

## Department of Engineering Technology Program Overview

The primary goal of the Department of Engineering Technology is to prepare students for successful technology based careers. Our Bachelor of Science in Engineering Technology (BSET) programs are developed specifically for students who desire a technical baccalaureate education with an emphasis on applications of engineering and technical knowledge to solve actual work place problems. There are two program alternatives leading to the BSET.

One degree alternative meets the needs of students who are interested in practice as professional engineers or land surveyors and includes concentrations in Mechanical (MET), Civil (CET), and Electrical (EET) Engineering Technology. The Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET) accredits these programs and graduates may apply to take the Fundamentals of Engineering (FE) or the Fundamentals of Land Surveying (FLS) examination in Virginia and in most states.

The second program alternative is a more flexible program that supports educational goals related to industry careers that do not require professional license: BSET with a concentration in General Engineering Technology.

## The General Engineering Technology Program

Many industry - oriented careers do not require a professional engineering license. Often, students with industry career goals have earned an associate in applied science (AAS) degree in a technical field, are currently employed, and have already identified a career

focus area. The diverse technical education background and career goals of these students require a program with a flexible, industry focus and the BSET with a concentration in General Engineering Technology (GET) meets this educational need. Current GET option areas include:

- Technical Operations Management
- Construction Management
- Automation and Control Systems
- Computer and Network Operations
- Geomatics and Geographic Information Systems



## AAS Transfer Credits and Articulation

There are a number of articulation agreements that integrate the GET program with a range of AAS degrees. As many as 75 of the credits toward a baccalaureate degree can be earned through completion of approved AAS degree programs at a community college coupled with completion of approved supporting courses to complement the AAS. Students should consult their community college advisors for details on current transfer/ articulation agreements and to select the correct transfer courses in areas such as mathematics, science, and general education.

In general the table below outlines the GET program structure:

<b>Lower Division (100- 200 level)</b>	<b>Credits</b>
Technical content including electives	33
General education (per ODU requirements)	15
Mathematics (includes one semester of calculus)	10
Natural science with laboratory	8
Oral and written communications	9
<b>Sub total lower division</b>	<b>75</b>
<b>Upper Division (300-400 level)</b>	
Technical content including electives	33
Minor	12
Sub total upper division	45
<b>Total credits</b>	<b>120</b>

## Technical Operations Management

Many rewarding careers involve technical operations and this option meets the needs of students who are interested in developing the broad skills and knowledge required for management of manufacturing and other complex technical, technology driven systems. The table below describes the upper division technical content.

<b>Technical Operations Management</b>
MET 305 Principles of Mechanics
MET 360 Geometric Dimensioning / Tolerancing
MET 370 Automation and Controls
MET 400 Computer Numerical Control / Robotics
MET 410 Advanced Manufacturing Processes
MET 445 Computer Integrated Manufacturing
EET 350 Fundamentals of Electrical Technology
MET 480 Quality Control Systems
MET 435W Senior Design Project

Graduates of the Technical Operations option pursue careers in areas such as quality systems, production management, materials, project management, operations support, and plant, facilities or maintenance management.

## Automation and Control Systems

Automated manufacturing and building systems require special technical knowledge to integrate electrical and mechanical components. The Automation and Control Systems option is designed to support career interests related to design, operation, and repair of these critical systems and their interfaces. Graduates of this option pursue careers in electromechanical systems, operations engineering, technical support, maintenance engineering, automation, and automated system design. The table below describes typical courses:

<b>Automation and Control Systems</b>
MET 305 Principles of Mechanics
MET 320 Design of Machine Elements
MET 310 Dynamics
EET 310 Digital Electronics
EET 320 Microprocessors
EET 360 Electrical Power and Machinery
EET415 Programmable Machine Controls
MET 400 CNC and Robotics
MET 435W or EET 480W Senior Project



## Construction Management

Success in the construction industry requires understanding of the complexity of schedules, budgets, task integration, and

construction methods necessary to complete projects on time and under budget. The option in Construction Management supports careers in the management and execution of construction projects. Graduates of this option pursue careers as construction superintendents, project engineers, estimators, and project managers. The table below describes typical courses:

Construction Management
MET 305 Principles of Mechanics
EET 350 Fundamentals of Electrical Technology
CET 340 Soils and Foundations
CET 360 Plans and Specifications
CET 440 Contract Documents
CET 445 Construction Planning and Scheduling
CET 460 Construction Estimating
CET 465 Construction Project Management
CET 475W Senior Project

### Geomatics and GIS

Geomatics involves integration of data from a wide range of sensors (satellites, photographs, etc.) to develop Geospatial Information Systems (GIS). The option in GIS and Geomatics develops skills to succeed in the public and private sector in career areas such as land development, site planning, environmental land use, construction, and utilities. The table below describes upper division technical content.

Geomatics and GIS
CET 305 Principles of Surveying
CET 313 Advanced Surveying
CET 314 Boundary Law
CET 318 Control and GPS Surveying
CET 411 Photogrammetry
CET 412 Route and Construction Surveying
CET 413 Geographic Information Systems
CET Elective
CET 475W Senior Project

### Computer and Network Operations

Design, operation, and maintenance of computer networks require knowledge of electronic hardware, software, and topology (network planning) skills. In automated manufacturing, it is often essential to understand the interface with machine controls. The option in Computer and Network Operations is designed to provide career opportunities in these areas. Computer and Network Operations graduates pursue careers as network engineers, LAN managers, and system designers. The table below describes upper division technical content courses:

Computer and Network Operations
EET 310 Digital Electronics
EET 320 Microprocessors
EET 360 Electrical Power and Machinery
EET 410 Communication Principles
EET 415 Programmable Machine Controls
CS 31 Internet Programming
CS 333 Object Oriented Programming
CS 361 Advanced Data Structures
EET 480W Senior Project

### Degree Completion Options

Many GET students complete an Associate in Applied Science (AAS) degree in a community college and finish the last two years of baccalaureate study on campus or through the ODU TELETECHNET System.

For career and family bound students who are not able to come to the main campus to complete their degree, the ODU TELETECHNET system, a national leader in distance learning, provides an alternative. Through this system, courses are delivered to sites at community colleges and industry locations in Virginia and across the nation and directly to students at home or in the work

place. There are three primary course delivery methods:

- Satellite links are the primary course delivery method and allow students to participate in live classes by television and two-way voice connections.
- Streaming video allows students on high-speed Internet connections at home or at work to participate in live classes.
- CD-ROM instruction is used to provide supporting information related to lectures delivered by satellite or streaming video.

When students miss class due to travel or business, these methods allow taped or digitized copies of class to be available for viewing at a later time. In all cases, distance students maintain close interaction with faculty by a number of means including telephone, email, and Internet bulletin boards / study sessions.

Through TELETECHNET, distance students can complete the technical content of the BS ET in three years from AAS completion depending on the semester load taken.

### Additional Information

For further information:

- Discuss program articulation with your local community college.
- Meet with your site director if you are at a TELETECHNET site.
- Contact us or visit our web site for more information and course schedules:

[www.et.odu.edu](http://www.et.odu.edu)

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# GENERAL ENGINEERING TECHNOLOGY

Options in:

- Technical Operations Management*
- Construction Management*
- Computer and Network Operations*
- Automation and Controls*
- Geomatics and GIS*

