

Engineering

Faculty: Charles A. Dana Professor Michael Puddicombe; Professors Jacques Beneat, R. Danner Friend, and Edwin Schmeckpeper; Associate Professors Nadia Al-Aubaidy, Michael Kelley, Tara Kulkarni, Jack Patterson, Michael Prairie, Adam Sevi, Karen Supan and Moses Tefe; Assistant Professors Ali Al Bataineh, Michael Cross, Carolina Payares-Asprino, Scott Smith, and Charles White; Lecturers Mark Atwood and Matt Rolland; Donald Wallace Visiting Assistant Professor Ricardo Cruz-Lozano.

Engineering major students engage in an innovative approach to interdisciplinary engineering education that is guided by current challenges of broad human concern that address societal needs. Students attain proficiency in skills necessary to contribute to solving complex and multi-disciplinary problems. The curriculum includes innovative problem-based seminar studio courses that employ modules to develop competencies in engineering fundamentals.

Mission:

Prepare students to excel in engineering and related fields. Make clear to students that above all else, the engineering profession is committed to bettering the world. Provide fundamental, laboratory-oriented, hands-on education in engineering and related fields. Foster creativity, critical thinking, and problem-solving abilities and motivate students to consider the societal and environmental consequences of their work. Enable students to be leaders in their profession, community, nation, and the world.

Upon completion of the program, students are awarded the BS in Engineering, are prepared to sit for Fundamentals of Engineering Exam (F.E. exam), and have a foundational understanding of engineering and science fundamentals.

Goals:

The educational objectives of the interdisciplinary Engineering major prepare graduates who, during their first few years of professional practice will:

- Be employed by industry or government in the fields, such as design, research and development, experimentation and testing, manufacturing, and technical sales
- Assume an increasing level of responsibility and leadership within their respective organizations
- Communicate effectively and work collaboratively in multidisciplinary and multicultural work environments
- Recognize and understand global, environmental, social, and ethical contexts of their work

Outcomes:

Students in the Engineering major demonstrate an ability to:

1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. communicate effectively with a range of audiences
4. recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. acquire and apply new knowledge as needed, using appropriate learning strategies.

Careers for this Major:

The Engineering major allows graduates the option of beginning a career in either the military or civilian life immediately upon graduation, or furthering their education in graduate school. Studies are designed to give both a broad engineering background and a focus in a specific topic area necessary to apply engineering principles and methods to solve multi-disciplinary problems in an ever-increasing range of applications.

- Clean water
- Sustainability
- Renewable Energy
- Cyber Security
- Bio-mechanical / biomedical / assistive technologies

The B.S. in Engineering major is designed to be accredited by the Engineering Accreditation Commission (EAC) of ABET. 415 N. Charles Street, Baltimore, MD, 21201, 1.410.347.7700.

Note: The application for accreditation of the Engineering major is planned to be submitted to ABET as soon as the first students in the program complete their graduation requirements.

Major

Engineering (B.S.) – Curriculum Map 2021-2022 Catalog

Course	Cr. Comp.	Course	Cr. Comp.
FRESHMAN			
Fall		Spring	
EG 109 Introduction to Engineering I	3	EG 110 Introduction to Engineering II	3
CH 103 General Chemistry I (General Education Lab Science)	4	EN 111 Writing and Inquiry in Academic Contexts	3
EN 110 Writing and Inquiry in Public Contexts	3	General Education History/Literature/Arts & Humanities/Social Science (http://catalog.norwich.edu/residentialprograms/catalog/generaleducationgoals/)	3
General Education Leadership (http://catalog.norwich.edu/residentialprograms/catalog/generaleducationgoals/)	1-3	General Education Lab Science (http://catalog.norwich.edu/residentialprograms/catalog/generaleducationgoals/)	4

