What is Molecular/Cellular Neuroscience?
Molecular/Cellular Neuroscience is a subfield of neuroscience that examines the mechanisms related to the basic biological processes of neurons and support cells of the nervous system. Molecular/Cellular neuroscientists tend to study how neurons communicate, how parts of neurons (e.g., axons and dendrites) function, and explore the anatomy/physiology of neurons.

Molecular/Cellular Specialization
The requirements for the 36 semester hour (12 classes) neuroscience major are distributed across four categories: Core, Data Analysis, Specialization, and Breadth.

I. CORE REQUIREMENTS
Take all 4 of the courses below
Pre-Major Core: Pre-major students must complete the pre-major core with grades of "B" or higher in both classes and earn a minimum 3.0 cumulative GPA

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Terms</th>
<th>Pre-reqs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 3313</td>
<td>Introduction to Behavioral Neuroscience</td>
<td>3hrs</td>
<td>Au, Sp Su</td>
<td>Psych 1100</td>
</tr>
<tr>
<td>Neuro 3000</td>
<td>Introduction to Molecular/Cellular Neuroscience</td>
<td>3hrs</td>
<td>Au, Sp</td>
<td>Bio 1113</td>
</tr>
</tbody>
</table>

Additional Core

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Terms</th>
<th>Pre-reqs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 3513</td>
<td>Introduction to Cognitive Neuroscience</td>
<td>3hrs</td>
<td>Au, Sp</td>
<td>Psych 1100</td>
</tr>
<tr>
<td>Neuro 3050</td>
<td>Structure &amp; Function of the Nervous System</td>
<td>3hrs</td>
<td>Au, Sp</td>
<td>Bio 1113 &amp; Neuro 3000</td>
</tr>
</tbody>
</table>

II. DATA ANALYSIS REQUIREMENT
Take 1 of the 4 courses below

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Terms</th>
<th>Pre-reqs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 2220</td>
<td>Introduction to Data Analysis in Psychology</td>
<td>3hrs</td>
<td>Au, Sp, Su, Sp</td>
<td>Psych 1100 &amp; Math 1148 (Honors Version)</td>
</tr>
<tr>
<td>Stats 2480</td>
<td>Statistics for Life Sciences</td>
<td>3hrs</td>
<td>Sp</td>
<td>Math 1151</td>
</tr>
<tr>
<td>Stats 2450</td>
<td>Introduction to Statistical Analysis</td>
<td>3hrs</td>
<td>Au</td>
<td>Math 1151</td>
</tr>
<tr>
<td>MolGen 5650</td>
<td>Analysis &amp; Interpretation of Biological Data I</td>
<td>3hrs</td>
<td>Au</td>
<td>Math 1150 &amp; 10hrs 3000-level Bio</td>
</tr>
</tbody>
</table>

III. SPECIALIZATION REQUIREMENTS
Choose at least 5 specialization courses from the options below

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Terms</th>
<th>Pre-reqs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuro 3010</td>
<td>Neurophysiology</td>
<td>3hrs</td>
<td>Au</td>
<td>Neuro 3000</td>
</tr>
<tr>
<td>Neuro 4050</td>
<td>Neurogenetics</td>
<td>3hrs</td>
<td>Au</td>
<td>Neuro 3000</td>
</tr>
<tr>
<td>Neuro 4100</td>
<td>Basic &amp; Clinical Foundations of Neurological Disease</td>
<td>3 hrs</td>
<td>Au</td>
<td>Neuro 3000</td>
</tr>
<tr>
<td>Neuro 4640</td>
<td>Neuronal Signal Transduction</td>
<td>3hrs</td>
<td>Sp</td>
<td>Neuro 3000 &amp; 3050</td>
</tr>
<tr>
<td>Neuro 5790H</td>
<td>Developmental Neuroscience</td>
<td>3hrs</td>
<td>Sp</td>
<td>Neuro 3000 &amp; 3050</td>
</tr>
<tr>
<td>MolGen 4500</td>
<td>General Genetics</td>
<td>3hrs</td>
<td>Au, Sp, Su</td>
<td>Bio 1113 &amp; 3+ hrs Bio (Honors Version)</td>
</tr>
<tr>
<td>Biochem 4511</td>
<td>Intro to Biological Chemistry</td>
<td>4hrs</td>
<td>Au, Sp, Su</td>
<td>Chem 1210/1220 &amp; 2510</td>
</tr>
<tr>
<td>Psych 4305</td>
<td>Intro to Psychopharmacology</td>
<td>3hrs</td>
<td>Au, Sp</td>
<td>Psych 3313 (Not Open to Students With Credit For Psych 3305)</td>
</tr>
<tr>
<td>Psych 4501</td>
<td>Advanced Behavioral Neuroscience</td>
<td>3hrs</td>
<td>Sp</td>
<td>B or higher in 3313</td>
</tr>
<tr>
<td>Psych 4644</td>
<td>Hormones &amp; Behavior</td>
<td>3hrs</td>
<td>Sp</td>
<td>Psych 3313 (Not Open to Students With Credit For Neuro 5644)</td>
</tr>
</tbody>
</table>
IV. BREADTH REQUIREMENT

