Bachelor of Science in Biochemistry - Pre-Health Option

The Bachelor of Science in Biochemistry degree program consists of a combination of requirements and electives that ensure a strong foundation in the chemical and biological sciences while providing the flexibility to tailor the curriculum to satisfy specific interests or career goals. This program may be of interest to students who plan careers in research, teaching, or in a life/health science profession (medicine, pharmacy, dentistry). The judicious use of free electives also enables the student to achieve considerable knowledge of other disciplines at Georgia Tech, such as chemical and biomolecular engineering, bioinformatics (computing), biomedical engineering, and biology. The biochemistry curriculum enables majors who are interested in medical, dental, or law school to meet admission requirements of these schools. Successful completion of the Pre-Health Science Option is noted on the student’s transcript.

Chemistry Website (http://www.chemistry.gatech.edu)

Wellness
APPH 1040 Scientific Foundations of Health 2
or APPH 1050 The Science of Physical Activity and Health

Core A - Essential Skills
ENGL 1101 English Composition I 3
ENGL 1102 English Composition II 3
MATH 1552 Integral Calculus 4

Core B - Institutional Options
CS 1301 Introduction to Computing 3
or CS 1315 Introduction to Media Computation
or CS 1371 Computing for Engineers

Core C - Humanities
Any HUM (http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-c) 6

Core D - Science, Math, & Technology
PHYS 2211 Introductory Physics I 4
PHYS 2212 Introductory Physics II 4
MATH 1551 Differential Calculus 2
MATH 1553 Introduction to Linear Algebra 2

Core E - Social Sciences
Select one of the following: 3
HIST 2111 The United States to 1877
HIST 2112 The United States since 1877
INTA 1200 American Government in Comparative Perspective
POL 1101 Government of the United States
PUBP 3000 American Constitutional Issues

Any SS (http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-e) 9

Core F - Courses Related to Major
CHEM 1211K Chemical Principles I 4
CHEM 1212K Chemical Principles II 4
CHEM 2380 Synthesis Laboratory I 2

Major Requirements
CHEM 2211 Introduction to Quantitative Analysis 3
CHEM 2311 Organic Chemistry I 3
CHEM 2312 Organic Chemistry II 3
or CHEM 23 Organic and Bioorganic Chemistry
CHEM 3211 Analytical Chemistry 5
CHEM 3371 Organic Chemistry Laboratory 2
CHEM 3411 Physical Chemistry I 3
CHEM 4511 Biochemistry I 3
CHEM 4512 Biochemistry II 3
CHEM 4581 Biochemistry Laboratory I 3
CHEM 4582 Biochemistry Laboratory II 3

Pre-Health Electives
Select 15 credits from the following: 15
APPH 3753 Fundamentals of Anatomy
APPH 3754 Laboratory in Human Anatomy
APPH 3755 Human Physiology
APPH 3756 Laboratory in Human Physiology
APPH 4400 Human Neuroanatomy
BIOL 2344 Genetics
BIOL 2345 Genetics Laboratory
BIOL 3381 Introductory Microbiology Laboratory
BIOL 3450 Cell and Molecular Biology
BIOL 3451 Cell and Molecular Biology Lab
BIOL 3380 Introductory Microbiology
BIOL 4015 Cancer Biology and Biotechnology
BIOL 4340 Medical Microbiology
BIOL 4464 Developmental Biology, Developmental Genetics
BIOL 4545 Genetics of Complex Human Traits and Diseases
BIOL 4570 Immunology and Immunochemistry
BMED 3600 Physiology of Cellular and Molecular Systems
CHEM 4521 Biophysical Chemistry
CHEM 4765 Drug Design, Development, and Delivery

Free Electives
Free Electives 2 13

Total Credit Hours 122

Pass-fail only allowed for Free Electives.

1 It is suggested that students select pre-health preparation courses (SOC and PSYC).
2 It is suggested that students select pre-health preparation courses (APPH, BIOL, HTS, LMC, PSYC)

International Plan
The BS in Chemistry (International Plan) and BS in Biochemistry (International Plan) are offered to undergraduate students seeking to understand their majors in a global perspective. Students in this program must demonstrate proficiency in a foreign language; complete coursework in a country/regional elective, international relations, and
global economics; and participate study or research abroad experience (usually in the junior year). While abroad, students are required to complete in a supervised research experience with a faculty member in chemistry and biochemistry at the host institution. Upon successful completion of degree requirements for the International Plan, a "International Plan" designator is indicated on the diploma. If interested in participating in the International Plan as part of the BS in Chemistry or BS in Biochemistry, students should visit: www.internationalplan.gatech.edu.

Chemistry Website (http://www.chemistry.gatech.edu)

Research Option

The BS in Chemistry (Research Option) and BS in Biochemistry (Research Option) are offered for students who wish to participate in a research problem under the supervision of one of the fifty members of faculty and adjunct faculty in the School. Participants in the Research Option learn how to address a research problem from experiment design and execution to interpretation of results. There is an expectation that undergraduates who contribute to completed studies will be co-authors on submissions to high-quality scholarly journals. Research projects are available in the traditional areas of chemistry (analytical, biological, inorganic, organic, physical, and polymer chemistry) as well as highly interdisciplinary research areas, such as nanochemistry, polymer and materials chemistry, environmental chemistry and sensors, medicinal chemistry, molecular biophysics, and computational chemistry.

To pursue the Research Option in the School of Chemistry and Biochemistry, students should obtain a research project with a faculty member in the department and apply online via www.undergradresearch.gatech.edu. Successful completion of the Research Option requires the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>CHEM 4698/4699</td>
<td>Undergraduate Research Assistantship</td>
<td>9</td>
</tr>
<tr>
<td>CHEM 2698/2699</td>
<td>Undergraduate Research Assistantship</td>
<td></td>
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<tr>
<td>LMC 4701</td>
<td>Undergraduate Research Proposal Writing (complete during the first or second semester of research)</td>
<td>1</td>
</tr>
<tr>
<td>LMC 4702</td>
<td>Undergraduate Research Thesis Writing (take during the term in which students complete their thesis)</td>
<td>1</td>
</tr>
</tbody>
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Total Credit Hours 11

1 supervised research with faculty over three or more semesters
2 approval of proposal on project by a committee of two or more faculty
3 submission of an approved thesis

Successful completion of the Research Option is noted on the student’s transcript. Students completing this option often pursue graduate studies in the chemical or biological sciences or research careers in industrial or governmental laboratories.

Chemistry Website (http://www.chemistry.gatech.edu)