BACHELOR OF SCIENCE IN NEUROSCIENCE

Students majoring in neuroscience will complete a 120 credit-hour curriculum (plus a required 2-credit class in health). They will learn fundamental principles and up-to-date advances in the field of neuroscience. The program will build on a strong foundation of required courses in the physical sciences and mathematics (chemistry, computer science, calculus, statistics and physics) in order to prepare students with the analytical skills needed to address the complexity of problems in neuroscience. The program will emphasize technological methods and innovations that have been critical, as well as ones needed to continue progress in neuroscience.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td><strong>Wellness</strong></td>
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<tr>
<td>APPH 1040</td>
<td>Scientific Foundations of Health</td>
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<tr>
<td>or APPH 1050</td>
<td>The Science of Physical Activity and Health</td>
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<tr>
<td>or APPH 1060</td>
<td>Flourishing: Strategies for Well-being and Resilience</td>
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<td></td>
<td><strong>Core A - Essential Skills</strong></td>
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<tr>
<td>ENGL 1101</td>
<td>English Composition I</td>
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<tr>
<td>ENGL 1102</td>
<td>English Composition II</td>
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<tr>
<td>MATH 1552</td>
<td>Integral Calculus</td>
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<tr>
<td>or MATH 15 Calculus for Life Sciences</td>
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<td><strong>Core B - Institutional Options</strong></td>
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<tr>
<td>CS 1301</td>
<td>Introduction to Computing</td>
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<tr>
<td>or CS 1315</td>
<td>Introduction to Media Computation</td>
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<tr>
<td>or CS 1371</td>
<td>Computing for Engineers</td>
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<td><strong>Core C - Humanities</strong></td>
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<td>Any HUM</td>
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<td><strong>Core D - Science, Math, &amp; Technology</strong></td>
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<tr>
<td>PHYS 2211</td>
<td>Introductory Physics I</td>
<td>4</td>
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<tr>
<td>PHYS 2212</td>
<td>Introductory Physics II</td>
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<tr>
<td>MATH 1551</td>
<td>Differential Calculus</td>
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</tr>
<tr>
<td>or MATH 15 Introduction to Differential Calculus</td>
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<tr>
<td>MATH 1553</td>
<td>Introduction to Linear Algebra</td>
<td>2</td>
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<tr>
<td>or MATH 15 Linear Algebra</td>
<td></td>
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</tr>
<tr>
<td>or MATH 15 Linear Algebra with Abstract Vector Spaces</td>
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<td><strong>Core E - Social Sciences</strong></td>
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<td>Select one of the following:</td>
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<tr>
<td>HIST 2111</td>
<td>The United States to 1877</td>
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<tr>
<td>or HIST 2 The United States since 1877</td>
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<tr>
<td>or INTA 1 American Government in Comparative Perspective</td>
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<tr>
<td>or POL 1 Government of the United States</td>
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<tr>
<td>or PUBP American Constitutional Issues</td>
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<td>PSYC 1101</td>
<td>General Psychology</td>
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<td>Any SS</td>
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<td><strong>Core F - Courses Related to Major</strong></td>
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<tr>
<td>CHEM 1310</td>
<td>General Chemistry</td>
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<tr>
<td>or CHEM 12 Chemical Principles I</td>
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<tr>
<td>CHEM 1315</td>
<td>Survey of Organic Chemistry</td>
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<tr>
<td>or CHEM 12 Chemical Principles II</td>
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**Major Requirements**

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIOS 1107 &amp; 1107L</td>
<td>Biological Principles and Biological Principles Laboratory</td>
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<tr>
<td>CHEM 3511</td>
<td>Survey of Biochemistry</td>
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<tr>
<td>NEUR 2001</td>
<td>Principles in Neuroscience</td>
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<td></td>
<td><strong>Neuroscience Depth Electives</strong></td>
<td>18</td>
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<tr>
<td>Select one research based elective:</td>
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<tr>
<td>NEUR 4001</td>
<td>Neuroscience Research Project</td>
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<tr>
<td>NEUR Thesis Option</td>
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<tr>
<td>Select one interest area elective:</td>
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<tr>
<td>BIOS 3450 &amp; BIOS 345 and Cell and Molecular Biology Lab</td>
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<tr>
<td>PSYC 4090</td>
<td>Cognitive Neuroscience</td>
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<tr>
<td>BIOS 3755 &amp; BIOS 375 and Physiology Laboratory</td>
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<tr>
<td>Select one statistics elective:</td>
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<tr>
<td>BIOS 4401</td>
<td>Experimental Design and Statistical Methods in Biological Sciences</td>
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<tr>
<td>BMED 2400 Introduction to Bioengineering Statistics</td>
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<td>ISYE 3770/ ISYE 3770 Statistics and Applications</td>
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<td>ECE 3077</td>
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<td>PSYC 2020</td>
<td>Psychological Statistics</td>
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<tr>
<td>MATH 3215 Introduction to Probability and Statistics</td>
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<td>MATH 3225 Honors Probability and Statistics</td>
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<tr>
<td>MATH 3670 Probability and Statistics with Applications</td>
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<tr>
<td>6-8 credits of additional Neuroscience electives</td>
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<tr>
<td>BIOS 2600</td>
<td>Genetics</td>
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<tr>
<td>BIOS 2610</td>
<td>Integrative Genetics</td>
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<tr>
<td>BIOS 3450</td>
<td>Cell and Molecular Biology</td>
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<tr>
<td>BIOS 3753</td>
<td>Fundamentals of Human Anatomy</td>
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<td>BIOS 3754</td>
<td>Laboratory in Human Anatomy</td>
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<td>BIOS 3755</td>
<td>Human Physiology</td>
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<td>BIOS 3756</td>
<td>Physiology Laboratory</td>
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<tr>
<td>BIOS 4200</td>
<td>Kinesiological Basis of Human Movement</td>
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<td>BIOS 4238</td>
<td>Ion Channels</td>
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<td>BIOS 4464</td>
<td>Developmental Biology</td>
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<td>BIOS 4471</td>
<td>Behavioral Biology</td>
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<tr>
<td>BIOS 4480</td>
<td>Evolutionary Developmental Biology – How to Build an Organism</td>
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<td>BIOS 4746</td>
<td>Signaling Molecules</td>
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<tr>
<td>CHEM 4511</td>
<td>Biochemistry I</td>
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<tr>
<td>CHEM 4512</td>
<td>Biochemistry II</td>
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<tr>
<td>NEUR 2699</td>
<td>Undergraduate Research</td>
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<tr>
<td>NEUR 4300</td>
<td>Neuroscience of Memory</td>
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<tr>
<td>NEUR 4400</td>
<td>Neuroendocrinology</td>
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<tr>
<td>NEUR 4699 Undergraduate Research</td>
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<tr>
<td>NEUR 4803 Special Topics</td>
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<tr>
<td>PHYS 3804</td>
<td>Special Topics (Neurophysics)</td>
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</table>
Bachelor of Science in Neuroscience

