

# Engineering Technology

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<https://engineering.temple.edu/academics/departments/engineering-technology-management>

## Programs

- Bachelor of Science in Engineering Technology
- Bachelor of Science in Engineering Technology with Co-op

## Courses

### **ENGT 2322. Applied Strength of Materials. 3 Credit Hours.**

Investigation of the elastic behavior of materials through the study of normal stress, strain, shear, and deformation under centric loading, flexural stress, shear, and deformation under transverse and eccentric loading, torsional stress, combined stress, stress concentration, and the stability of columns.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of C- in (ENGT 2331 or ENGR 2331)

### **ENGT 2331. Applied Engineering Statics. 3 Credit Hours.**

Provides an understanding and application of principles of equilibrium of particles and rigid bodies that are subjected to concentrated and distributed forces using vector mechanics. Subjects covered include vector mathematics, force and moment systems in two dimensions, free body diagrams and the static equilibrium of structures, centroids, moments of inertia, frictional systems, shearing force, and bending moment diagrams.

**Degree Restrictions:** Must be enrolled in one of the following Degrees: Bach of Sci in Const Engr Tech, Bach of Sci in Engr Tech.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of C- (except where noted) in (MATH 1031 (may be taken concurrently), MATH 1042 (D- or higher; may be taken concurrently), or 'Y' in MATW) and (PHYS 1021 or PHYS 1061)

### **ENGT 2521. Applied Fluid Mechanics. 3 Credit Hours.**

Fluid properties, fluid statics, fluid flow concepts, dynamic similitude, fluid resistance, ideal flow, compressible flow, pneumatic and hydraulic applications.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of C- in (ENGT 2331 or ENGR 2331)

### **ENGT 3182. Independent Study in Engineering Technology. 1 to 5 Credit Hour.**

Students may complete a regular course during semesters in which the course is not offered to meet prerequisite or graduation requirements. An instructor is assigned to supervise the student.

**Repeatability:** This course may be repeated for additional credit.

### **ENGT 3201. Applied Materials Technology. 3 Credit Hours.**

Atomic and molecular structures, bonding and interatomic forces, thermodynamics and kinetics of solid state reactions, mechanical and electronic properties.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of C- in (CHEM 1031 or CHEM 1035), PHYS 1022, and (ENGT 2322 (may be taken concurrently) or ENGR 2333 (may be taken concurrently))

**ENGT 3323. Applied Dynamics. 3 Credit Hours.**

A non-vector approach to the kinematics and kinetics of a particle employing the methods of force-mass acceleration, work-energy, and impulse momentum. Kinematics of rigid bodies in general plane motion using methods of force-mass acceleration and work-energy.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of C- (except where noted) in (ENGT 2331 or ENGR 2331) and (MATH 1031, MATH 1042 (D- or higher), MATH 1942 (D- or higher), or 'Y' in MATW)

**ENGT 3532. Thermodynamics. 3 Credit Hours.**

Properties of a substance, work and heat interaction, first law of thermodynamics, carnot cycle, entropy, ideal gases, irreversibility, and efficiency. NOTE: Special Authorization for Non-Technology Majors. Approved for ENGT, MET, CMT, ENVT.

**Field of Study Restrictions:** Must be enrolled in one of the following Majors: Civil & Construction Eng Tech, Construction Mgt Tech, Engineering Technology.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of C- (except where noted) in (MATH 1031, MATH 1042 (D- or higher), or 'Y' in MATW) and PHYS 1022.

**ENGT 3651. Manufacturing Control Systems. 3 Credit Hours.**

A survey course covering pneumatic and hydraulic controls, programmable controllers, digital circuits, electro-mechanical servos and industrial instrumentation, and transducers. Laboratory.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- in ENGT 3652.

**ENGT 3652. CAD/CAM/CNC. 3 Credit Hours.**

Solids modeling, geometric tolerancing, welds, treads, dimensions, numerical control simulation, and post processing. Basic components of NC systems, coordinate systems, motion control, programming languages, CNC and DNC, laboratory and demonstrations.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- in ENGR 1117.

**ENGT 4040. Special Topics. 1 to 5 Credit Hour.**

A course designed to present new and emerging areas of engineering technology. The course may also be used to present areas not normally taught in the college. Course requirements vary with the topic and instructor. Offered as needed or as appropriate.

**Class Restrictions:** Must be enrolled in one of the following Classes: Junior 60 to 89 Credits, Senior 90 to 119 Credits, Senior/Fifth Year 120+ Credits.

