

Engineering Science (B.S.)

Degree Type
B.S.

Engineering sciences are based on mathematics and basic sciences but carry knowledge further toward creative application needed to solve engineering problems. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other.

Objectives

1. To provide students the broad-based foundational science courses and breadth of experience necessary to tackle complicated engineering problems.
2. To allow students to consider how a solution may affect all people and to communicate the plans effectively while being receptive to input from clients and constituents.
3. To allow students to explore the synergy between the physical and/or life sciences and engineering analysis and design, leading to the solution of problems often of an interdisciplinary nature.

Admission Requirements

Entering students will be required to test at the level of MATH 121 College Algebra or higher to be enrolled in EGSC 110. Students unable to test at the level of MATH 121 will have to be informed that completing their degree will likely take more than 4 years and might require summer courses. To ensure success, all students will have to meet the following benchmarks in math and science courses before they are allowed to declare the major:

- A minimum grade of C+ in all mathematics and science courses taken at Emory & Henry
- An overall GP A of 2.5 or better by the end of the first year, and
- A minimum of two advising sessions with the program director or a designated engineering science faculty member.
- Additionally, students will be required to maintain a minimum GPA of 2.3 in the major course requirements each year until graduation.

Transfer students will be required to take EGSC 110 and 120 unless they bring credit for equivalent courses (equivalency to be determined by the Registrar and the program director). Students admitted for the spring semester will not be placed in EGSC 120 but will start the introductory sequence the following fall.

Graduation Requirements

Completion of a minimum of 124 credit hours including all required core and general education; foundational and additional; and major courses. Minimum overall cumulative GPA of 2.3 for all required core engineering courses. Successful completion of all required core engineering and foundational courses, as well as the additional and core and general education requirements.

Item #	Title	Semester Hours
EGSC 120	Introduction to Engineering Science II	4
	EGSC 210 or EGSC 211	2
EGSC 231	Statics and Mechanics of Materials	4
EGSC 320	Materials Science	4
EGSC 322	Dynamics	4
EGSC 361	Electronics Instrumentation	4
EGSC 430	Engineering Thermodynamics	3
EGSC 498	Capstone Engineering Project Design	1
EGSC 499	Capstone Engineering Project	3
EGSC 470	Internship I	2

Two Courses From:

Item #	Title	Semester Hours
EGSC 230	Materials Chemistry	3
EGSC 300	Genetic Engineering - Genetics	4
EGSC 310	Fundamental of Engineering Project Management	3
EGSC 330	Controls and Systems	4
EGSC 350	Special Topics in Engineering	3-4
EGSC 410	Introduction to Nanotechnology	3
EGSC 420	Mechanical Properties of Materials	3
EGSC 441	Genetic Engineering - Cellular and Molecular Biology	4
CHEM 422	Instrumental Analysis	3
ENVS 200	Environmental Monitoring	4

Foundational Courses

Item #	Title	Semester Hours
CHEM 111	General Chemistry I	4
CHEM 111L	General Chemistry Lab	0
CHEM 112	General Chemistry II	4
CHEM 112L	General Chemistry II Lab	0
CHEM 312	Physical Chemistry I	3
MATH 151	Calculus I	4
MATH 152	Calculus II	4
MATH 253	Calculus III	4
	MATH 353 or PHYS 355	3-4
PHYS 201	General Physics I	4
PHYS 202	General Physics II	4

Additional Requirements:

Item #	Title	Semester Hours
MCOM 262	Science Communication	3
PHIL 201	Ethics	3
	One Computer Programming or Scientific Computing Course	3

Two Courses From:

Item #	Title	Semester Hours
GEOG 205	Environment & Planning	3
GEOG 322	Environmental Policy	3
PHIL 224	Environmental Ethics	3
SOCI 230	Environmental Sociology	3
ECON 313	Economics of Growth & Development	3
	Total Credits	86-89

EGSC 210 or EGSC 211

Elective Credits 2

MATH 353 or PHYS 355

Elective Credits 3-4

Item #	Title	Semester Hours
MATH 353	Differential Equations	3
PHYS 355	Mathematical Methods for Physical Science I	4

One Computer Programming or Scientific Computing Course

Elective Credits 3