Mechanical Engineering Technology

The mission of the Mechanical Engineering Technology (MET) program is to prepare students for successful Mechanical Engineering Technology careers, responsible citizenship, and continued professional growth. The MET program strives to produce graduates with a strong foundation in engineering fundamentals, application skills, design expertise, problem recognition and resolution skills, project management skills, communication skills, and a commitment to professional and ethical responsibility. The Montana State University Mechanical Engineering Technology Program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/), under the commission's General Criteria and Program Criteria for Mechanical Engineering Technology and Similarly Named Programs.

Mechanical Engineering Technology Program Objectives:

The Mechanical Engineering Technology program strives to prepare graduates who:

- Successfully establish themselves as professionals within a diverse range of engineering technology activities
- Conduct themselves ethically in all activities
- Contribute to industry and society, through service activities and/or professional organizations
- Advance in their profession, maintain currency within the profession, and demonstrate leadership qualities

MET Program Curriculum and Career Information

The undergraduate Mechanical Engineering Technology (MET) program is designed with an applications-oriented structure. Many of the technical science courses have an accompanying laboratory component providing hands-on learning activities. Coursework emphasizes mechanical design, thermal systems design, manufacturing processes design and implementation, measurement, data collection and analysis, documentation, and written/oral report preparation/presentation.

The program aims to develop core competencies in engineering fundamentals (statics, strengths of materials, materials science, fluid dynamics, and electrical circuits), manufacturing applications (manufacturing processes, machining, welding and joining processes, design for manufacturing and tooling, quality assurance, etc.), mechanical design (computer-aided design, design and analysis of mechanisms, machine design, fluid power technology, measurement and test, etc.), and thermal sciences (thermodynamics, heat transfer, and heating, ventilation, and air conditioning, etc.). Extensive course work in the physical sciences and mathematics is included.

Technical elective courses are chosen by the student in consultation with an academic advisor. Core coursework includes offerings such as humanities, arts, and social sciences. The overall curriculum is designed to provide the student with an ability to apply scientific and engineering knowledge and methods combined with technical skills in support of engineering activities.

Mechanical Engineering Technology graduates are prepared to apply scientific and engineering knowledge in support of a wide range of engineering activities. Specifically, the mechanical engineering technology professional provides the engineering services required to support the transformation of the results of scientific endeavors into useful products and services. Students who choose a career in mechanical engineering technology may pursue any number of career paths including, but not limited to: machine and product design engineering, product and system evaluation, research laboratory experimental support, prototype evaluation, plant operation and management, quality assurance, technical sales, manufacturing methods improvement, building energy systems design, control and installation, project management, energy systems support, alternative energy development and systems sustainability.

The mechanical engineering technology graduate is equipped to perform analysis and planning steps to convert ideas into finished products, in the most efficient and safe manner. They may be the engineering professional who develops designs and design-build instructions using various computer programs, develops efficient manufacturing processes and manages the operation of manufacturing equipment, handles inspections, analyzes and resolves production problems, and manages the implementation of product realization and product improvement activities.

The demand for the mechanical engineering technology graduates continues to be strong. Average starting salaries are very competitive, and indications are that this trend will continue. MSU Mechanical Engineering Technology graduates are actively recruited, and many of our alumni hold engineering positions of considerable responsibility in industry.

Student Performance and Retention Requirements

No further requirements apply in order to advance in the Mechanical Engineering Technology program

Freshman Year	Credits	
	Fall	Spring
CHMY 121IN - Introduction to General Chemistry & CHMY 122IN - Introduction to General Chemistry Lab	4	
WRIT 101W - College Writing I[1]	3	
M 165Q - Calculus for Technology I	3	
ETME 100 - Introduction to Mechanical Engineering Technology	1	
University Core Electives	6	
COMX 111US - Introduction to Public Speaking (formerly COM 110US) or CLS 101US - Knowledge and Community or US 101US - First Year Seminar		3
M 166 - Calculus for Technology II		3
EMEC 103 - CAE I-Engineering Graphics Communications		2
PHSX 205 - College Physics I		4
University Core Electives		3
Year Total:	17	15

