Bachelor of Science in Engineering Technology

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

Manufacturing Engineering Technology

Afi Anuar, Program Director

The Bachelor of Science in Engineering Technology (BSET) degree program in Manufacturing Engineering Technology (MFET) offers a variety of courses in the following areas: manufacturing processes, manufacturing principles, smart manufacturing, and metrology. Students in this program also take additional courses such as: engineering graphics, geometric dimensioning and tolerancing, statics, dynamics, automation and control (Programmable Logic Controller - PLCs). The program culminates with a senior project that integrates coursework with a practical project assignment in the student's area of interest. Graduates of the MFET program are qualified for positions in manufacturing systems design, development and manufacturing, maintenance, field operations, and various other technical functions. Potential positions are manufacturing engineer, quality assurance engineer, project engineer, robotics engineer, and mechatronics engineer.

Mission Statement

The mission of the Manufacturing Engineering Technology 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 the University's distance learning program, the MFET 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 Manufacturing Engineering Technology program is to prepare graduates to establish themselves as successful professionals in manufacturing systems 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 those 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 Manufacturing Engineering Technology program has adopted, after deliberations by its constituents, five student outcomes for the Bachelor of Science in Engineering Technology degree program in Manufacturing Engineering Technology. These outcomes are listed below:

1. Apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
2. Design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
3. 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. Conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
5. Function effectively as a member as well as a leader on technical teams.

Curriculum

The curriculum provides baccalaureate degree graduates with instruction in the knowledge, techniques, skills, and use of modern equipment in manufacturing engineering technology. Baccalaureate degree graduates build on the strengths of associate degree programs by gaining the knowledge, skills, and abilities for entry into manufacturing careers practicing various tools, techniques and processes. The curriculum must include instruction in the following topics:

1. Materials and manufacturing processes;
2. Product design process, tooling, and assembly;
3. Manufacturing systems, automation, and operations;
4. Statistics, quality and continuous improvement, and industrial organization and management; and
5. Capstone or integrating experience that develops and illustrates student competencies in applying both technical and non-technical skills in successfully solving manufacturing problems.

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

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

Upper-Division General Education

Met in the major through a built-in minor in engineering management.
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.
- 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.

Manufacturing Engineering Technology Grade Requirement

Critical MFET course sequences within the Manufacturing Engineering Technology curriculum 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 110C</td>
<td>English Composition</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 211C or</td>
<td>Writing, Rhetoric, and Research or Writing, Rhetoric, and Research: Special Topics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 162M</td>
<td>Precalculus I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 163</td>
<td>Precalculus II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MET 200</td>
<td>Materials and Manufacturing Processes</td>
<td>3</td>
</tr>
<tr>
<td>ENGT 435W</td>
<td>Senior Design Project</td>
<td>3</td>
</tr>
</tbody>
</table>

Manufacturing Engineering Technology Major

Students completing this major will receive a minor in engineering management.

General Education

Complete lower-division requirements 32-38
Complete upper-division requirements (met in the major through a built-in minor in engineering management) 12

Manufacturing Engineering Technology

Complete the MFET departmental and major requirements as shown on the degree program guide 77

Total Credit Hours 121-127

Degree Program Guide*

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.
A select number of exceptionally well-qualified students can 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 for the undergraduate degree and 3.50 overall and in the major. 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 work with the Graduate Program Director to plan the final 6 credits.