

Bachelor of Science in Engineering Technology

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

Electrical Engineering Technology

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The Bachelor of Science in Engineering Technology with a major in Electrical Engineering Technology (EET) program is accredited by the Engineering Technology Accreditation Commission of ABET, <http://www.abet.org/>. The EET program offers courses at the senior level specializing in computer engineering technology, communications systems technology, embedded systems technology, mechatronics systems technology, and power systems technology. Students in this program take common courses in areas such as DC and AC circuits, electronic devices and circuits, digital electronics, linear electronics, microprocessors and programming. Supporting laboratories provide experience in instrumentation, testing and troubleshooting, and design and implementation. The program culminates with a senior project that integrates coursework with a practical project assignment in the student's area of interest. To satisfy the upper-division general education requirements, students are required to complete a minor within the Batten College of Engineering and Technology or the College of Sciences. Graduates should be qualified for application positions in electronic and electrical product design and development, electronic and electrical system operation and maintenance, field operations, and various other technical functions.

Mission Statement

The mission of the Electrical Engineering Technology (EET) program is to sustain a high quality undergraduate program of study leading to the Bachelor of Science in Engineering Technology degree. It is a significant component of the University's commitment to science, engineering and technology, particularly in fields of major importance to the region. Through ODUGlobal, the electrical engineering technology program provides opportunities for technical personnel throughout the state and elsewhere to enhance their education and pursue baccalaureate level studies. Simultaneously, the program supports the general education components that yield a well-rounded graduate who is aware of societal needs and issues.

Program Educational Objectives

The objective of the electrical engineering technology program is to prepare graduates to establish themselves as successful professionals in electrical systems technology, computer engineering technology, 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.

Typical technical problems that EET graduates will be able to address include: planning, specification, development, design, procurement of equipment and materials, implementation, and performance verification.

Typical technical tasks the EET graduates will be expected to perform include: conduct engineering experiments, make observations, collect and analyze data, and formulate conclusions.

Student Outcomes

The electrical engineering technology program has adopted, after deliberations by its constituents, five student outcomes for the Bachelor of Science program in electrical 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 - Electrical Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET www.abet.org. (<http://www.abet.org>)

The curriculum provides EET graduates with instruction in the knowledge, techniques, skills and use of modern tools necessary to enter careers in the design, application, installation, manufacturing, operation and/or maintenance of electrical/electronic(s) systems. Graduates of EET program are well prepared for development and implementation of electrical/electronic(s) systems.

The curriculum includes the following topics:

1. application of circuit analysis and design, computer programming, associated software, analog and digital electronics, microcontrollers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems;
2. application of natural sciences and mathematics at or above the level of trigonometry to the building, testing, operation, and maintenance of electrical/electronic systems;
3. analysis, design, and implementation of one or more of the following: control systems, instrumentation systems, communications systems, computer systems, power systems or energy systems;
4. application of project management techniques to electrical/electronic(s) systems; and
5. utilization of differential and integral calculus, as a minimum, to characterize the performance of electrical/electronic systems.

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

A minor from the College of Engineering and Technology, a minor from the College of Sciences, or a minor in cybersecurity is required. If a computer science minor is selected, the EET electives should be replaced with CS electives; CS courses for the computer science minor require a grade of C or higher.

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.

Electrical Engineering Technology Grade Requirements

Critical EET course sequences within the Electrical 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	Writing, Rhetoric, and Research	3
or ENGL 231C	Writing, Rhetoric, and Research: Special Topics	
MATH 162M	Precalculus I	3
MATH 163	Precalculus II	3
MATH 211	Calculus I	4
EET 110	Electrical Circuits I	3
EET 200	Electrical Circuits II	3
ENGT 435W	Senior Design Project	3

Electrical Engineering Technology Major

General Education

Complete lower-division requirements	32-38
Complete upper-division requirements (minor required; minimum of 12 credit hours)	12

Electrical Engineering Technology Major

Complete electrical engineering technology major requirements as shown on the degree program guide 84

Total Credit Hours 128-134

Graduates of the electrical engineering technology major are eligible to take the Fundamentals of Engineering (FE) exam in Virginia and many other states.

Degree Program Guide*

The Degree Program Guide is a suggested curriculum to complete this degree program in four years. 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.

Course prerequisites are strictly enforced. Critical EET course sequences within the Electrical Engineering Technology curricula require a minimum grade of C before progressing to subsequent courses. Refer to the individual EET course descriptions for information on specific C grade and other prerequisite requirements. A grade of C- does not satisfy the requirement for a C grade.

Course	Title	Credit Hours
Freshman		
Fall		
EET 120	Logic Circuits and Microprocessors	3
EET 125	Logic and Microprocessor Laboratory	1
ENGN 110	Explore Engineering and Technology	2
MATH 162M	Precalculus I (C or better required)	3
ENGL 110C	English Composition (C or better required)	3
Human Behavior (S)		3
Credit Hours		15
Spring		
EET 110	Electrical Circuits I (C or better required)	3
ENGT 111	Engineering Technology Information Literacy/Research	2
MATH 163	Precalculus II (C or better required)	3
PHYS 111N	Introductory General Physics	4
Human Creativity (A)		3
Credit Hours		15
Sophomore		
Fall		
EET 200	Electrical Circuits II (C or better required)	3
EET 205	Circuits Laboratory	1
EET 261	Introduction to Microprocessors and Microcontrollers	3
MATH 211	Calculus I (C or better required)	4
PHYS 112N	Introductory General Physics	4
Credit Hours		15
Spring		
EET 210	Electronic Devices and Circuits	3
EET 225	Electronics Laboratory	1

EET 263	Introduction to Programmable Logic Controllers (PLCs)	3
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research (C or better required) or Writing, Rhetoric, and Research: Special Topics	3
COMM 101R	Public Speaking	3
Laboratory Science		4

Credit Hours **17**

Junior

Fall

EET 300	Advanced Circuit Analysis	3
EET 310	Digital Electronics	3
EET 315	Digital Electronics Laboratory	2
ENGT 305	Advanced Technical Analysis	3
ENMA 480	Ethics and Philosophy in Engineering Applications **	3
Gen Ed Literature (L)		3

Credit Hours **17**

Spring

EET 312	Principles of Communication Systems	4
EET 320	Advanced Microprocessors and Microcontrollers	3
EET 325	Microprocessor Laboratory	2
EET 330	Linear Electronics	3
EET 335	Linear Electronics Laboratory	2
Gen Ed. Interpreting the past (H)		3

Credit Hours **17**

Senior

Fall

EET 360	Electrical Power and Machinery	3
EET 366	Electrical Power and Machinery Laboratory	1
EET 373	Instrumentation	3
ENGT 434	Introduction to Senior Project	1
Approved EET Elective		3
Approved Minor		3
Approved Minor		3

Credit Hours **17**

Spring

ENGT 435W	Senior Design Project (C or better required)	3
EET 370	Energy and The Environment	3
Approved EET Elective		3
Approved Minor		3
Approved Minor		3

Credit Hours **15**

Total Credit Hours **128**

Approved EET Electives

EET 405	Data Communications and Computer Networks	3
EET 412	Wireless Communication Systems	3

EET 420	Advanced Logic Design	3
EET 430	Advanced Motion Control Systems	3
EET 470	Microcontrollers/Embedded-Based Designs	3
EET 483	Introduction to Smart Grids	3
EET 485	Electrical Power Systems	3

* Does not include the University's General Education language and culture requirement. Additional hours may be required.

** Meets the philosophy and ethics general education requirement

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.