Overview of neurobiology and the Biology 434 course:
One of the most challenging and interesting problems in biology is understanding the brain: how we think, feel, remember, and learn. Neurobiology is the study of the nervous system and their constitutive parts — nerve cells and neural circuits — and the way in which these structures mediate behavior. Neurobiology is a large and fast moving subfield of biology. Indeed, many universities offer undergraduate and graduate degrees in the neuroscience.

The Biology 434 course is designed to offer you a representative view of the field in a 15-week course. This course will introduce you to the levels at which nervous systems are studying, ranging from individual nerve cells to circuits to behavior. You will also examine one aspect of neurobiology in depth as part of a term long project. I hope that the combination will give you a solid understanding of modern neurobiology and that you will find the course challenging and informative.

Specific objectives:
- To introduce you to all levels of neurobiology ranging from individual nerve cells to nervous systems and behavior.
- To explore one aspect of neurobiology in a term-long research project.
- To increase your familiarity with the scientific process and to develop your abilities to read and talk about scientific material.
- To apply concepts in neurobiology to you experiences as biologists and as human beings.

From your perspective:
At the end of the course:
- You should feel that you have a solid understanding of mammalian brain anatomy, understand how neurons are organized into circuits and the key role of synapses in brain function, have increased your understanding of the cellular and molecular events mediating nervous system function, and have learned about sex differences, development, and neuroinflammation.
• You should also feel MUCH more comfortable reading and critically evaluating scientific papers.
And I hope that:
You will feel that your term project allowed you to explore an area of neuroscience of particular interest to you, and that through the project, that you have increased your own and other students’ understandings of neurobiology.

Meeting times:
Tuesday and Thursday from 11:00 to 12:20 in Th 188.

Expectations and evaluation criteria:
1) Attendance at lectures and discussions is mandatory. Students will be allowed two absences per semester. If more classes are missed, a penalty may be assessed. Note: I realize that some students are in the process of interviewing at graduate and medical schools; as a result you may have to miss more than two meetings. If this occurs, please contact me early so that we can work out some sort of accommodation.

2) You are expected to thoroughly read the assigned papers and participate in weekly class discussions and laboratories. Each of you will also be responsible for leading a class discussion twice during the semester. The evaluation criteria for discussion are mastery of the material and level of participation. After each discussion I will assign each student a score of + (good), √ (fair), - (needs improvement). After each student has had a chance to lead a discussion (about one third through the class) I will ask each of you to sign up for a mid-term checkup. At that point, I will offer you feedback on your level of participation, and we can discuss strategies for improving your performance if necessary. 10% of grade.

3) Quizzes and short assignments. We will have two in-class quizzes. In addition, at various points in the semester you will given a short assignment or problem set to complete before coming to class. These assignments will typically be associated with a reading and will serve to help prepare you for a class discussion, exam or activity. 15% of grade.

4) Take-home midterm. The exam will be open-note and open-book. It will cover material presented in lecture as well as the assigned readings. You will also be asked to analyze data and propose experiments to test hypotheses. 25% of grade.

5) Take-home final. See take-home midterm for exam format. 20% of grade.

6) Term paper on a current topic in neurobiology. Each student will choose a topic of interest to him/herself. You will meet with me once during the term to discuss progress on the paper. The final paper grade will be based on the paper content, analysis, effort, and clarity of presentation. 20% of grade.
7) Annotated bibliography. See the term project handout for details. **5% of grade.**

*If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Peggy Perno, Director of the Office of Accessibility and Accommodation, 105 Howarth, 253.879.3395. She will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.*