

CONSTRUCTION ENGINEERING TECHNOLOGY

The construction industry is the largest industry in the world. Leadership in this field requires a broad knowledge of labor, materials and equipment, capital and construction procedures. The interdisciplinary approach of the construction engineering technology program offers the student specialized coursework in all phases of construction, designed to prepare him or her for responsible positions in industry.

The primary goal of the Construction Engineering Technology (CET) program is to enhance the quality of the instructional program through effective management of the curriculum, teaching assignments and fiscal and physical resources. This goal includes providing instructional facilities, equipment and support services for faculty and students which maintain an excellent learning environment.

Program Educational Objectives

OSU Construction Engineering Technology graduates a few years after graduation will:

1. Solve problems typically found in the construction industry in construction engineering design, estimating, planning, scheduling and project management using mathematical, analytical and scientific skills of engineering technology.
2. Successfully lead and work in teams and communicate effectively in written, oral and graphical forms.
3. Continue life-long career and professional growth by actively interacting with local industries and participating in appropriate professional societies.
4. Continue life-long personal growth in sensitivity to ethical responsibilities, global environments and associated social issues.

Construction Engineering Technology graduates can expect to obtain these student outcomes upon graduation:

- (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.

Faculty with excellent credentials, including a balance of formal education, teaching ability and appropriate industry experience, are recruited nationwide and are provided opportunities for individual professional development and regular contact with the industry. Faculty members are encouraged to become involved in extension and research programs relating to the department's areas of strength or growth and to

serve the needs for continuing education within the industry, particularly in the regional construction community.

These needs and opportunities for service are assessed regularly through close cooperation with local and regional construction professionals and industry associations. An active Advisory Board, representing a broad cross-section of the industry, meets regularly to offer support and guidance necessary to preserve uncompromising excellence.

The Construction Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, <http://www.abet.org> (<http://www.abet.org/>). The educational objectives of the Construction Engineering Technology program are consistent with those required by ETAC of ABET and are listed under "Division of Engineering Technology" in the Catalog.

The modern constructor must have a great deal of technical knowledge to keep abreast of rapidly changing equipment, materials and methods of construction. Specialized courses in estimating, surveying, structures, construction planning and scheduling, construction law and insurance, field and office management and construction procedures provide students with the background necessary for today's construction industry. These specialized courses, in addition to a blend of the basic sciences, business and general studies, produce a well-balanced curriculum for students in construction engineering technology. Special attention is given to computer applications in construction estimating, and the development of graphic, written and oral communication skills is emphasized throughout the curriculum.

Students with an interest in building structures may select courses in the "building" option of the construction engineering technology curriculum, which provides them with knowledge of working drawings, mechanical and electrical equipment of buildings, and other coursework for a career in building construction.

Students with an interest in civil engineering structures may select courses in the "heavy" option of the construction engineering technology curriculum, which provides them with knowledge of highways, soils, foundations and other coursework for a career in the heavy and industrial construction industry.

The program attempts to identify and recruit highly qualified students who will benefit from the instructional platform, and faculty members promote retention and ultimate graduation of construction engineering technology students through effective instruction and advisement. A schedule of outcome assessment among graduates and their employers assures that the program continues to provide the academic training required for success.

Graduates of construction engineering technology have shown the curriculum to be successful in their development as productive members of the construction industry, holding responsible positions as company executives, project managers, estimators, material and equipment salespersons, and construction managers at all levels.

Courses

CET 1213 Introduction to Construction

Description: Overview of the entire construction industry with emphasis on construction materials, methods and systems. Both building and heavy highway construction drawings and their interpretation. Previously offered as CMT 1213 and CMT 1214.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 2203 Construction Drawings (for Non-Majors)

Description: Principles of graphic communication are applied to reading and drawing construction plans, with emphasis to fire protection systems. Does not meet CMT degree requirements. (Online course for non-CMT majors). Previously offered as CMT 2203.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 2253 Printreading & BIM

Prerequisites: Grade of "C" or better in MATH 1513 or ALEKS score greater or equal to 60 or permission of instructor.

Description: Principles of 2D and 3D graphic communication are applied to reading and drawing construction plans. Techniques for measuring items of construction work from plans and specifications are also covered. Previously offered as CMT 2253.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 2263 Estimating I

Prerequisites: Grade of "C" or better in (CMT 1213 and CET 2253) and (CET 2253 or CMT 2253) and (MATH 1613 or MATH 1715 or MATH 1813 or ALEKS score greater or equal to 65) or permission of instructor.

