

# PSYCHOLOGY 489N

## Advanced Special Topics: The Evolution of the Forebrain Syllabus

**INSTRUCTOR:** Dr. Steven E. Brauth; **OFFICE:** 3123J; **OFFICE HOURS:** Mon. 11:00 AM  
**CLASS SCHEDULE:** Monday 3:00-5:30PM, Rm BPS 1232; [EMAIL=sbrauth@umd.edu](mailto:sbrauth@umd.edu)

**WEBSITE:** Canvas – [www.elms.umd.edu](http://www.elms.umd.edu). This website includes links to articles for class discussion, copies of powerpoint lecture slides and other review materials for the course including the final examination.

### COURSE GOALS:

This advanced course focuses on the question of how new neural structures arise in the course of brain evolution. We will investigate the organization and evolution of important forebrain systems subserving complex behaviors including the cerebral cortex (and comparable structures in non-mammals), basal ganglia and limbic system. Lectures will alternate with discussions based on seminal papers in the field. Specific topics include (a) an overview of vertebrate brain development and organization; (b) historical perspectives on cytoarchitecture of the forebrain, theories of homology and convergence, outgroup comparisons and the equivalent circuit hypothesis of Karten; (c) comparison of pallial organization in mammals, sauropsids and amphibians; (d) patterns and processes in neocortical development; (e) parallel sensory pathways in land vertebrates; (f) evolution of the basal ganglia; (g) olfactory systems and evolution of the limbic system; (h) behavioral and physiological studies of telencephalic functions in nonmammals; (i) theoretical treatment of how one new neurobehavioral system, that serving vocal learning, has evolved in birds.

### GRADING PROCEDURES:

Grades will be based on the scores students earn on six online quizzes (total of 30 points), five short papers and associated participation in class discussions based on assigned readings (50 points) and one final exam paper (40 points). Students will receive 5 points for each quiz, 10 points for each short paper, and 40 points for the online final exam paper for a total of 120 course points. Letter grades for the course will be assigned on the following basis with + and – grades assigned at the margins (+ or – 2%); A score of 97% or better is needed for an A+:

TOTAL NUMBER OF POINTS	LETTER RANGE
105-120	A
90-104	B
75-89	C
60-74	D
Below 60	F

**SHORT PAPERS/DISCUSSION ASSIGNMENTS:**

Links to articles to critique for discussion will be posted at the website at least two weeks in advance of the class meeting during which these articles will be discussed. Each student is responsible for reading one article and for *posting* their comments (see the Assignments link at this website). Discussion periods will begin with each student summarizing their evaluation; then the entire class will critique the papers and explore in depth the topics encompassed by the material under consideration.

**GRADE OF INCOMPLETE:**

The grade of "I" is an unusual grade at the University of Maryland and is only assigned at the discretion of the instructor and in special cases. The following conditions must be met:

1. *MOST* of the course work must be completed at the time the grade is requested. Students who have seldom attended class and have not completed most of the work and two of the examinations will not be considered eligible for this grade.
2. *SATISFACTORY* performance in course work at the time of the request is required. Students not performing at the level of "C" or better (see grade schedule on previous page) are not considered eligible for a grade of "I".
3. An *INCOMPLETE CONTRACT* must be signed by both the student and the instructor. This contract will set a date at which time the work must be completed and specify the remaining assignments. If this contract is not fulfilled (i.e. if the student does not complete the assignments on schedule) a grade of "F" will be assigned in the course.
4. Students desiring a grade of "I" must present compelling and strong evidence that such a grade is warranted. Medical evidence must be documented and endorsed by appropriate physicians or medical professionals in writing. If the student's request is based on nonmedical reasons, the student must petition the instructor *in writing* for the grade of "I" stating clearly the reasons for the request.

**RETAKES:**

There are *NO* retakes of examinations. Once you take an exam, the results (i.e. the grades) are final!

**MAKE UP ASSIGNMENTS:**

Students requesting make-up assignments must petition the instructor in writing, providing written documentation of medical excuses and clear explanations of nonmedical problems. The final decision in these cases rests exclusively with the instructor.

**ACADEMIC DISHONESTY:**

The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.studenthonorcouncil.umd.edu/whatis.html>. The code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. The University Senate encourages students to write the following signed statement on each examination or assignment: "I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment)."

**INCLEMENT WEATHER:**

Inclement weather or emergency closure of the University may occur during any semester. In the event of such occurrences students are advised to call the University main information number 301-405-SNOW and listen to radio and television news programs reporting local school closings. In the event the University is closed, PSYC206 will not meet. If school closes on a day an exam is scheduled, the exam will occur on the next regular class meeting. In the event of school closings, it may be necessary to make up the work by extending the hours for other class periods or by meeting for an extra period at the end of the term. In such cases announcements will be posted at this website. Students should be mindful of these possibilities.

**ACADEMIC ACCOMMODATIONS:**

If you have a documented disability, you should contact Disability Support Services 0126 Shoemaker Hall. Each semester students with documented disabilities should apply to DSS for accommodation request forms which you can provide to the instructor as proof of your eligibility for accommodations. The rules for eligibility and the types of accommodations a student may request can be reviewed on the DSS web site at [http://www.counseling.umd.edu/DSS/receiving\\_serv.html](http://www.counseling.umd.edu/DSS/receiving_serv.html).

**RELIGIOUS OBSERVANCES:**

The University System of Maryland policy provides that students should not be penalized because of observances of their religious beliefs, students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. It is the responsibility of the student to inform the instructor of any intended absences for religious observances in advance. Notice should be provided as soon as possible but no later than the end of the schedule adjustment period.

## COURSE CALENDAR:

<b>Date</b>	<b>Text</b>	<b>Topics Covered</b>	<b>Assignments</b>
1/26	Lecture 1	Concepts in Comparative Neuroanatomy	
2/2	Lecture 2	Theories of Brain Evolution	Quiz #1
2/9	Discussion 1	Linked articles at Assignments	Paper #1
2/16	Lecture 3	The Dorsal Ventricular Ridge	Quiz #2
2/23	Discussion 2	Linked articles at Assignments	Paper #2
3/2-9	Lectures 4-5	Basal Ganglia Organization in Mammals	Quiz #3
3/23	Discussion 3	Linked articles at Assignments	Paper #3
3/30	Lecture 5	Olfactory and Limbic System Evolution	Quiz #4
4/6	Discussion 4	Linked articles at Assignments	Paper #4
4/13	Lecture 6	Comparative Functional Pallial Studies	Quiz #5
4/20	Discussion 5	Linked articles at Assignments	Paper #5
4/27-5/4	Lectures 7- 8	Avian Vocal Learning	Quiz #6
5/11	Discussion 6	Prepare for Final Exam Discussion	
5/18	<b>Above</b>	<b>FINAL EXAM PAPER DUE</b>	<b>Final</b>