



**What is Mechanical Engineering?** Mechanical engineering is one of the most diverse branches of engineering, and it involves the design and analysis of machines, structures, and materials by applying the principles of physics and material science. Mechanical engineers can do it all, from designing cars, airplanes, and robots, to developing renewable energy systems, medical devices, and stronger and lighter composite materials.

## Major areas of emphasis

Students working on the Bachelor of Mechanical Engineering degree have some flexibility in designing a curriculum to meet their needs and interests. For example, you may choose a formal concentration in aerospace engineering or a minor in biomedical engineering, or you can create your own combination of technical electives with the help of your faculty advisor.

Active research ensures that the content of the undergraduate program is constantly renewed and maintained at a challenging technical level and integrates discovery learning into the program. Opportunities abound for mechanical engineering undergraduates to work with faculty and graduate students as research assistants, either for pay or independent study credit. We want our graduates to have the skills necessary to pursue advanced degrees.

Research in the department covers a broad range of topics including fluid mechanics, materials, nonlinear dynamics, and solid mechanics. In addition to these general areas of research, the department has five focused areas of research: Biomedical Engineering; Clean Energy and Environment; Composites and Advanced Materials; Nanomaterials and Nanotechnology; and Robotics and Controls. More detailed information about our research program is available on our website.

## Endless career opportunities

**Biomechanics:** The body is a mechanical system containing fluid flow and structural and dynamical components. Mechanical engineers are leaders in the field of biomechanics, which encompasses medical device design and the analysis and enhancement of human motion.

**Air and fluid flow:** Mechanical engineers apply the physics of gases and fluids to design devices like air conditioners, heating systems, respirators, engine cooling systems, aircraft, and spacecraft.

**Composite materials:** Composite structures have become the standard for high-performance sporting goods and aerospace vehicles, and mechanical engineers are leading the development of more and better applications for these advanced materials.

**Design:** Engineering design makes extensive use of science but is concerned with creating new things—turning ideas into reality.

**The environment:** Mechanical engineering fundamentals are used to understand atmospheric transport and transformation of pollutants, their thermodynamic and chemical properties, and particle dynamics.

**Manufacturing and processing:** Modern manufacturing employs machines that mechanical engineers design and build.

**Smart materials and controls:** Mechanical engineers exploit new engineering materials to develop novel sensors and actuators and to provide detection and control for vibration suppression.

Because mechanical engineers have such broad exposure to design, technology, and its development, they are often drawn into business, financial, or legal aspects of technology. With a degree in mechanical engineering, you can work also in one of the many traditional jobs in industry, from aerospace, air pollution, automotive, and air conditioning to bioengineering, chemicals, composites, controls and design.

## Additional study opportunities

### Exploring the humanities and social sciences through the breadth requirements

All engineering curricula include self-selected humanities and social science courses. The required 21 credits of breadth coursework include 18 credits of humanities and social sciences, and 3 credits of chemistry, math or physics.

*Please note: 3 of the above credits must also satisfy the Multicultural Requirement (University requirement); 6 credits must be above the introductory level (College requirement); and already completed Advanced Placement (AP) credit may apply toward these requirements.*

### Exploring other subjects through minors

A minor is a small set of courses in a particular subject area that differs from a student's major. Minors normally require five to seven courses to be completed in the subject area. Students may double-count courses for credit against both majors and minors. If electives are chosen carefully, minors can easily be integrated into the program requirements. Nearly half of all engineering students have at least one minor, many have two or three.

### 4+1 BME/MEM Program

Well-qualified Mechanical Engineering majors may apply to the 4+1 program which would culminate in the student earning a Bachelor degree in Mechanical Engineering (BME) and a Master of Mechanical Engineering (MEM) degree within five years. The program is limited to University of Delaware undergraduates pursuing the BME degree, with a minimum Grade Point Average of 3.3 on a 4.0 scale at the time of application.

## After graduation

Engineering fosters the development of quantitative, analytical and problem-solving skills that are useful in many different career areas. On average, 70–80% of graduates with a Bachelor of Mechanical Engineering degree choose employment in private industry, government laboratories and agencies, and non-profit research centers. Approximately 15–25% of graduates continue their education toward a master's or Ph.D. degree, and some attend medical, law, architecture, or business school. Students who earn Ph.D. degrees in engineering usually pursue a career in advanced research or as a faculty member in a college of engineering.

## Career resources

The Career Services Center provides comprehensive services to all matriculated undergraduate students, primarily in the development and implementation of career and educational plans. The Career Services Center can help you determine a major, find internships or full-time jobs, build your resume and cover letter, practice interview skills, apply to graduate or professional school, or network with employers. Visit [www.udel.edu/CSC](http://www.udel.edu/CSC) for details.

## Mechanical Engineering Curriculum

### Fall

First Year		
COURSE #	COURSE DESCRIPTION	CREDITS
EGGG 101	Introduction to Engineering (FYE)	2
CHEM 103	General Chemistry I	4
MATH 241	Analytic Geometry & Calculus A	4
CISC 106	General Computer Science for Engineers	3
	Breadth Requirement Elective 1*	3
		16

### Spring

First Year		
COURSE #	COURSE DESCRIPTION	CREDITS
MEEG 112	Statics	3
PHYS 207	Fundamentals of Physics I	4
MATH 242	Analytic Geometry & Calculus B	4
ENGL 110	Critical Reading and Writing	3
		14

### Second Year

COURSE #	COURSE DESCRIPTION	CREDITS
MEEG 211	Dynamics	3
MEEG 215	Mechanics of Solids	3
MEEG 216	Mechanics of Solids Lab	1
MATH 243	Analytic Geometry & Calculus C	4
MATH 351	Engineering Mathematics I	3
	Breadth Requirement Elective 2*	3
		17

### Second Year

COURSE #	COURSE DESCRIPTION	CREDITS
MEEG 202	Computer-Aided Engineering Design	3
MSEG 302	Materials Science for Engineers	3
MATH 352	Engineering Mathematics II	3
MATH 353	Engineering Mathematics III	3
PHYS 245	Introduction to Electricity and Electronics	4
		16

### Third Year

COURSE #	COURSE DESCRIPTION	CREDITS
MEEG 301	Machine Design-Kinematics and Kinetics	3
MEEG 311	Vibration and Controls	3
MEEG 312	Vibration and Controls Lab	1
MEEG 321	Materials Engineering	3
MEEG 331	Fluid Mechanics I	3
MEEG 333	Fluid Mechanics I Lab	1
MEEG 341	Thermodynamics	3
		17

### Third Year

COURSE #	COURSE DESCRIPTION	CREDITS
MEEG 304	Machine Design-Elements	3
MEEG 332	Fluid Mechanics II	3
MEEG 342	Heat Transfer	3
MEEG 346	Thermal Lab	1
	Basic Science Elective	3
	Breadth Requirement Elective 3*	3
		16

### Fourth Year

COURSE #	COURSE DESCRIPTION	CREDITS
MEEG 401	Senior Design (DLE)	6
	Technical Elective 1	3
	Technical Elective 2	3
	Breadth Requirement Elective 4*	3
		15

### Fourth Year

COURSE #	COURSE DESCRIPTION	CREDITS
	Technical Elective 3	3
	Technical Elective 4	3
	Breadth Requirement Elective 5*	3
	Breadth Requirement Elective 6*	3
		12

**TOTAL CREDIT HOURS: 123**

\*A list of Breadth Requirement courses is available at: [www.engr.udel.edu/advise/undergrad\\_programs.html](http://www.engr.udel.edu/advise/undergrad_programs.html)