Description: Quantity take-off with emphasis on excavation, formwork and concrete, masonry, rough carpentry and miscellaneous specialty items. Previously offered as CMT 2263.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 2343 Concrete Technology

Prerequisites: Grade of "C" or better in (CET 1213 and CMT 1213) and (CMT 2353 or CET 2253) or permission of department.

Description: Fundamentals and practical application of concrete and concrete making materials including admixtures. Proportioning concrete mixtures. Batching, mixing, conveying, placing, finishing, and curing concrete. Hot and cold weather concreting, jointing, volume change and crack control. Previously offered as CMT 2343 and CMT 2351 and CMT 2352.

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

CET 3163 Field Engineering Applications

Prerequisites: CET 2263.

Description: Construction sequencing and methods and basic timber structural design.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 3213 Soft Skills for Effective Interpersonal Communication (S)

Description: A study of personal one-on-one communication skills to improve effective intrapersonal communication. The course also relates intrapersonal skills to successful teamwork and teambuilding and becoming and presenting the best version of yourself.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

General Education and other Course Attributes: Social & Behavioral Sciences

CET 3273 Scheduling Construction Projects

Prerequisites: Grade of "C" or better in CMT 2263, or CET 2263 or permission of department.

Description: Scheduling basics, including bar charts and critical-path methods; manual and computer techniques using current software; emphasis on using schedules for construction project management. Previously offered as CMT 3273.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 3322 Construction Practicum I

Prerequisites: Grade of "C" or better in (CMT 1213 and CET 1213) and (CMT 2253 or CET 2253), or permission of department.

Description: Supervised field experience in construction; 400 hours minimum documented time required. Previously offered as CMT 3331 and CMT 3322.

Credit hours: 2

Contact hours: Lecture: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 3323 Theory of Built Structures

Prerequisites: A grade of "C" or better in (MATH 2123 or MATH 2144) and (GENT 2323 or ENSC 2113) or permission of the department.

Description: The study of equilibrium of structural systems and stresses and strains that occur in structural members of the built environment. Previously offered as CMT 3323.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 3332 Construction Practicum II

Prerequisites: Grade of "C" or better in (CMT 2263 or CET 2263), (CMT 3322 or CET 3322) and CIVE 3614 or permission of department.

Description: Supervised temporary, full-time employment in construction, emphasizing field and office engineering and a variety of project management functions; 400 hours minimum documented time required. Previously offered as CMT 3332 and CMT 3333.

Credit hours: 2

Contact hours: Lecture: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 3364 Structures I

Prerequisites: Grade of "C" or better in (CMT 2343, CET 2343, or CMT 2351) and (CMT 3323, CET 3323 or GENT 3323 or ENSC 2143) and (MATH 2133 or MATH 2153) and (PHYS 1214 or PHYS 2114) and (CMT 3322 or CET 3322) and (CMT 3273 or CET 3273).

Description: Methods of structural analysis applicable to construction; design of timber structures and forms for concrete structures. Previously offered as CMT 3363 and CMT 3364.

Credit hours: 4

Contact hours: Lecture: 3 Lab: 2 Contact: 5

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Engineering Technology

CET 3432 Principles of Site Development

Prerequisites: Grade of "C" or better in (CET 2343 or CMT 2343 or CMT 2352), CIVE 3614 and CMT 3323, CMT 3323 or GENT 3323 or ENSC 2143.

Description: Site layout, vertical and horizontal control, surveying instrument adjustments, site investigations, excavations, site drainage and geotechnical considerations. Previously offered as CET 3433, CMT 3433 and CMT 2333.

Credit hours: 2

Contact hours: Lecture: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 3443 Environmental Building Systems (Non-Majors)

Prerequisites: Grade of "C" or better in ENGR 1322 or CMT 2253 or ARCH 3263 and grade of "C" or better in (PHYS 1114 or PHYS 2014), or permission of department.

Description: An introductory level knowledge of plumbing, heating, air-conditioning, electrical and lighting systems as applied to construction and construction-related projects. May not be used for degree credit with CET 3463.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 3463 Environmental Building Systems

Prerequisites: Grade of "C" or better in CET 2253 or CMT 2253 and (PHYS 1214 or PHYS 2114) or permission of department.

Description: Plumbing, heating, air-conditioning, electrical and lighting systems as applied to residences and commercial buildings. Previously offered as CMT 3463.

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

CET 3554 Structures II

Prerequisites: Grade of "C" or better in (CET 3364 or CMT 3364).

Description: Analysis and design of elements in steel and reinforced concrete structures; review of shop drawings for both types of construction. Previously offered as CMT 3553 and CMT 3554.

