MECHANICAL ENGINEERING TECHNOLOGY

Mechanical Engineering Technology (MET) is the component of engineering that specializes in mechanical design, computer-aided technologies, materials, mechanical power and manufacturing. MET is an excellent major for students interested in mechatronics, robotics, automotive manufacturing, agricultural machinery and processing, mining, shipbuilding, spacecraft, electronics manufacturing, food processing, aircraft metals and plastics production—nearly the entire spectrum of the industry. In the power areas, MET graduates are involved in vapor power cycles, gas power cycles, air conditioning, fluid power and power transmission. Manufacturing areas involving MET graduates include tool design, cost evaluation and control, plant operations, production planning and manufacturing methods.

At OSU, the MET curriculum is as rigorous as engineering programs and is nearly identical to the Mechanical Engineering (ME) curriculum for the first two years, but the upper-level major courses are taught with more emphasis on applications. Multiple MET major courses are popular among engineering undergraduate and graduate students who find value for their job search and thesis/dissertation research.

An important element in MET is the use of laboratory experience as a teaching tool. The MET program has laboratories in mechatronics, fluid power, materials, fluid mechanics, thermal science, basic instrumentation, 3D printing, computer-aided design, manufacturing and engineering (CAD/DAM/CAE). Senior capstone design courses, composed of student teams for SpeedFest (autonomous vehicle competition) or industry-sponsored interdisciplinary design projects, integrates the knowledge and skills learned during their course of study. The latest computer software is provided and supported for the courses that MET students take. Where appropriate, laboratories with modern computer data acquisition systems and on-screen displays are available.

In addition to the required mechanical engineering technology courses, students are provided a solid foundation in calculus, physics, chemistry, and computer science. Minor degree choices are available in mechatronics or entrepreneurship.

Program Educational Objectives

The Mechanical Engineering Technology (MET) program at Oklahoma State University focuses on preparing graduates so that they are able to productively contribute at their workplace after a short introductory period. A graduate from the OSU MET program should be able to:

1. Employ the latest design and analysis tools in engineering and manufacturing.

2. Be a life-long learner through participation and membership in professional organizations, continuation of professional/graduate studies, and/or self-study.

3. Introduce new technologies and methods into their workplace to maximize value to their employer.

4. Work collaboratively in multi-disciplinary teams.

5. Demonstrate professionalism in the workplace by using the highest standards of ethics and personal integrity.

Student Outcomes

Students graduating from the MET program are expected to achieve the following outcomes (1-5):

1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
2. an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
3. an ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
4. an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
5. an ability to function effectively as a member as well as a leader on technical teams.

Preparation for a specific industrial function is accomplished by selecting courses that emphasize a given design area, such as fluid power, mechanical design, computer-aided design/manufacturing/engineering (CAD/CAM/CAE), power generation, and air conditioning and heating. Because the program focuses on the application of engineering principles to the pragmatic solution of problems, graduates are immediately productive with minimal on-the-job training, thus increasing their value to industry. Graduates of the MET program are prepared to function in the areas of product design, testing and evaluation; product application and maintenance field engineering; and technical sales and liaison. Industries employing MET graduates include manufacturing companies of all types (aircraft, automobile, compressor and turbine, fluid power manufacturers and others); energy companies (such as natural gas, electrical power generation, and the oil and gas industries); and service companies (transportation industry, architecture and professional engineering firms, and those supporting the oil and gas industry).

Companies utilizing the talents of MET graduates are diversified in their products, as well as geographical location, thus providing a variety of choices in respect to both type of work and place of residence and in diverse industrial, governmental and educational institutions.

The Mechanical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/).

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Courses

MET 1103 Introduction to Mechanical Engineering Technology
Description: Introduction to mechanical engineering technology, analytical techniques, and data presentation. Orientation to the mechanical engineering technologist's profession. Previously offered as MPT 1103.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 1121 Technical Graphics
Prerequisites: A grade of "C" or better in ENGR 1332 or ENGR 1322.
Description: Visualization of 3-D objects, sketching, manual drafting of engineering drawings to ANSI standards, interpreting typical industrial drawings.
Credit hours: 1
Contact hours: Lab: 2 Contact: 2
Levels: Undergraduate
Schedule types: Lab
Department/School: Engineering Technology

