
- GPLN215 Introduction to Urban and Regional Planning (3 hrs)
- GEOG310 Energy Awareness (3 hrs)
- GEOG440 World Food Systems (3 hrs)
- SOCL334 Population (3 hrs)

Subgroup B:

- CTAT446 Contemporary Problems in Telecommunications (3 hrs)
- ECON386 Technology and Economic Growth (3 hrs)
- GEOG100 Future Worlds (3 hrs)
- GEOG235 Economic Geography (3 hrs)
- ESSC495/GPLN495 Environmental Assessment and Planning (3 hrs)
- INDT420 Women and Technology (3 hrs)
- INDT201 Microcomputer Applications in Technology (3 hrs)
- PHIL380 Philosophy of Science (3 hrs)
- PLSC381 Public Policy Analysis (3 hrs)
- PLSC382 Politics and the 21st Century (3 hrs)
- PSY350 Environmental Psychology (3 hrs)
- PSY351 Industrial Psychology (3 hrs)
- SOCL336/ANTH336 Social and Cultural Change (3 hrs)
- ANTH379 Special Topics: Contemporary Issues in Developing and Modern Technological Societies (3 hrs)
- SOCL307 Sociology of the Workplace (3 hrs)

Minor Total24 hours

DEPARTMENT OF MILITARY SCIENCE AND LEADERSHIP

Campus Address: 18 Roosevelt Hall
Internet: cot.emich.edu/ms
Telephone: 734.487.1020

See page 324 for course descriptions.

The Department of Military Science and Leadership offers a four-year and two-year program that prepares students for commissioning as second lieutenants in the United States Army, Army Reserve or National Guard. Emphasis is given to the development of the student as a leader and a manager, capable of organizing and motivating others.

The program is pursued as a complement to the student's academic major. If the program is successfully completed, the student may be commissioned as an officer upon graduation.

Students must complete all of the military science and leadership courses unless granted advanced placement for the 100- and 200-level classes.

ROTC scholarships are available and awarded on a "best qualified" basis. Scholarships cover payment of tuition, fees, texts and supply costs related to the student's curriculum for the period of award. Also, a monthly subsistence allowance up to \$400 is paid for each school month during the period of the scholarship. Application can be made by contacting the Department of Military Science and Leadership.

The two-year program is designed for students transferring from community colleges and other students who were not enrolled in military science and leadership courses during their first two years of college. Applicants complete a five-week training program during the summer months,

which takes the place of the on-campus MSL100- and 200-level courses. While in summer training, the student remains a civilian but earns Army pay and travel allowances. Upon completing the program, the student may be granted eight credit hours upon the recommendation of the Department of Military Science and Leadership and may apply for entry into the MSL300-level courses. Students may compete for two-year ROTC scholarships while at summer training. Applications for the two-year program are accepted from December through May.

The Simultaneous Membership Program (SMP) is a co-op work experience program where advanced ROTC students are assigned to local Army Reserve or National Guard units. One weekend a month students learn leadership and management skills by drilling with the unit. For this experience, students earn an additional \$250 per month. SMP is an excellent opportunity to learn applied management skills.

Veterans can qualify for advanced placement credit directly into MSL301. Applicants should contact the department for acceptance into MSL301 at the earliest possible time before the next full semester. In addition, veterans can qualify for Montgomery GI Bill benefits adding anywhere from \$300-\$670 per school month.

All uniforms are provided to the student without cost. Additionally, MSL300 and 400 participants receive \$350 to \$400 per month during the school year and are paid at one-half the rate of a second lieutenant while attending the Leadership Development and Assessment course at Fort Lewis, Wash. Armed forces veterans may receive the \$350 to \$400 per month pay in addition to any other veterans benefits they are receiving.

Special Requirements

Admission into the advanced program (MSL301, MSL302, MSL401 and MSL402) requires that all students undergo a complete physical examination and have completed the basic course or its equivalent.

The criteria for continuance is that all students maintain a 2.5 GPA or better, and pass the Army Physical Fitness Test.

The fieldwork criteria is that all members of the advanced program participate in a field training exercise (FTX) each semester.

In the summer, between the third and fourth academic years, students will attend The Leadership Development and Assessment course at Ft. Lewis, Wash., in which their leadership skills are evaluated against the skills of other cadets across the nation.

Nursing students within the University nursing program will attend the Nurse Summer Training Program (NSTP) in addition to the advanced camp between the third and fourth years.

Credit Toward Graduation

The 12 hours of credit earned in the advanced program may be used as free elective credit. Requirements in certain majors and curricula will cause the ROTC student to take more than the minimum 124 credit hours for graduation. When finalizing their undergraduate program, students should consult an academic adviser within the department of their declared major.

MILITARY SCIENCE AND LEADERSHIP MINOR (MILT)

Required Courses.....20 hours

- MSL101 Foundations of Officership (2 hrs)
- MSL102 Basic Leadership (2 hrs)
- MSL201 Individual Leadership Studies (2 hrs)
- MSL202 Leadership and Teamwork (2 hrs)
- MSL301 Leadership and Problem Solving (3 hrs)
- MSL302 Leadership and Ethics (3 hrs)
- MSL401 Leadership and Management (3 hrs)
- MSL402 Officership (3 hrs)

Students must take all of the above courses unless granted advanced placement. Students electing a minor in military science may not use this minor to fulfill the state secondary provisional certificate requirement of a teaching minor.

Minor Total20 hours