Neuroscience major for University of Chicago undergraduates

Director of the Undergraduate Major in Neuroscience:

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Professor of Neurobiology

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Requirements for NSCI major

BA
- General education requirements: 600 units
- Major requirements: 900 units
- Electives: 700 units

BS (GPA ≥ 3.25, enter no later than end of 3rd year)*
- Three quarters of research and submit thesis: 300 units

* not currently an option, will come on line in AY ‘17-18
# General education requirements

**GENERAL EDUCATION**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOS 20150*</td>
<td>How Can We Understand the Biosphere?</td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS 20151*</td>
<td>Introduction to Quantitative Modelling in Biology (Basic)</td>
</tr>
<tr>
<td>BIOS 20152*</td>
<td>Introduction to Quantitative Modelling in Biology (Advanced)</td>
</tr>
</tbody>
</table>

One of the following 2-quarter sequences:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MATH 13100-13200</td>
<td>Elementary Functions &amp; Calculus I, II</td>
</tr>
<tr>
<td>MATH 15100-15200*</td>
<td>Calculus I &amp; II</td>
</tr>
<tr>
<td>MATH 16100-16200</td>
<td>Honors Calculus I &amp; II</td>
</tr>
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One of the following sequences:

<table>
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<th>Course Code</th>
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<tbody>
<tr>
<td>CHEM 10100-10200</td>
<td>Introductory General Chemistry I, II</td>
</tr>
<tr>
<td>CHEM 11100-11200*</td>
<td>Comprehensive General Chemistry I &amp; II</td>
</tr>
</tbody>
</table>

**Total Units** 600
# Major requirements

<table>
<thead>
<tr>
<th>MAJOR</th>
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<tbody>
<tr>
<td>CHEM 11300*</td>
<td>Comprehensive General Chemistry III *</td>
</tr>
<tr>
<td>PHYS 12100-12200*</td>
<td>General Physics I &amp; II * (note: 2 quarters)</td>
</tr>
<tr>
<td>STAT 22000*</td>
<td>Statistical Methods and Applications *</td>
</tr>
<tr>
<td>BIOS 24203</td>
<td>Fundamentals of Neuroscience</td>
</tr>
<tr>
<td>BIOS 24204</td>
<td>Introduction to Cellular Neurobiology</td>
</tr>
<tr>
<td>BIOS 24205</td>
<td>Introduction to Systems Neuroscience</td>
</tr>
<tr>
<td>PSYC 20700</td>
<td>Sensation and Perception</td>
</tr>
<tr>
<td>NSCI 20100</td>
<td>Neuroscience Laboratory †</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td><strong>900</strong></td>
</tr>
</tbody>
</table>

* Credit may be granted by examination  
† NSCI 20100 Neuroscience Laboratory course will not be available in the 2016-2017 academic year. It will be available for the first time in the 2017-2018 academic year, and each year after that.
Neuroscience electives I
(Neuro-biology/science)

BIOS 24218  Molecular Neurobiology
BIOS 24246  Neurobiology of Disease
BIOS 24206  Peering Inside the Black Box: Neocortex
BIOS 24208  Survey of Systems Neuroscience
BIOS 24249  Neurobiology of Seeing
BIOS 24231  Computational Neuroscience
BIOS 24232  Computational Cognitive Neuroscience
BIOS 24408  Modeling for Neuroscientists
NURB 32400  Synaptic Physiology
NEUR 33400  Genetic Approaches to Neurobiology
Neuroscience electives II
(Psychology)

PSYC 20300  Biological Psychology
PSYC 23890  Learning and Memory
PSYC 25460  The Body in the Mind
PSYC 25750  Psychology and Neurobiology of Stress
PSYC 27010  Psycholinguistics
Neuroscience electives III
(Comp Sci & Physics)

CMSC 15400  Introduction to Computer Systems
CMSC 25020  Computational Linguistics
CMSC 25025  Machine Learning and Large Scale Data Analysis
CMSC 25050  Computer Vision
CMSC 25400  Machine Learning (Advanced)
PHYS 12300 or 13300 Waves and Optics

No more than one of the following 2-quarter sequences:
CMSC 12100-12200  Computer Science with Applications I & II
CMSC 15100-15200  Introduction to Computer Science I & II
CMSC 16100-16200  Honors Introduction to Computer Science I & II
Neuroscience electives IV (Biology)

BIOS 26210  Mathematical Methods for Biological Sciences I
BIOS 26211  Mathematical Methods for Biological Sciences II
BIOS 20200  Introduction to Biochemistry

No more than 3 of the following:
BIOS 20186  Fundamentals of Cellular and Molecular Biology
BIOS 20187  Fundamentals of Genetics
BIOS 20188 or 20191  Integrative Physiology
BIOS 20189 or 20190  Fundamentals of Developmental Biology
BIOS 20234  Molecular Biology of the Cell
BIOS 20235  Biological Systems
BIOS 20236  Biological Dynamics
BIOS 20242  Principles of Physiology
Neuroscience electives V (Thesis research)

NSCI 29100: Thesis Research 100 Units
NSCI 29200: Honors Thesis Research 100 Units

This option will not be available until AY ‘17-18.