MET 1123 Technical Drawing and Basic CAD
Description: Sketching, manual drafting and CAD generation of engineering drawings to ANSI standards. Interpreting typical industrial drawings. Students with two years high school or one year practical ANSI drafting/CAD may substitute an advanced course in mechanical engineering technology with consent of their advisers. Previously offered as GENT 1153.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 2103 Industrial Materials
Prerequisites: CHEM 1314 or CHEM 1215 or CHEM 1414.
Description: A survey of the properties, characteristics and applications of metals, polymers, ceramics and other industrial materials. Terminology, concepts and principles involved in material selection, specification and processing. Laboratory activities include data collection and report generation, determination of material properties, and evaluation of material characteristics. Previously offered as GENT 1103.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 2223 Geometric Dimensioning and Tolerancing with Computer-Aided Design
Prerequisites: A grade of “C” or better in (GENT 1153 or MET 1123) or a grade of “C” or better in (ENGR 1332 or equivalent) and MET 1121 (can be concurrent enrollment in MET 1121).
Description: Theory and application of Geometric Dimensioning and Tolerancing (GD&T) technique. Creation and analysis of tolerances for manufacturing with advanced computer-aided design (CAD) and engineering drawings.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 2313 Fundamentals of Hydraulic Fluid Power
Prerequisites: A grade of "C" or better in ENSC 2113 or GENT 2323.
Description: Basic fluid power concepts. Standard hydraulic symbols, component design and application, fluid power system considerations, design and operation. Previously offered as MPT 2313.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 3003 Dynamics
Prerequisites: A grade of "C" or better in GENT 2323 or ENSC 2113.
Description: Plane motion of particles and rigid bodies. Force-acceleration, work-energy, and impulse-momentum principles. Graphical analysis, mechanisms and vibrations.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 3113 Basic Instrumentation
Prerequisites: A grade of "C" or better in MATH 2123 or MATH 2144, and PHYS 1214 or PHYS 2114, and GENT 3323 or ENSC 2143, and ENGR 2421.
Description: Data analysis. Theory, operational characteristics and application of transducers for measurement of strain, force, velocity, acceleration, displacement, time, frequency, temperature, pressure. Previously offered as MPT 3114.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 3223 Geometric Dimensioning and Tolerancing
Prerequisites: A grade of "C" or better in MET 1123 or ENGR 1332 or equivalent.
Description: Theory and Application of Geometric Dimensioning and Tolerancing (GD&T) technique based on ASME Y14.5. Creation, analysis, and inspection of tolerances for manufacturing.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 3313 Applied Fluid Mechanics
Prerequisites: A grade of "C" or better in (MATH 2123 or MATH 2144), (PHYS 1114 or PHYS 2014), and (GENT 2323 or ENSC 2113).
Description: Practical analysis of fluid systems including static forces, the Bernoulli and general energy equations, laminar and turbulent flows, measurements of flow and pressure, lift and drag, pumps, and fans. Previously offered as MPT 3313.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 3343 Physical Metallurgy
Prerequisites: A grade of "C" or better in (CHEM 1215 or CHEM 1314 or CHEM 14114 or CHEM 1515).
Description: Analysis and evaluation of the properties of metals commonly used in product design. Property change caused by hot and cold working, and by heat treatment. Laboratory activities including metallographic specimen preparation, inspection and testing; and standard tests of tensile properties, hardenability, hardness and toughness. Previously offered as MFGT 3343.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 3353 Plastics
Prerequisites: A grade of "C" or better in (MET 1123 or ENG 1332) and (MET 3343 or ENSC 3313).
Description: The course will provide an overview of commonly used commercial plastics processes. Plastic materials types, additives, polymer flow and physical and mechanical properties. The use of CAE will be used to generate part designs and process simulations.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 3413 Fundamentals of Pneumatic Fluid Power
