# Course within a Course: Learning to Teach through Teaching Neuroscience

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## Introduction

Drugs, the Brain, and Behavior is an interdisciplinary two-semester upper-level course at Georgetown University. The class is team-taught by Ph.D. candidates in the Interdisciplinary Program in Neuroscience (IPN). IPN faculty provide mentorship in the form of a steering committee.

## Course design

The design is twofold:
1. To expose undergraduate and master’s students to broad areas of the neurosciences
2. To provide pedagogical experience for Ph.D. students in the IPN

In this class, students explore normal and altered nervous system function, with a focus on different sets of disorders each semester.

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatric disorders</td>
<td>Neurological disorders</td>
</tr>
<tr>
<td>Regulatory Systems</td>
<td>Development (Neurological), Neural Injury and Recovery, Sensation and Perception, Basal Ganglia, Learning and Memory</td>
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<tr>
<td>Mood Regulation</td>
<td>Executive Function, Development (Psychological), Biological Rhythms</td>
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## Demographics of Lecturers

**Fall 2009**

- Prior teaching experience has increased over the past 4 semesters.

**Spring 2010**

- Fall 2010
- Spring 2011

In Fall 2010, the majority of classroom hours (68%) were taught by students with two or more semesters of previous experience teaching in the course.

## Pedagogy

**Technology**

This class has been a leader at Georgetown University Medical Center in incorporating technological advancements in course design and execution. In addition to the widely used Blackboard software, we have incorporated:
- iclicker® (classroom response system)
- Sharestream® (streaming video of classes)
- SMART board® (interactive whiteboard with save function)

**Primary literature** is employed in multiple ways:
- As representative data in didactic lectures
- In student paper presentations to the class
- Synthesis of data in a term paper

### End of class questions

End of class questions ensure that students continue to engage with classroom material outside of class. Participation is emphasized through questions and discussion.

## Class demographics

Students in the following programs take our course for credit:
- Cognitive Science minor
- Psychology (BA)
- Biology, Neuroscience (BS)
- Physics (MS)
- Complementary and Alternative Medicine (MS)
- Biochemistry (MS)
- Pharmacology (MS, PhD)

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- Biology, Neuroscience (BS)
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<table>
<thead>
<tr>
<th>Fall 2009</th>
<th>Spring 2010</th>
<th>Fall 2010</th>
<th>Spring 2011</th>
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<tbody>
<tr>
<td>2nd year</td>
<td>22%</td>
<td>24%</td>
<td>22%</td>
</tr>
<tr>
<td>3rd year</td>
<td>33%</td>
<td>35%</td>
<td>32%</td>
</tr>
<tr>
<td>4th year</td>
<td>18%</td>
<td>19%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Class years have become equally represented among lecturers.

## Challenges of a team-taught class

Ways in which we ensure continuity throughout the year (within a team-taught class) and across years (across changing instructors and directors):

- "Key neuroscience concept" for each lecture
- "Key neuroscience techniques" for each module
- Course directors attend all lectures
- Staggered directorship
- Repeated guest lectures
- Slides from previous years’ lectures available
- Standardized grading rubrics
- Faculty steering committee

## History of the course

Since the start of the course in 2000, 20 IPN students have acted as co-directors. In the 11 semesters of the course for which we have data (2 semesters are missing), 80 IPN students have lectured in the course. Thus, more than 60% of students who have entered the IPN program have taught in the course.

This course is unique at Georgetown University in bridging:
1. Multiple disciplines (psychology, biology, neuroscience, etc.)
2. Levels of study (Bachelor’s, Master’s, and Ph.D. students)
3. The medical center and main campus

From a teaching perspective, this course poses a special challenge and benefit in that course directors and lecturers get experience with both the "Main Campus" and "Medical Center" teaching atmosphere and style.

## Funding

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