ENGINEERING TECHNOLOGY

Office: 4855 Fourth Street; 313-577-0800
Chairperson: Ece Yaprak
http://engineering.wayne.edu/et/

The Division of Engineering Technology, founded in 1973, stresses the application of current technology to typical industrial problems. The curricula maintain a close relationship between theoretical principles taught in the classroom and their applications.

Engineering technology is a profession closely related to engineering. It deals with the application of knowledge and skills to industrial processes, production and management. Technologists are organizers of people, materials, and equipment for the effective planning, construction and maintenance of technical facilities and operations. Their responsibilities require technical and practical knowledge. Graduates of Wayne State's engineering technology programs are employed in such areas as manufacturing engineering, engineering production, marketing, maintenance, quality control, product testing, field engineering, consulting engineering, design, and technical supervision.

AYOOBI, MOHSEN: Ph.D., Louisiana State; M.Sc. and B.Sc., Isfahan University; Assistant Professor

CHEN, CHING-MING: Ph.D., Texas A&M University; M.S., B.S., National Taiwan University; Senior Lecturer

CHEN, WEN: Ph.D., Simon Fraser University; M.S., Nanyang Technological University; Diploma, Northeastern University; Associate Professor

DJURIC, ANA: Ph.D., M.S., University of Windsor; M.E., B.S., Belgrade University; Assistant Professor

LIAO, GENE: D.Eng., University of Michigan; M.S., University of Texas at Arlington; B.S., National Central University; Professor

SEMAMAKULA, MUKASA E.: Ph.D., M.S., B.S., University of Manchester Institute of Science and Technology; Professor

YAPRAK, ECE: Ph.D., M.S., Wayne State University; B.S., University of Michigan, Dearborn; Professor and Chair

YEH, CHIH-PING: Ph.D., M.S., Texas A & M University; B.S.E.E., Tamkang University; Associate Professor

ET 5100 Fundamentals of Mechatronics and Industrial Applications Cr. 3
Fundamentals of mechatronics and their applications in industry; building blocks of mechatronic products including sensors, proximity, displacement and rotational measurement sensors, force and torque measurement sensors, pressure sensors, accelerometers, and actuators; introduction of closed-loop control, electrohydraulic motion control, PLC mechatronics design by embedding sensors, actuators and controllers into mechanical components. Offered Winter.
Prerequisites: ([EET 3180 with a minimum grade of D-] OR [MCT 3010 with a minimum grade of D-])

ET 5500 Graduate Industrial Internship Cr. 1-4
Industrial practice under supervision in cooperative education. Oral presentation and written report describing professional experience required. Offered for graduate credit only. Offered Every Term.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 4 Credits

ET 5870 Engineering Project Management Cr. 3
Insights into human and organizational behavior affecting products; quantitative tools for successful management of engineering projects. A variety of product types are addressed. How to select, initiate, operate and control as well as terminate a project. Offered Fall, Winter.
Prerequisites: ([MAT 1800 with a minimum grade of D-])

ET 5995 Special Topics in Engineering Technology I Cr. 1-4
Topics to be announced in Schedule of Classes. Offered Irregularly.
Repeatable for 8 Credits

ET 7300 Advanced Battery Systems for Electric-drive Vehicles Cr. 4
Aims to familiarize students with advanced battery technologies and their applications in hybrid and electric vehicles. Contents include: a descriptive overview of energy sources and conversions, HEV/PHEV/EV technology, hybrid powertrain configuration and components, in-vehicle energy storage systems, electrochemistry fundamentals, battery power and capacity/energy, battery system design (cell, module and pack), Battery Management System (BMS), cell monitoring and balancing, thermal management, on-board diagnostics, battery charging schemes and systems. Offered Fall, Winter.
Restriction(s): Enrollment is limited to Graduate level students.
Equivalent: EVE 7300

ET 7430 Methods of Engineering Analysis I Cr. 4
Restriction(s): Enrollment is limited to Graduate level students.