Choose at least 2 additional courses from the list below

- **Neuro 4850**  
  Contemporary Topics in Neuroscience  
  3hrs | Au  
  (Pre-reqs: Psych 3313 & Neuro 3000)

- **Psych 3310**  
  Sensation and Perception  
  3hrs | Au, Sp  
  (Pre-reqs: Psych 1100)

- **Psych 3321**  
  Quantitative and Statistical Methods in Psychology  
  3hrs | Au, Sp  
  (Pre-reqs: B or higher in 2220)

- **Math 4350**  
  Quantitative Neuroscience  
  3hrs | Au, Sp, Ma, Su  
  (Pre-reqs: Math 1151 & 1152)

- **EEOB 4550**  
  Neurobiology of Behavior  
  3hrs | Au, Sp, Ma, Su  
  (Pre-reqs: 2 courses in Bio)

- **Neuro 4623**  
  Biological Clocks & Behavior  
  3hrs | Sp  
  Spring ’16 ’18 (Pre-reqs: Psych 3313)

- **CSE 5526**  
  Introduction to Neural Networks  
  3hrs | Au  
  (Pre-reqs: Psych CSE 3521)

- **Psych 5600**  
  Psychobiology of Learning & Memory  
  3hrs | Sp  
  (Pre-reqs: Psych 3313)

- **Psych 5602**  
  Behavioral Genetics  
  3hrs | Sp  
  (Pre-reqs: Psych 3313)

- **Psych 5606**  
  High Level Vision  
  3hrs | Sp  
  (Pre-reqs: Psych 3310)

- **Psych 5608**  
  Intro to Mathematical Psychology  
  3hrs | Au  
  (Pre-reqs: Psych 3321)

- **Psych 5609**  
  Intro to Mathematical Models in Experimental Psychology  
  3hrs | Au  
  (Pre-reqs: Psych 5608)

- **Psych/CSE/Ling/Philos 5612**  
  Introduction to Cognitive Science  
  3hrs | Au  
  (Pre-reqs: 12hr in Psych/CSE/Ling/Philos)

- **Psych 5613H**  
  Biological Psychiatry  
  3hrs | Sp  
  (Pre-reqs: Psych 4501)

- **Psych 5614**  
  Cognitive Neuroscience  
  3hrs | Au  
  (Pre-reqs: Psych 3313 or 3513)

- **Psych 5618**  
  Introduction to Computational Cognitive Neuroscience  
  3hrs | Au  
  (Pre-reqs: Psych 3513)

- **SHS 5760**  
  Neurology of Speech and Hearing Mechanisms  
  3hrs | Au, Sp  
  (Pre-reqs: Permission of Instructor)

- **Psych 5898**  
  Seminar in Behavioral Neuroscience  
  3hrs | Au  
  (Pre-reqs: Psych 4501 & Instructor Consent)

- **Neuro 4998/3193**  
  Undergraduate Research & Individual Studies  
  Pre-approval required.  
  Up to 3 credit hours of any combination of Undergraduate Research (4998) and Individual Studies (3193) can be applied to the breadth requirement. 3 credit hours equals 1 course toward the breadth requirements.

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**HONORS AND GRADUATE LEVEL COURSE OFFERINGS**

Honors students* and students with a 3.4 or higher cumulative and major GPAs are eligible to take graduate level courses. Course credit at the graduate level may be substituted for credit within the specialization and/or breadth requirements. To see current course offerings, please visit:

[http://neurosciencemajor.osu.edu/honors](http://neurosciencemajor.osu.edu/honors)

*Honors students are required to take at least one honors or graduate level course.

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The interdisciplinary major in neuroscience was created by a joint venture between the College of Arts and Sciences & the College of Medicine.