

# BACHELOR OF SCIENCE IN CHEMICAL AND BIOMOLECULAR ENGINEERING

The Bachelor of Science in Chemical and Biomolecular Engineering provides a strong foundation in chemical and biomolecular engineering and offers students the opportunity to pursue advanced elective courses in more specialized areas, such as bioprocess engineering, polymers, microelectronics, sustainability, process systems engineering and environmental engineering.

The curriculum offers two specialization options. The Biotechnology Option is for students who wish to focus their education on the biomolecular aspects of chemical and biomolecular engineering. This option includes the core chemical engineering courses, specialized biomolecular engineering courses, biochemistry, and engineering electives focused in the biotechnology area. The Standard Option provides the basics of biomolecular engineering but allows much more flexibility for the student to pursue other areas of chemical engineering. Special opportunities exist for students wishing to pursue minors or certificates in fields of particular interest, and students are encouraged to explore the frontiers of knowledge through involvement in faculty-directed research.

## Program Educational Objectives

The faculty of ChBE strives to continuously improve our undergraduate program in chemical and biomolecular engineering. The educational objectives reflect the needs, and have been reviewed by, among others, the Advisory Board, the faculty, and the students:

- Graduates will be recognized for excellence and leadership and selected for high-impact industrial, academic, government, and other professional positions
- Graduates will be intellectual leaders in solving global problems in a diverse and evolving landscape of technology, environment, and public policy
- Graduates will demonstrate critical-thinking and problem-solving abilities in developing creative, innovative, and ethical solutions to contemporary challenges using the tools of chemical and biomolecular engineering
- Graduates will engage in self-initiated, life-long learning for professional growth in their chosen career paths.

## Student Outcomes

The School of Chemical and Biomolecular Engineering has adopted the following student outcomes for its undergraduate program. Upon graduation, students are expected to be able to demonstrate:

- (1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- (2) an ability to 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) an ability to communicate effectively with a range of audiences.

(4) an ability to 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) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

- Bachelor of Science in Chemical and Biomolecular Engineering - Biotechnology Option
- Bachelor of Science in Chemical and Biomolecular Engineering - Standard Option

## Cooperative Option

Since 1912, Georgia Tech has offered a five-year Undergraduate Cooperative Program to those students who wish to combine career-related experience with classroom studies. The program is the fourth oldest of its kind in the world and the largest optional co-op program in the country.

Students alternate between industrial assignments and classroom studies until they complete three semesters of work. Co-op students with chemical and biomolecular engineering majors complete the same coursework on campus that is completed by regular four-year students. Most co-op students begin the program as sophomores and are classified as full-time students regardless of whether they are attending classes on campus or are working full time at an employer's location.

Students who participate in the program have the opportunity to develop career interests, become more confident in their career choices, and develop human relation skills through their work experience. Graduates of the program receive a bachelor's degree with a Cooperative Plan designation.

## International Plan

The International Plan is a challenging and coherent academic program for undergraduates emphasizing global competence within the context of the chemical and biomolecular engineering major. This program has specific language requirements. There are also coursework requirements related to history, global economy, international culture, and residential foreign experience. Refer to [www.internationalplan.gatech.edu](http://www.internationalplan.gatech.edu) for the general requirements of the International Plan. These requirements may be satisfied by carefully selecting the humanities, social sciences, and free elective hours available in the program, in consultation with an academic advisor.

## Research Option

The Chemical and Biomolecular Engineering undergraduate program offers an undergraduate Research Option that allows students to participate in undergraduate research and complete an undergraduate thesis. The words "Research Option" will appear on the transcript of each

student completing the requirements to indicate that the student has had substantial, in-depth research experience.

## **BS/MS Chemical and Biomolecular Engineering**

The program seeks to engage undergraduate students at Georgia Tech who indicate an interest in, and ability for, additional education beyond the BS degree. Students with significant AP credit will be especially well positioned to take full advantage of this opportunity.

Students in the BS/MS Program will remain undergraduates until they meet the requirements for the BS degree; after which, their status will change to graduate student.

Students are eligible to apply for the program after completion of thirty semester credit hours at Georgia Tech (i.e., at the end of freshman year). As a practical matter, it is recommended that students apply to the program immediately after completion of CHBE 3130. Students must have a Georgia Tech GPA of 3.5 or higher for admission into the program.

Admission into the program will be based on academic performance at Georgia Tech, as well as the potential for advanced study and/or research as assessed from the essay and recommendation letter.

Continuation in the program will require the student to maintain a GPA of 3.0 or higher. This GPA requirement should not deter students from taking challenging courses. The program will not penalize students who opt out after receiving the BS degree. Additionally, students participating in the program will be eligible for the six credit hour Graduate Course Option.

Additional Information