Prerequisites: A grade of "C" or better in MET 2313.
Description: Basic pneumatics concepts, gas laws, component design and application, system design considerations. Air logic. Previously offered as MPT 2413.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 3423 Intermediate Hydraulic Fluid Power
Prerequisites: A grade of "C" or better in MET 2313.
Description: Review of fundamentals of hydraulic fluid power. Energy-efficient hydraulic systems, cartridge valves, dynamics of hydraulic systems, special topics associated with mobile hydraulic equipment.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 3433 Basic Thermodynamics
Prerequisites: A grade of "C" or better in (MATH 2123 or MATH 2144) and (PHYS 1114 or PHYS 2014).
Description: Basic scientific principles of energy and the behavior of substances as related to engines and systems. Gas laws, vapors and engine cycles. Previously offered as MPT 3433 and GENT 3433.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 3453 Heat Transfer
Prerequisites: A grade of "C" or better in (MATH 2144 or MATH 2123 and (PHYS 2014 or PHYS 1114).
Description: Conduction, convection, radiation, condensation and boiling heat transfer. Heat exchangers. Prediction of heat transfer rates. Retardation and enhancement of heat transfer. Course previously offered as MPT 4433 and GENT 4433.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 3543 Manufacturing Processes
Prerequisites: Grade of “C” or better in (MET 1123 or ENG 1332) and (MET 3343 or ENSC 3313).
Description: Manufacturing processes used to transform new materials including metals and non-metals into finished goods. Traditional and nontraditional manufacturing processes. Introduction to CAD/CAM. Basic process selection. Meteorology and measurement fundamentals. Previously offered as GENT 1223 and MET 1213.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 3573 Advanced Production Processes
Prerequisites: Grade "C" or better in (GENT 1223 or MET 1213) and (MET 1223 or MET 2223).
Description: Advanced manufacturing and production processes including polymers and plastics, powder metallurgy, foundry, welding and metal forming. Design for assembly (FDA) and design for manufacture (FDM). Previously offered as MFGT 3573.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 3803 Fundamentals of Mechatronics
Prerequisites: Grade of “C” or better in EET 3104 or EET 2635.
Description: Fundamentals of mechatronic systems and components. Different modelling approaches used for mechatronics systems, sensors and actuators, data acquisition and interfacing, signal conditioning, and PLCs. Previously offered as GENT 3503. Same course as EET 3803.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4003 Machine Elements
Prerequisites: A grade of "C" or better in (MATH 2133 or MATH 2153) and (GENT 3323 or ENSC 2143).
Description: Applications of statics and strength to the design of machine components. Problems of choosing materials, impact and fatigue loading.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4013 Parametric Computer-Aided Modeling
Prerequisites: A grade of "C" or better in MET 1223.
Description: Computer-aided drafting and design using parametric, feature-based solid modeling techniques.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4023 Advanced Mechanical Computer-Aided Design
Prerequisites: A grade of "C" or better in MET 1123 or ENGR 1332 or equivalent.
Description: Computer-aided design methodologies and processes. State-of-the-art technologies and methodologies in 3D modeling and design processes.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4033 Applied Vibration and Acoustics
Prerequisites: A grade of "C" or better in GENT 3323 or ENSC 2143.
Description: Free and forced vibration of mechanical systems with an emphasis on practical applications. Introduction to sound wave generation and propagation. Mechanical system design methods for noise and vibration mitigation.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4050 Advanced Mechanical Design
Prerequisites: Junior standing and consent of instructor.
Description: Special problems in mechanical engineering technology. Previously offered as MFGT 4050 and MPT 4050. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.
Credit hours: 1-3
Contact hours: Contact: 1-3 Other: 1-3
Levels: Undergraduate
Schedule types: Independent Study
Department/School: Engineering Technology

