

Bachelor of Science in Engineering

Technology

Engineering Technology with a Major in Civil Engineering Technology (BSET)

Web Site: <https://ww1.odu.edu/engtech.html>

Civil Engineering Technology

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The Bachelor of Science in Engineering Technology (BSET) degree program in Civil Engineering Technology (CET) is accredited by the Engineering Technology Accreditation Commission of ABET, <http://www.abet.org/>. The CET program courses at the senior level specializing in the areas of construction management, structural design, and site development. Students in this program are prepared for employment in a wide range of professional and technical positions with the construction, consulting engineering, surveying and site development industries. Graduates are eligible to take the Fundamentals of Engineering exam, the first step to licensure as a professional engineer. CET courses include topics such as computer-aided drafting, statics, strength of materials, materials testing, surveying, building construction, steel and concrete design, soils and foundations, and hydrology and drainage. Effective written, oral and graphic communications are practiced throughout the curriculum along with computer literacy. The program culminates in a senior project that integrates course work with a practical project assignment in the student's area of interest. To satisfy the upper-division general education requirements, students are encouraged to complete a minor in engineering management, business management, environmental health and safety, or mechanical engineering technology.

Civil Engineering Technology Program

Mission Statement

The mission of the Civil Engineering Technology (CET) program is to sustain a high quality undergraduate program of study leading to the Bachelor of Science in Engineering Technology degree. The program prepares graduates to become certified in their area of specialization. Civil engineering technology is a significant component of the University's commitment to science, engineering and technology, particularly in structural design, construction, site development and related fields, which are of major importance to civilization. Students around the world are enabled to expand opportunities to enhance their education and pursue baccalaureate level studies through ODUGlobal. Simultaneously, the program supports the general education components that yield a well-rounded graduate who is aware of and able to address societal needs and issues.

Typical technical problems that CET graduates will be able to address include: building and non-building type structures and construction operations. Typical technical tasks the CET graduates will be expected to perform include: planning and design, field testing and inspection, on-site technical coordination and control, and other tasks relevant to one's emphasis area.

Program Educational Objectives

The objective of the civil engineering technology program is to prepare graduates to establish themselves as successful professionals in structural design, site development, and construction management or related areas

during the first few years of their careers by having demonstrated their ability to:

1. Identify and solve increasingly complex technical problems, both theoretically and practically, as raised by continually evolving technologies and industry needs and practices.
2. Make educated, responsible, and ethical decisions in response to the needs of the profession and society, with these decisions solidly grounded in science and engineering fundamentals.
3. Work effectively as member or leader of technical teams and clearly communicate ideas leading to successful team outcomes.

Student Outcomes

The civil engineering technology program has adopted, after deliberations by its constituents, five student outcomes for the Bachelor of Science degree program in civil engineering technology. These outcomes are listed below.

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.

Accreditation

The Bachelor of Science in Engineering Technology - Civil Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET www.abet.org. (<http://www.abet.org>)

Graduates of CET programs typically analyze and design systems, specify project methods and materials, perform cost estimates and analyses, and manage technical activities in support of civil engineering projects. The curriculum provides instruction in the following curricular areas:

1. utilization of principles, hardware, and software that are appropriate to produce drawings, reports, quantity estimates, and other documents related to civil engineering technology;
2. performance of standardized field and laboratory tests related to civil engineering technology;
3. utilization of surveying methods appropriate for land measurement and/or construction layout;
4. application of fundamental computational methods and elementary analytical techniques in sub-disciplines related to civil engineering technology;
5. planning and preparation of documents appropriate for design and construction;
6. performance of economic analyses and cost estimates related to design, construction, operations and maintenance of systems associated with civil engineering technology;
7. selection of appropriate engineering materials and practices; and
8. performance of standard analysis and design in at least three sub-disciplines related to civil engineering technology.