Credit hours: 4

Contact hours: Lecture: 3 Lab: 2 Contact: 5

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Engineering Technology

CET 3633 CAD and BIM for Construction Managers

Prerequisites: Grade of "C" or better in (CMT 1213 or CET 1213) and (CMT 2253 or CET 2253).

Description: Interpretation and production of construction drawings using computer aided drafting. Theory and use of Building Information Modeling software builds upon computer aided drafting skills. Previously offered as CMT 3633.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4050 Advanced Construction Management Problems

Description: Special problems in construction management. Previously offered as as CMT 4050. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Engineering Technology

CET 4263 Estimating II

Prerequisites: Grade of "C" or better in EET 1003, (CMT 2263 or CET 2263) and concurrent enrollment or grade of "C" or better in GENT 2323 or ENSC 2113; or permission of department.

Description: Extensive use of actual contract documents for quantity take-off, pricing and assembling the bid for several projects. Use of computers in estimating. Previously offered as CMT 4263.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4273 Technology in Construction

Prerequisites: Grade of "C" or better in (CMT 3273 or CET 3273) and (CMT 4263 or CET 4263).

Description: Applications of various technologies including software for construction. Previously offered as CMT 4273.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4283 Business Practices for Construction

Prerequisites: Grade of "C" or better in ACCT 2003, ACCT 2103, (CMT 3273 or CET 3273) and (CMT 4563 or CET 4563) or permission of department.

Description: Principles of management applied to construction contracting; organizing office and field staff; bonding, liens, financial management practices; introduction to the construction manager concept; schedule of values; construction billings. Previously offered as CMT 4283.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4293 Construction Manager Concepts

Prerequisites: Grade of "C" or better in (CMT 3332 or CET 3332) and (CMT 4283 or CET 4283) and (CMT 3364 or CET 3364) and ENGL 3323 or permission of department.

Description: Capstone course utilizing skills and knowledge of estimating, scheduling, bidding, construction management, CAD, TQM, partnering and safety; includes topics in leadership, motivation and the use of current project management software. Previously offered as CMT 4293.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4333 Equipment Management for Constructors

Prerequisites: Grade of "C" or higher in (CMT 2263 or CET 2263), (CMT 2343 or CET 2343) and (ACCT 2003 or ACCT 2103) or permission of department.

Description: Selection and use of equipment, estimating equipment costs, estimating equipment production rates for all types of equipment used in building construction and heavy/highway construction. Previously offered as CMT 4333.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4443 Construction Safety and Loss Control

Prerequisites: Grade of "C" or better in (CMT 2253 or CET 2253) and (CMT 4263 or CET 4263) or permission of department.

Description: A detailed study of OSHA Part 1926 - Construction Safety and Health Compliance and related safety topics including topics related to the OSHA 30-hour training program; concepts and methods of loss control. Previously offered as CMT 4443.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4533 Heavy Civil Construction and Estimating

Prerequisites: Grade of "C" or better in (CMT 2263 or CET 2263) and (CMT 2343 or CET 2343 or CMT 2351) or permission of department.

Description: Theory and application of contractor estimating and bidding procedures used in heavy and highway construction projects. Previously offered as CMT 4533.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4553 Structural Steel Design & Connections

Prerequisites: CET 3613 and ENSC 2143.

Description: Analysis and design of steel beams and columns, bolted and welded connections, and rigging applications. May not be used for degree credit with CET 3554.

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

CET 4563 Construction Law and Insurance

Prerequisites: A grade of "C" or better in (CMT 2263 or CET 2263) and SPCH 2713 and acceptance to the CMT Upper Division or permission of the department.

Description: Legal and insurance problems as they pertain to the construction industry. Previously offered as CMT 4563.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Engineering Technology

CET 4663 Concrete Design & Formwork

Prerequisites: CET 3613 and ENSC 2143.

Description: Analysis and design of cast in place concrete with concrete formwork applications. May not be used for degree credit with CET 3364 and CET 3554.

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

Undergraduate Programs

- Construction Engineering Technology: Building, BSET (<http://catalog.okstate.edu/engineering-architecture-technology/construction-engineering-technology/building-bset/>)

- Construction Engineering Technology: Heavy, BSET (<http://catalog.okstate.edu/engineering-architecture-technology/construction-engineering-technology/heavy-bset/>)

Faculty

Heather Yates, EdD, CPC—Professor and Program Coordinator

Associate Professor: Rachel Mosier, PhD, PE

Assistant Professors: Amy Lewis, PhD, Soojin Yoon, PhD

Assistant Professor of Practice: Dr. Marllon "Dan" Cook, PhD