ET 7450 Methods of Engineering Analysis II Cr. 4
Computer applications and numerical methods of solving differential and integral equations, fast Fourier transforms, spectrum analysis, curve fitting, approximation of function. Offered Winter.
Prerequisite: CSC 1050 with a minimum grade of D- and ET 7430 (may be taken concurrently) with a minimum grade of C
Restriction(s): Enrollment is limited to Graduate level students.

ET 7850 Statistical Methods and Applications Cr. 4
Sampling techniques in production data analysis, correlation coefficients, regression analysis, control charts, design of experiments, analysis of variance, Factor analysis. Offered Winter.
Corequisite: ET 7430
Restriction(s): Enrollment is limited to Graduate level students.

ET 7990 Directed Study Cr. 1-8
Supervised study and instruction in an advanced topic. Outline of proposed study and petition must be submitted to graduate committee in advance of registration for approval. Offered Every Term.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 8 Credits

ET 7995 Special Topics in Engineering Technology II Cr. 1-4
Topics to be announced in Schedule of Classes. Offered Irregularly.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 8 Credits
ET 7999 Master's Project Cr. 1-6
Design, fabrication, system optimization, and applications of graduate level material. Offered Every Term.
Restriction(s): Enrollment limited to students with a class of Candidate Masters; enrollment is limited to Graduate level students.
Repeatable for 6 Credits

Electrical/Electronic Engineering Technology

EET 5720 Computer Networking Applications Cr. 4
Networking protocols, components, architecture, and standards. Data communication, data packet structure, data transmission methods and techniques, network topologies, and media access control methods. Offered Yearly.
Prerequisites: ([EET 3100 with a minimum grade of D-]) AND ([EET 3720 with a minimum grade of D-])
Course Material Fees: $25

EET 7720 Advanced Computer Networking Cr. 4
Latest advances in networking; internetworking with bridges, routers, and switches. LAN and WAN protocols, high speed networks. Offered Yearly.
Prerequisite: EET 5720 with a minimum grade of C
Corequisite: EET 7430
Restriction(s): Enrollment is limited to Graduate level students.

Manufacturing/Industrial Engineering Technology

MIT 5500 Machine Tool Laboratory Cr. 1
Laboratory experiences in manufacturing processes, machine tools, and mechanization. Calibration and part-setup. Offered Fall, Winter.
Prerequisites: ([EET 2140 with a minimum grade of D-])

MIT 5700 Industrial Robots Modeling and Simulation Cr. 4
Modeling, simulation and programming of industrial robots in flexible manufacturing environment; the direct and inverse kinematic problems; homogeneous and composite homogeneous transformation matrices; links, joints, the Denavit-Hartenberg representation; kinematic equations for manipulators; and geometric approach applied for 2DOF, 3DOF, and up to 6DOF manipulators. Offered Winter.
Restriction(s): Enrollment limited to students with a class of Unranked Grad or Senior; enrollment is limited to Graduate or Undergraduate level students.

MIT 7700 Robotics and Flexible Manufacturing Cr. 4
Kinematics, dynamics and controls of the manipulators, their design and applications in flexible manufacturing cells. Computer-integrated manufacturing. Offered Irregularly.
Prerequisite: ET 7430 with a minimum grade of C and MIT 4700 with a minimum grade of C-
Restriction(s): Enrollment is limited to Graduate level students.

Mechanical Engineering Technology

MCT 5210 Energy Sources and Conversion Cr. 3
Various energy sources and how they are utilized. Wind, solar, geothermal, fuel cells, storage devices, energy economics and transportation techniques, related to harnessing energy to a usable form such as electricity and heat. Offered Fall.
Prerequisites: ([EET 3430 with a minimum grade of D-]) AND ([PHY 2140 with a minimum grade of D-])

MCT 6150 Hybrid Vehicle Technology Cr. 4
Technical concepts and design, energy analysis, unified modeling approach, optimization, control; power generation, engine overview, concepts of hybridization, on-board energy storage; overview of motors, transmissions, fuel cells, future applications. Offered Yearly.
Prerequisites: ([EET 3450 with a minimum grade of D-]) AND ([PHY 2140 with a minimum grade of D-])