Requirements

Lower-Division General Education

Written Communication (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#written)	6
Oral Communication (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#oral)	3

Mathematics (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#math)	3
Language and Culture (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#language)	0-6
Information Literacy and Research (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#information)	3
Human Behavior (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#behavior)	3
Human Creativity (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#creativity)	3
Interpreting the Past (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret)	3
Literature (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature)	3
Philosophy and Ethics (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#philosophy)	3
The Nature of Science (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#nature)	8
Impact of Technology (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#impact)	3

The General Education requirements in information literacy and research, impact of technology, and philosophy and ethics are met through the major.

Upper-Division General Education

- Option A. Approved Minor, 12-24 credit hours; also second degree or second major
- Option B. Interdisciplinary Minor; 12 credit hours, (3 credit hours may be in the major area of study)
- Option C. An approved certification program such as teaching licensure (hours vary)
- Option D. Two Upper-Division Courses (6 credit hours) from outside the College of Engineering and Technology and are not required by the major.

Requirements for Graduation

Requirements for graduation include the following:

- Minimum of 120 credit hours.
- Minimum of 30 credit hours overall and 12 credit hours of upper-level courses in the major program from Old Dominion University.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken toward the major.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken toward a minor.
- Completion of ENGL 110C, ENGL 211C or ENGL 231C, and the writing intensive (W) course in the major with a grade of C or better. The W course must be taken at Old Dominion University.
- Completion of Senior Assessment.

Civil Engineering Technology Grade Requirements

Critical CET course sequences within the Civil Engineering Technology curricula require a minimum grade of C before progressing to subsequent courses. A grade of C- does not satisfy the requirement for a C grade.

The following courses require a minimum grade of C:

ENGL 110C	English Composition	3
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research Writing, Rhetoric, and Research: Special Topics	3
MATH 162M	Precalculus I	3
MATH 163	Precalculus II	3
MATH 211	Calculus I	4

CET 200	Statics	3
CET 210	Fundamentals of Building Construction	3
ENGT 435W	Senior Design Project	3

Civil Engineering Technology Major

General Education

Complete lower-division requirements	32-38
Complete upper-division requirements (minimum of 6 credits)	6

Civil Engineering Technology Major

Complete civil engineering technology major requirements as shown on the degree program guide	88
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Total Credit Hours	126-132
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Degree Program Guide ¹

The Degree Program Guide is a suggested curriculum to complete this degree program in four years. It is just one of several plans that will work and is presented only as broad guidance to students. Each student is strongly encouraged to develop a customized plan in consultation with their academic advisor. Additional information can also be found in Degree Works.

Critical CET course sequences within the Civil Engineering Technology curricula require a minimum grade of C before progressing to subsequent courses. Refer to the individual CET course descriptions for information on specific C grade prerequisites. A grade of C- does not satisfy the requirement for a C grade.

Course	Title	Credit Hours
Freshman		
Fall		
CET 120	Civil 2D Computerized Aided Drafting	3
ENGN 110	Explore Engineering and Technology	2
MATH 162M	Precalculus I (grade of C or better required)	3
CHEM 121N	Foundations of Chemistry I Lecture	3
CHEM 122N	Foundations of Chemistry I Laboratory	1
Human Behavior Way of Knowing		3
Credit Hours		15
Spring		
Human Creativity Way of Knowing		3
ENGT 111	Engineering Technology Information Literacy/Research	2
MATH 163	Precalculus II (grade of C or better required)	3
PHYS 111N	Introductory General Physics	4
ENGL 110C	English Composition (grade of C or better required)	3
Credit Hours		15
Sophomore		
Fall		
CET 200	Statics (grade of C or better required)	3
CET 210	Fundamentals of Building Construction (grade of C or better required)	3
MATH 211	Calculus I (grade of C or better required)	4
PHYS 112N	Introductory General Physics	4

ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research (grade of C or better required) or Writing, Rhetoric, and Research: Special Topics	3
Credit Hours		17
Spring		
CET 205	Principles of Surveying	3
CET 220	Strength of Materials	3
CET 345W	Materials Testing Laboratory (grade of C or better required)	2
COMM 101R	Public Speaking	3
ENMA 480	Ethics and Philosophy in Engineering Applications ²	3
Literature Way of Knowing		3
Credit Hours		17
Junior		
Fall		
CET 301	Structural Analysis	3
CET 330	Fluid Mechanics	4
CET Elective ⁵		3
ENGT 305	Advanced Technical Analysis	3
Upper Division Gen Ed ³		3
Credit Hours		16
Spring		
CET 260	Plan and Specifications ⁴	3
CET 340	Soils and Foundations	3
CET 341W	Soils Testing Laboratory (grade of C or better required)	2
CET Elective ⁵		3
ENMA 302	Engineering Economics	3
Credit Hours		14
Senior		
Fall		
CET 355	Sustainable Building Practices	3
CET 440	Contract Documents	3
CET Elective ⁵		3
Upper Division Gen Ed ³		3
Interpreting the Past Way of Knowing		3
ENGT 434	Introduction to Senior Project	1
Credit Hours		16
Spring		
CET 410 or CET 450	Reinforced Concrete Design or Structural Steel Design	3
ENGT 435W	Senior Design Project (grade of C or better required)	3
Two CET Electives ⁵		6
EET 370	Energy and The Environment	3
ENGN 401	Fundamentals of Engineering Review	1
Credit Hours		16
Total Credit Hours		126

- 1 Does not include the University's General Education language and culture requirement. Additional hours may be required.
- 2 Meets the philosophy and ethics general education requirement.
- 3 One or more additional courses will be required to complete a minor. See advisor for details.
- 4 Students with an interest in construction, design or site development may substitute an alternate course with approval of their advisor.
- 5 Senior electives CET 445, CET 460 and CET 465 are in the area of Construction Management, CET 325, CET 332, and CET 420 are in the area of Site Development, and CET 400, CET 405, and both CET 410 and CET 450 are in the area of Structural Design.

Linked Bachelor's/Master's Degree Programs

These are designed to allow qualified students to secure a space in a master's program available in the Frank Batten College of Engineering and Technology while they are still pursuing their undergraduate degrees. An eligible student can choose a master's program in the same discipline as his/her bachelor's program or in a complementary discipline. Subject to the approval of the undergraduate and graduate program directors, a student enrolled in a linked program can count up to six credit hours of course work towards both the undergraduate and the graduate degrees. Full-time students may be able to complete the requirements for the bachelor's degree in four years and the master's degree in one additional year. Students in linked programs must earn a minimum of 150 credit hours (120 discrete credit hours for the undergraduate degree and 30 discrete credit hours for the graduate degree).

Students who are matriculated in an undergraduate major in the Frank Batten College of Engineering and Technology with a GPA of at least 3.00 overall and 3.00 in the major are eligible to apply for admission to a linked bachelor's/master's program. Transfer students who desire to be admitted to a linked program at the time they join an undergraduate major at Old Dominion University are eligible to apply if their overall GPA at their previous institution is 3.25 or higher. Prerequisite courses may be required for engineering technology majors to pursue a master's degree in engineering.

Continuance in a linked bachelor's/master's program requires maintenance of a GPA of 3.00 or higher overall and in the major.

Bachelor-to-PhD Programs

For a select number of exceptionally well-qualified students, the college has established a linked doctoral program that enables students to be admitted directly into the PhD program upon completion of the baccalaureate degree. A select number of exceptionally well-qualified students can be admitted to the Bachelor/PhD program in their junior year while they are pursuing one of the undergraduate programs at Old Dominion University. This program encourages admitted students to work closely with faculty members and pursue a research experience. Just as in the linked Bachelor/MS program, six credit hours of graduate course work may again be counted towards the undergraduate degree and doctoral course work mentioned above for the Bachelor/PhD program. For linked bachelor's to doctoral programs, students must earn a minimum of 198 credit hours (120 discrete credit hours for the undergraduate degree and 78 discrete credit hours for the graduate degree). Students in these programs must maintain a GPA of 3.50 or better throughout their bachelor's and doctoral studies.

The student may opt to obtain the master's degree along the way to the doctorate. To obtain the master's degree, the student must utilize the six graduate credits obtained as part of their undergraduate program, use 18 credits of the graduate course work that is part of the PhD, and also write a master's thesis.