MA 107 Precalculus Mathematics ⁷	4	MA 121 Calculus I (General Education Math)	4
Fall Semester Total Cr.:	15-17	Spring Semester Total Cr.:	17
SOPHOMORE			
Fall		Spring	
EE 204 Electrical Circuits I	3	EE 200 Engineering Programming	3
EG 201 Engineering Mechanics-Statics	3	EG 202 Engineering Mechanics-Dynamics	3
Engineering Elective (CE, EE, EM, ME) ^{1, 4}	3	EG 206 Thermodynamics I	3
MA 122 Calculus II (General Education Math)	4	Math Elective ²	3
PS 211 University Physics I	4	Math or Science Elective ^{2, 3}	4
Fall Semester Total Cr.:	17	Spring Semester Total Cr.:	16
JUNIOR			
Fall		Spring	
EG 301 Mechanics of Materials	3	EN 204 Professional and Technical Writing	3
EG 303 Fluid Mechanics	3	Engineering Elective (CE, EE, EM, ME) ^{1, 4}	3
EG 350 Engineering Economics and Decision Analysis	3	Engineering Elective (CE, EE, EM, ME) ^{1, 4}	3
EM 461 Project Management	3	Engineering Elective (CE, EE, EM, ME), Math Elective or Science Elective ^{1, 2, 3, 4}	3
Concentration/Focus Area Elective	3	General Education History/Literature/Arts & Humanities/Social Science (http://catalog.norwich.edu/residentialprograms/catalog/generaleducationgoals/)	3
Math Elective ²	3	Concentration/Focus Area Elective	3
Fall Semester Total Cr.:	18	Spring Semester Total Cr.:	18
SENIOR			
Fall		Spring	
Concentration/Focus Area Elective	3	Concentration/Focus Area Elective	3
Concentration/Focus Area Elective	3	Concentration/Focus Area Elective	3
EG 450 Professional Issues (General Education Ethics)	3	Engineering Elective (CE, EE, EM, ME) ^{1, 4}	3
CE 479 Senior Design Project I or EE 491 Electrical System Design I or ME 467 Mechanical Engineering Design I	3	General Education History/Literature/Arts & Humanities/Social Science (http://catalog.norwich.edu/residentialprograms/catalog/generaleducationgoals/)	3
Engineering Elective (CE, EE, EM, ME) ^{1, 4}	3	CE 480 Senior Design Project II (Capstone) ⁵ or EE 494 Electrical System Design II or ME 468 Mechanical Engineering Design II	3
General Education History/Literature/Arts & Humanities/Social Science (http://catalog.norwich.edu/residentialprograms/catalog/generaleducationgoals/)	3		
Fall Semester Total Cr.:	18	Spring Semester Total Cr.:	15
TOTAL CREDITS FOR THIS MAJOR: 134-136			

¹ CE 211, CE 214, CE 328, CE 332, CE 348, CE 421, CE 422, CE 444, CE 460, EE 204, EE 215, EE 303, EE 321, EE 350, EE 356, EE 357, EE 359, EE 366, EE 373, EE 411, EE 459, EE 463, EE 478, EE 486, EG 203, EG 447, EM 220, EM 401, ME 211, ME 307, ME 311, ME 356, ME 363, ME 370, ME 435, ME 465, ME 490

² Math courses 200 level or higher that may NOT be counted as both a Math Elective and a Concentration/Focus Area Elective.

³ BI 101, BI 102, BI 220, CH 104, CH 204, CH 205, CH 327, GL 110, GL 156, GL 253, GL 255, GL 257, GL 262, GL 265, ID 110

⁴ Science or Engineering courses may NOT be counted as both an Engineering Elective and a Concentration/Focus Area Elective.

⁵ Must take either CE 475/480 OR EE 491/494 OR ME 467/468 sequence.

⁶ Focus Area Electives are an intentional, customized course selection in consultation with the advisor to meet the student's interests. Courses may be selected from category 1 or an alternative approved course(s).

⁷ When Math Placement Score permits Calculus I, MA 107 is not required.