

# BS in Engineering Sciences

## Motivation

The BS in Engineering Sciences provides a rigorous foundation in the science underlying modern technology, while allowing students to benefit from a broad liberal arts curriculum. A carefully crafted liberal arts curriculum can build a strong base for many essential aspects of engineering: fundamental understanding of physics, chemistry, and other sciences; advanced mathematical tools and programming skills; and principles of economics, business, and technical writing.

## Goal

The BS in Engineering Sciences is designed to prepare students to face the challenges of rapidly advancing technology. The value of a rigorous science education is recognized in industries that depend on cutting-edge technology. The BS in Engineering Sciences is a great starting point for students interested in professions that interface with engineers, such as engineering management and patent law. This degree is also good preparation for graduate studies in engineering.

## Requirements for the BS in Engineering Sciences

Three tracks are available: Engineering Physics, Materials Science, and Geoscience. A set of core courses is required for all three tracks. The core courses establish a foundation of mathematical, computational, and experimental skills, as well as scientific knowledge.

## Core courses

Math 111: Calculus I

Math 112: Calculus II

Math 211: Multivariable Calculus

Math 212: Differential Equation

Chem 150: Structure and Properties

Phys 151\*: Physics for Scientists and Engineers I

Phys 152\*: Physics for Scientists and Engineers II

Phys 212: Computer Modeling for Scientists and Engineers

Phys 220: Math Methods for Scientists and Engineers

Phys 222: Fundamentals of Engineering Design

\*With permission of your advisor, Phys 141/142 may replace Phys 151/152

The Engineering Physics track requires 8 additional courses, the Materials Science track requires 6 or 7 additional courses, and the Geoscience track requires 9 additional courses. Complete details are shown here: <http://www.physics.emory.edu/EngScience.pdf>

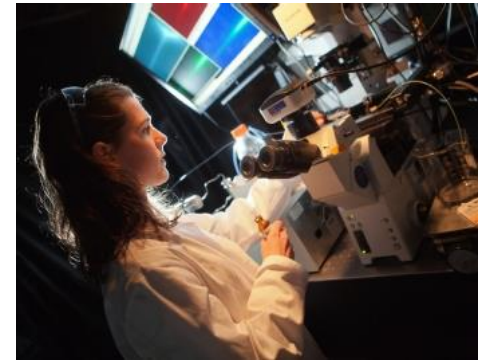


## Engineering Physics Track

The engineering physics track offers students advanced training in applications of analytical mechanics, electromagnetism, thermodynamics, and quantum mechanics. Quantum mechanics, in fact, is the foundation of solid-state physics and modern electronics, including integrated circuits and microprocessors. The advisor for the Engineering Physics track is Dr. Jed Brody (jbrody@emory.edu, 404-727-5580).

## Materials Science Track

The materials science track allows students to specialize in the physics and chemistry of materials, including their mechanical, electrical, magnetic, optical, and thermal properties, as well as the fabrication of novel materials. Technological innovation in many areas draws heavily on the fundamental science of materials and material fabrication. The advisor for the Materials Science track is Dr. Jed Brody (jbrody@emory.edu, 404-727-5580).



## Geoscience Track

The geoscience track trains students in the applications of earth and atmospheric sciences, including climatology and energy and water resources. The advisor for the Geoscience track is Dr. Eri Saikawa (eri.saikawa@emory.edu, 404-727-0487).