MET 4103 Senior Design I
Prerequisites: A grade of "C" or better in (MET 1223 or MET 2223 or MET 3223) and MET 4003.
Description: First part of a two semester sequence for the MET capstone project. Focuses on finding and beginning a practical engineering design project. Includes selected topics in engineering design, project management, ethics, and intellectual property.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4113 Practical Computational Fluid Dynamics
Prerequisites: A grade of "C" or better in MET 3313 or ENSC 3233.
Description: An introduction to the practical use of Computational Fluid Dynamics (CFD) commercial software. Students will be introduced to the concepts governing CFD, but the majority of the class will be utilized in learning the use of a popular commercial code. May not be used for degree credit with MET 5113.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4123 Senior Design II
Prerequisites: A grade of "C" or better in MET 4103 and ENGL 3323. Must be taken in the immediately subsequent semester after completing MET 4103.
Description: Second part of a two semester sequence for the MET capstone project. Finishes work on the practical engineering design project begun in MET 4103. Includes selected topics in engineering design, project management, ethics, and intellectual property.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4133 Interdisciplinary Design I
Prerequisites: A grade of "C" or better in (MET 1223 or MET 2223) and MET 4003 and permission of the instructor.
Description: First part of an interdisciplinary capstone project for engineering technology seniors. Conduct mechanical design, prototype development, and project management on practical engineering design project. Same course as MET 4103.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4143 Interdisciplinary Design II
Prerequisites: A grade of "C" or better in (MET 1223 or MET 2223) and MET 4003 and permission of the instructor.
Description: Second part of an interdisciplinary capstone project for engineering technology seniors. Conduct mechanical design, prototype development, and project management on practical engineering design project. Same course as MET 4123.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4173 Additive Manufacturing: Materials, Methods and Applications
Prerequisites: Senior standing or consent of instructor.
Description: Theory and practice of additive manufacturing, materials and their applications in various fields. Discuss their applications in product development, data visualization, rapid prototyping, and specialized manufacturing, with special emphasis on direct digital manufacturing.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4203 Finite Element Methods
Prerequisites: A grade of "C" or better in GENT 3323 or ENSC 2143.
Description: Application of Finite Element Methods to machine component design. Problems involving stress, strain, temperature and vibration will be solved using state of the art Finite Element Software. May not be used for degree credit with MET 4203.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4303 Computer Integrated Manufacturing
Prerequisites: A grade of "C" or better in (GENT 1223 and MET 1213) and (MET 1223 or MET 2223).
Description: Introduction to programming techniques and manufacturing applications of computer numerical control (CNC) and robotics. Machine capabilities and tooling requirements with programs being prepared manually and with COMPACT II computer assistance.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4313 Electrohydraulics and Motion Control
Prerequisites: Grade of "C" or better in MET 2313 and EET 1114.
Description: Principles of electronics as applied to fluid power controls. Trends in modern fluid power systems. Solenoid systems, proportional control, servosystems, programmable controllers, and robotics. Lab includes design, fabrication and operation of practical systems.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4413 Ground Source Heat Pump Systems
Prerequisites: GENT 4433 and a grade of "C" or better in MET 3313 and GENT 3433.
Description: Design and applications of ground sourced heat pump systems. Heat pump performance, borehole heat transfer, pressure loss calculations and installation methods.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4453 Applied Thermodynamics
Prerequisites: A grade of "C" or better in ENSC 2213 or GENT 3433.
Description: Mixtures, psychrometrics, combustion, heat engine cycles, heat pumps cycles, internal and external combustion engines. Refrigeration. Previously offered as MPT 4453.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4463 Thermal Fluids Laboratory
Prerequisites: Grade "C" or better in (MET 3313 or ENSC 3233) and (GENT 3433 or MET 3433 or ENSC 2213). Prerequisite or concurrent enrollment in GENT 4433 or MET 4433.
Description: Prerequisite or concurrent enrollment in GENT 4433. Experimental study of topics in fluid mechanics, thermodynamics, and heat transfer. Interpretation of experimental data and technical report writing. Previously offered as MPT 4463.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4503 Petroleum Operations
Prerequisites: A grade of "C" or better in GENT 2323 or ENSC 2113.
Description: An introduction to the petroleum industry and available careers is presented for all engineering technology disciplines. Coverage includes basic petroleum geology, drilling, well completions, producing equipment, field operations, blowout recovery procedures, and transportation of hydrocarbons along the flow path from reservoir to the refinery.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4713 Internal Ballistics
Prerequisites: "C" or better in (ENSC 2123 or MET 3003) and (ENSC 3233 or MET 3313).
Description: This course focuses on the motion of a projectile in the air. Course topics include the vacuum trajectory, ballistic coefficient, aerodynamic forces and moments on the projectile, the point mass trajectory, the Coriolis effect, wind drift, gyroscopic drift, stability of projectiles, interaction between the firearm and the shooter, applications to long-range shooting, and project. May not be used for degree credit with MET 5713.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4723 External Ballistics
Prerequisites: "C" or better in (ENSC 2123 or MET 3003) and (ENSC 3233 or MET 3313).
Description: This course focuses on the motion of a projectile in the air. Course topics include the vacuum trajectory, ballistic coefficient, aerodynamic forces and moments on the projectile, the point mass trajectory, the Coriolis effect, wind drift, gyroscopic drift, stability of projectiles, interaction between the firearm and the shooter, applications to long-range shooting, and project. May not be used for degree credit with MET 5723.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4733 Terminal Ballistics and Armor
Prerequisites: Grade of "C" or better in (MET 3003 or ENSC 2123) and permission of the instructor.
Description: Practical applications of dynamics theories to the mechanical behavior of projectiles and targets at impact. Structural and body armor system design, test, and analyses. May not be used for degree credit with MET 5733.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4803 Mechatronics System Design
Prerequisites: Grade of “C” or better in GENT 3123 and MET 3803 (can be concurrent enrollment in GENT 3123).
Description: Modelling of mechanical, electrical, and hydraulic components. Feedback control systems, electro-hydraulic drives, electrical drives, and microcontroller programming. Previously offered as GENT 4503. Same course as EET 4803.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4883 Tool Design
Prerequisites: A grade of "C" or better in MET 2213 and MET 3343.
Description: Basic design and development of special tools for processing or manufacturing engineering materials. Design and specification and inspection tools using appropriate techniques of engineering graphics and analysis. Previously offered as MFGT 4883.
Credit hours: 3
Contact hours: Lecture: 2 Lab: 2 Contact: 4
Levels: Undergraduate
Schedule types: Lab, Lecture, Combined lecture and lab
Department/School: Engineering Technology

