BACHELOR OF SCIENCE IN CHEMISTRY - MATERIALS OPTION

The School of Chemistry and Biochemistry has a vibrant program of study leading to a Bachelor of Science in Chemistry. The flexibility of the curriculum allows students to study fundamental areas of chemistry while tailoring their degree with technical and free electives to produce a well-rounded experience in preparation for a variety of career opportunities. Students may pursue tailored tracks towards the BS in Chemistry, including those allowing specialization in: pre-health science, biochemistry, business, polymers, and materials options. There are also tremendous opportunities to gain valuable research experience in state-of-the-art laboratories. In addition to coursework requirements, students in the program often participate in a variety of experiential programs, including: undergraduate research, Cooperative work, study abroad, summer internship, and serving as an undergraduate teaching assistant.

Faculty in the school are committed to undergraduate education and several have won awards for excellence in teaching. With a faculty to student ratio of approximately 1:6, the School prides itself on the close contact that it maintains with its undergraduate students. The high quality of the curriculum and faculty is part of the reason chemistry graduates receive job offers at the highest salary levels for BS chemists. Graduates of the BS in Chemistry pursue careers such diverse field as forensics, environmental science, nanoscience, biotechnology, pharmaceuticals in industry or governmental organizations; or they may continue their education in the chemical or biological sciences, or in medicine, pharmacy, dentistry, and law. Chemistry, especially with the biochemistry option (or the stand-alone BS in Biochemistry degree) is a superb preparation for medical school.

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:

HIST 2111 The United States to 1877 3

Major Requirements
CHEM 2211 Introduction to Quantitative Analysis 3
CHEM 2311 Organic Chemistry I 3
CHEM 2312 Organic Chemistry II 3
CHEM 3111 Inorganic Chemistry 3
CHEM 3211 Analytical Chemistry 5
CHEM 3380 Synthesis Laboratory I 2
MATH 2251 Multivariable Calculus 4
Biol 1510 Biological Principles 4

Materials Option
CHEM 3511 Survey of Biochemistry 3
or CHEM 4511 Biochemistry I 3
or CHEM 4512 Biochemistry II 3
CHEM 4695 Undergraduate Internship (Undergraduate Internship for Academic Credit) 3
or CHEM 4699 Undergraduate Research 3
MSE 2001 Principles and Applications of Engineering Materials 3

Select three of the following:
MSE 2021 Materials Characterization
MSE 3001 Chemical Thermodynamics of Materials
MSE 3002 Structural Transformations in Metallic, Ceramic, and Polymeric Systems
MSE 3003 Mechanical Behavior of Materials
MSE 3012 Thermal and Transport Properties of Materials
MSE 3015 Electrical, Optical and Magnetic Properties
MSE 3021 Materials Laboratory I
MSE 4002 Ceramic Materials: Properties, Processing, Applications
MSE 4010 Environmental Degradation
MSE 4020 Designing with Materials I
MSE 4022 Materials Laboratory II
MSE 4325 Thin Film Materials Science
MSE 4751 Introduction to Biomaterials

Free Electives
Free Electives 13

Pass-fail only allowed for Free Electives.

Total Credit Hours 122
Six of the nine credits must be 3000-level or higher. Special Topics also allowed with departmental approval.

**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 a supervised research experience with a faculty member in chemistry or 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 (http://www.internationalplan.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 participate in the Research Option in the School of Chemistry and Biochemistry, students should find a research project with a faculty member in the department and apply online via www.undergradresearch.gatech.edu (http://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</td>
<td>Undergraduate Research Assistantship</td>
<td>9</td>
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<tr>
<td>4698/4699</td>
<td></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) 2</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) 3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>11</td>
</tr>
</tbody>
</table>

1 supervised research with a chemistry or biochemistry faculty over three or more semesters
2 approval of this 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 degree may pursue graduate studies in the chemical or biological sciences or research careers in industrial or governmental laboratories.