**College Restrictions:** Must be enrolled in one of the following Colleges: Engineering.

**Repeatability:** This course may be repeated for additional credit.

**ENGT 4119. Professional Seminar. 1 Credit Hour.**

Preparation for entering the working and professional worlds of engineering and the job market. Includes preparation of résumés, interviewing techniques, securing and holding a job, advancement, professional registration, ethics, and professional societies.

**Class Restrictions:** Must be enrolled in one of the following Classes: Senior 90 to 119 Credits, Senior/Fifth Year 120+ Credits.

**Repeatability:** This course may not be repeated for additional credits.

**ENGT 4129. Professional and Industrial Seminar. 3 Credit Hours.**

Preparation for entering the working and professional worlds of engineering and the job market. Includes preparation of résumés, interviewing techniques, professional registration, and ethics. There will also be presentations by engineers from the local business community on technical topics of current interest in engineering.

**Class Restrictions:** Must be enrolled in one of the following Classes: Senior 90 to 119 Credits, Senior/Fifth Year 120+ Credits.

**Repeatability:** This course may not be repeated for additional credits.

**ENGT 4196. Capstone Project. 3 Credit Hours.**

Team-oriented engineering technology capstone projects of various types. Topics proposed and presented by students in the initial stage of the semester. At completion, the project is demonstrated during an oral presentation. Project results are submitted in a final report. Offered Fall, Spring, and Summer.

**Field of Study Restrictions:** Must be enrolled in one of the following Majors: Engineering Technology.

**Class Restrictions:** Must be enrolled in one of the following Classes: Senior 90 to 119 Credits, Senior/Fifth Year 120+ Credits.

**Course Attributes:** WI

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- in ENGT 4119.

**ENGT 4261. Engineering Technology Project II. 3 Credit Hours.**

Team-oriented engineering system design problems of various types. Topics proposed and orally presented by students in the initial stage of the course sequence. At completion, the project is demonstrated during an oral presentation and a final written report.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- in (ENGT 4161 or ENGT 4196)

**ENGT 4278. Cardiac Devices. 3 Credit Hours.**

Intended for electrical engineering, biology, and bioengineering students. No course prerequisites. This course will cover cardiac anatomy and physiology, the hearts electrical system in health and disease, cardiac ecg rhythm interpretation, design and function of ecg monitoring devices, pacemakers and external and implanted defibrillators, and arrhythmia detection algorithms. The course will include observation of pacemaker implants, and troubleshooting in a pacemaker follow-up clinic. The course will prepare students to take the Heart Rhythm Society Allied Professional Pacemaker Certification examination. It is intended to put students in a competitive advantage for getting jobs in the expanding pacemaker and other medical electronics device industries.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of C- in (any MATH course numbered 1022 to 4999, 'Y' in MC6, 'Y' in MC6A, or 'Y' in MATW) and any PHYS course numbered 1021 to 4999.

**ENGT 4342. Machine Elements. 3 Credit Hours.**

Survey of the design and application fundamentals underlying the sound selection and use of common machine elements such as shafts, bearings, clutches, brakes, gears, chain and belt drives, etc. Term design project.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- (except where noted) in ((ENGR 1117 and ENGT 2322) or ENGR 2333 (C- or higher)) and (ENGT 3323 or ENGR 2332 (C- or higher))

**ENGT 4532. Heating, Ventilating, and Air Conditioning. 3 Credit Hours.**

Establishment of design requirements for environmental comfort conditioning. Heating, heat pumps, humidity control, cooling, ventilation, integrated systems, controls and instrumentation, computer-aided design. Design project.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- in (ENGT 2521 and ENGT 3532)

**ENGT 4641. Production Tooling. 3 Credit Hours.**

Fundamentals of the design of work-holders and of tooling for inspection and gauging, welding and joining processes, and punch presses. A weekly practicum covers applications of fundamentals to typical tool design problems.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- (except where noted) in ENGR 1117, (ENGR 2333 (C- or higher) or ENGT 2322 (C- or higher)), and ENGT 3652.

**ENGT 4642. Quality Control. 3 Credit Hours.**

Fundamental engineering methods for product and process quality assurance and control. Standard statistical tools are used for quality control methods used in industry. Acceptance sampling, statistical process control, quality measurement, and quality management topics are covered.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- in (STAT 2101 or STAT 2103)

**ENGT 4643. Fundamentals of Manufacturing. 3 Credit Hours.**

A course designed to present new and emerging areas of engineering technology. This course covers fundamental manufacturing processes under the classification of processing operations and the assembly operations, and the basic parameters involved in these processes. This course combines lectures and intensive lab activities with a design project component.

**Repeatability:** This course may not be repeated for additional credits.

**Pre-requisites:** Minimum grade of D- in ENGT 4342.