<table>
<thead>
<tr>
<th>Course (Code and Title)</th>
<th>Notes</th>
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<tbody>
<tr>
<td>PHYS 4803 Special Topics (Physical Principles of Living Systems)</td>
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<tr>
<td>PSYC 2015 Research Methods</td>
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<tr>
<td>PSYC 2103 Human Development Over the Life Span</td>
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<tr>
<td>PSYC 2230 Abnormal Psychology</td>
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<tr>
<td>PSYC 3011 Cognitive Psychology</td>
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<tr>
<td>PSYC 3012 Introduction to Cognitive Psychology</td>
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<tr>
<td>PSYC 3040 Sensation and Perception</td>
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<tr>
<td>PSYC 3041 Human Sensation and Perception</td>
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<tr>
<td>PSYC 4100 Behavioral Pharmacology</td>
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<tr>
<td>PSYC 4090 Cognitive Neuroscience</td>
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<table>
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<tr>
<th>Breadth Electives</th>
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<tbody>
<tr>
<td>Free Electives</td>
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</tbody>
</table>

Total Credit Hours 122

1. MATH 1553 (2 cr.) is preferred but MATH 1554 (Linear Algebra, 4 cr.) or MATH 1564 (Linear Algebra with Vector Spaces, 4 cr.) can satisfy this requirement with the excess 2 cr. to be applied to free electives.

2. CHEM 2311 is an approved substitution for CHEM 1315 to fulfill Area F only for students who complete a full year of organic chemistry (i.e., both CHEM 2311 and CHEM 2312 or CHEM 2313 must be completed).

3. CHEM 4511 is an approved substitution for CHEM 3511 to fulfill Area F only for students who complete a full year of biochemistry (i.e., both CHEM 4511 and CHEM 4512 must be completed).

4. Four credits of NEUR 4699 credit is only allowed to substitute for NEUR 4001 if completing the Georgia Tech Research Option. The Research Option requires an additional 6 credits of research (an additional 2 credits of NEUR 4699 may be applied to "Additional Neuroscience Electives"; the additional 3 credits of research credit will be applied to Free Electives), and LMC 4701 (1 credit) and LMC 4702 (1 credit) (applied to Free Electives). A research proposal and thesis/report is also required to complete the Research Option.

5. PSYC 2020 may be completed only for students completing the Psychology Breadth Elective option.

6. Biological Sciences, Chemistry, Mathematics, and Psychology Special Topics must be approved by Neuroscience Curriculum Committee

Research Option

BS in Neuroscience students are able to complete the Georgia Tech Research Option.

To complete the research option for Neuroscience, the student must:

- Complete ten units of supervised research, over a period of preferably three but at least two terms.
- Research may be for either pay or credit [typically 4698 or 4699]* - for BS in Neuroscience, this will be NEUR 4699.
- At least six credit hours must be on the same research project, broadly defined.
- Write an undergraduate thesis or other substantial, written report showing results of the research.
- A research proposal must be approved by a faculty advisor and one other faculty member. The proposal will normally be completed at the end of the student's first semester of research, but must be approved at latest before the start of their final term of research. An approved proposal is required for admission to the class "Writing an Undergraduate Thesis" (see below).
- The thesis/report must be approved and graded by two faculty members.
- Theses will be published in the Georgia Tech Library.
- Take the two-credit class "Writing an Undergraduate Thesis." [LMC 4701 and LMC 4702]

http://www.undergradresearch.gatech.edu/research-option/