Sophomore Year	Credits	
	Fall	Spring
EMEC 250 - Mechanical Engineering Materials	3	
EMAT 252 - Materials Struct and Prop Lab	1	
EGEN 203 - Applied Mechanics	3	
ETME 202 - Mechanical Engineering Technology Computer Applications	3	
PHSX 207 - College Physics II	4	
ETME 311 - Joining Processes	3	
EGEN 208 - Applied Strength of Materials		3
ETME 215 - Manufacturing Processes		3
ETME 216 - Manufacturing Process Laboratory		1
EGEN 324 - Applied Thermodynamics		3

ETME 203 - Mechanical Design Graphics		3
EELE 250 - Circuits, Devices and Motors		4
Year Total:	17	17
Junior Year	**Credits**	
	Fall	**Spring**
EGEN 331 - Applied Mechanics of Fluids	3	
EGEN 350 - Applied Engineering Data Analysis	2	
EMEC 360 - Measurement & Instrumentation	3	
EMEC 361 - Measurement & Instrument Lab	1	
ETME 310 - Machining and Industrial Safety	3	
ETME 340 - Mechanisms	3	
EGEN 310R - Multidisciplinary Engineering Design		3
ETME 303 - CAE Tools in Mechanical Design		3
ETME 321 - Applied Heat Transfer		3
ETME 341 - Machine Design		3
ETME 362 - Applied Electronics and Power for Mechanical Systems		3
Year Total:	15	15
Senior Year	**Credits**	
	Fall	**Spring**
EGEN 330 - Business Fundamentals for Technical Professionals	3	
ETME 422 - Principles of HVAC I	3	
ETME 424 - Thermal Processes Lab	1	
ETME 489R - Capstone: Mechanical Engineering Technology Design I	2	
Professional Electives[2]	6	
ETME 415 - Design for Manufacturing and Tooling		3
ETME 499R - Capstone: Mechanical Engineering Technology Design II		3
EGEN 488 - Fundamentals of Engineering Exam		0
Professional Electives[2]		6
University Core Electives		3
Year Total:	15	15
Total Program Credits:		**126**

Pre-Approved MET Professional Elective Courses:

EGEN 365	Introduction to Mechatronics	3
EIND 300	Engineering Management & Ethics	3
EIND 313	Work Design and Analysis	3
EIND 371	Introduction to Computer Integrated Manufacturing	3
EIND 373	Production Inventory Cost Analysis	3
EIND 410 & EIND 411	Interaction Design and Interaction Design Project	3
EIND 413	Ergonomics & Human Factors Engineering	3
EIND 422	Introduction to Simulation	3
EIND 425	Technology Entrepreneurship	3
EIND 434	Project Management for Engineers	3
EIND 477	Applied Statistical Quality Control with Python	3
EMAT 350	Engineering Materials	3
EMAT 461	Friction and Wear of Materials	3
EMAT 462	Manufacturing of Composites	3
EMAT 463	Composite Materials	3
EMAT 464	Biomedical Materials Engineering	3
EMEC 424	Cellular Mechanotransduction	3
EMEC 440	Biomechanics of Human Movement	3
EMEC 444	Mech Behavior of Materials	3
EMEC 447	Aircraft Structures	4
EMEC 462	System Dynamics and Control	3
EMEC 465	Bio-inspired Engineering	3
EMEC 467	Micro-Electromechanical Systems	3
EMEC 466	Acoustics, Engineering and the Environment	3
ETME 309 & ETME 327	Building Information Modeling in MEP and Commercial Building Energy Assessment Lab	3
ETME 410	Computerized Numerical Control and Computer-aided Manufacturing Technology	3
ETME 423	Principles of HVAC II	3
ETME 430	Fluid Power Systems Design	3
ETME 460	Advanced Instrumentation	3
ETME 462	Industrial Processing Automation and Controls	3
ETME 470	Renewable Energy Applications	3
ETME 490R	Undergraduate Research	1-3
ETME 492	Independent Study	1-3
ETME 498	Internship	1-3

[1] Students exempt from MSU writing requirement must still complete a 3 credit writing intensive course. See MIE Writing Policy (http://www.montana.edu/mie/students/advising_forms/documents/Advising_Forms_All_Terms/Writing%20Exemption%20Policy%206-30-15.pdf).

[2] See MET PE Policy (https://www.montana.edu/mie/students/mechanical_engineering_technology_pe_policy.html) for details.

A minimum of 126 credits is required for graduation; 42 of these credits must be in courses numbered 300 and above.