MET 4953 Industrial Assessment and Improvement
Prerequisites: Senior standing and consent of instructor.
Description: Plant assessment and improvement-based concepts, strategies, and tools for manufacturing operations. Emphasis is on small to medium-sized manufacturing operations. Issues include energy, water, waste, quality, and productivity analysis across the organization from a systems perspective. Justification of improvement projects and measurement of results. May not be used for degree credit with IEM 4953 or IEM 5953.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 4993 Mechanical Engineering Technology Practice
Prerequisites: Junior standing and consent of department head.
Description: Supervised industrial experience in mechanical engineering technology practice with minimal continual duration of eight weeks. Comprehensive journal, written report, and oral presentation.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Undergraduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 5113 Practical Computational Fluid Dynamics
Prerequisites: MET 3313 or ENSC 3233.
Description: An introduction to the practical use of Computational Fluid Dynamics (CFD) commercial software. Students will be introduced to the concepts governing CFD, but the majority of the class will be utilized in learning the use of a popular commercial code. May not be used for degree credit with MET 4113.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Graduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 5203 Finite Element Methods
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Graduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 5713 Internal Ballistics
Prerequisites: Graduate standing.
Description: This course is about launching a projectile using a gun barrel. Course topics include solid propellent combustion, design and manufacturing of ammunition, design and manufacturing of barrels, dynamics of bullets inside the barrel, design and dynamics of weapon systems, and project. May not be used for degree credit with MET 4713.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Graduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 5723 External Ballistics
Prerequisites: Graduate standing.
Description: This course focuses on the motion of a projectile in the air. Course topics include the vacuum trajectory, ballistic coefficient, aerodynamic forces and moments on the projectile, the point mass trajectory, the Coriolis effect, wind drift, gyroscopic drift, stability of projectiles, interaction between the firearm and the shooter, applications to long-range shooting, and project. May not be used for degree credit with MET 4723.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Graduate
Schedule types: Lecture
Department/School: Engineering Technology

MET 5733 Terminal Ballistics and Armor
Prerequisites: Graduate standing.
Description: Practical applications of dynamics theories to the mechanical behavior of projectiles and targets at impact. Structural and body armor system design, test, and analyses. May not be used for degree credit with MET 4733.
Credit hours: 3
Contact hours: Lecture: 3 Contact: 3
Levels: Graduate
Schedule types: Lecture
Department/School: Engineering Technology

Undergraduate Programs

- Mechanical Engineering Technology, BSET (http://catalog.okstate.edu/engineering-architecture-technology/mechanical-engineering-technology/bset/)

Faculty

Chulho Yang, PhD, PE—Professor and Program Coordinator
Professors: Young Chang, PhD, PE, CFPS
Associate Professors: Aaron Alexander, PhD; Warren L. Lewis, MS
Assistant Professors: Hitesh Vora, PhD; Ilchung Park, PhD
Teaching Associate: Laura Emerson, MS