

## Syllabus

### Psychobiology of Aggression (4 credits)

1-5.

Class meets @ 1:00-2:18 on Tuesdays and Thursdays in PS 042

Call Number:

Instructor: Professor R.J. Nelson

Course website: <http://www.psy.ohio-state.edu/nelson/H594.shtml>

Office Hours: Thursdays 11:30-12:30 pm and by appointment

Office: 49 Psychology Building

Phone: 614.292.7005

Fax: 614.688.4733

**6. Course description:** The origins of violence and aggression can be found in nature. It has been known for some time that certain areas of the brain are associated with aggressive behavior in humans and in other animals. In this course, we will examine the biological mechanisms underlying aggression. We will consider the brain mechanisms and hormones in the control of aggression, concentrating on structures in the midbrain and the limbic system, and the role played by chemicals - both neurotransmitters and hormones, as well as the various genetic correlates of aggression. The types of aggression in nonhuman animals and how evolutionary principles can help us to understand both animal aggression and human violence will also be considered.

**7. Textbooks:** *Biology of Aggression* (2006) edited by Randy Nelson. It is also recommended that you read *Biology of Violence* (1999) by Debra Niegoff and *On Aggression* (1974) by Konrad Lorenz. New copies should be available at the bookstores. Used copies are abundant on Amazon.com. Additional readings will also be assigned for the lectures. This material will be provided to you in class or via the course website.

**8-14.** Students must attend and actively participate in all class meetings. The students' final grades will reflect their participation (10%), as well as performance on a midterm examination (20%), in-class presentation (25%), and term paper (45% [10% for comprehensive outline; 35% for final paper]). **The instructor must approve the topic of your paper by class time on 17 April 2008.** A comprehensive outline of your term paper (primary references included) is due by 1 May 2008 (10% of final grade). Students must complete the term paper by class time on 29 May 2008. The term paper is worth 35% of your final grade. **Late papers will NOT be accepted under any circumstances.** The topic of your term paper will also be the topic of your in-class oral presentation (25% of final grade). **There are NO make-up exams.** The midterm exam will be given to the students at the end of class on 6 May 2008. The completed exams are due at the beginning of class on Thursday 8 May 2008. >90% of the correct answers on the midterm =A; >80%=B; >70%=C; >60%=D; >50%=F.

The **goal** of this course is to introduce students to biological mechanisms underlying aggression and violence through the following objectives: (1) identify the evolutionary and adaptive functions of aggression and how these adaptive functions can become pathological (violent), (2) critically evaluate research on aggressive behavior across levels of analysis from genes to society, and (3) explore theoretical frameworks about aggression and violence. Teaching methods, designed to both present information and apply theories and concepts to real-life situations, include: interactive lectures, video demonstrations, individual presentations, a research paper and examinations.

**Important!** *If you are having difficulty with any of the material, either in lecture or in the readings, then please see the instructor for help. The instructor is here to facilitate your learning, and that means not only giving lectures, but also consulting with you individually. The quarter is very short, so it is critical to seek assistance as soon as you detect a problem.*

**Instructions for Term Paper:** The scientific literature for the biology of aggression and violence is extensive and diverse. It is often necessary to scan many articles quickly and to extract from them the essential message. It is frequently necessary to evaluate methods in order to determine if the claims in the paper are extravagant. Even with careful reviewing, articles are published that may not be tightly reasoned and frequently, alternative explanations for data are not considered. Your term paper should critically examine some problem of current interest in biological approaches to the study of aggressive behavior. You have considerable freedom in terms of the approach you use. However, you must use only primary research literature (you can use review articles as points of departure) and you must be critical (exercise careful judgment) in your approach. You might want to examine the development of a particular concept during the past several years by choosing a paper from 10 or so years ago and then picking a very recent paper for comparison. Alternatively, you might pick a controversial topic and examine different points of view based on different scientific methodologies, philosophies or as alternative explanations for similar observations. There is no desire on my part to limit your options; you may be able to think of some other approaches. Do not approach this assignment with the idea that there is something wrong with the papers you read. A critic is one who expresses a reasoned opinion on a matter, involving a judgment of its logical bases, correctness, value or significance. Give the reader sufficient information so that your arguments can be followed and your opinions understood, but do not abstract papers being discussed (i.e., do not write... "Fox and Hound (1985) found X. This was wrong. Cole and colleagues found Y. This was right."). Rather, focus on issues that attract your attention and present a comparative analysis. You might start by reviewing the journals, *Aggressive Behaviour*, *Behavior Genetics*, *Hormones and Behavior*, *Physiology & Behavior* or *Behavioural Brain Research*. You might also get ideas from your readings, Psychlit, or Medline. Once you find an article of interest, explore its references for other articles of related interest. Use Science Citation Index for determining the researchers who are citing papers of interest to you. The paper is very important to your final grade. Present it in good form, underlining or italicizing scientific names and using the literature citation format of the APA (an APA manual of style will be placed on reserve at the library). Please do not write less than 12 or more than 20 double-spaced pages. I expect all of your arguments to be supported by sufficient references. ***Your grade on the paper will be based on my assessment of your critical abilities, the originality of your treatment, your presentation (including grammar, syntax, and spelling), and the total development of the paper.*** The instructor will gladly help you with any aspect of your term paper. I expect you to work on this paper during the entire term and my evaluations of the final product will be based on those expectations. You may also seek assistance from the Center for the Study and Teaching of Writing (CSTW) on campus, an interdisciplinary support and research unit in The Ohio State University's College of Humanities. The writing lab is located in 485

Mendenhall Laboratory (which is on the South side of the oval, next to Hegarty Hall), and students can schedule appointments on their website ([www.cstw.org](http://www.cstw.org)) or by calling 614-688-4291. Failure to complete the term paper will result in a failing grade. A comprehensive outline of your term paper is due in class on 1 May 2008. This outline should include the thesis of your paper, as well as a list of the major references that you have consulted (3-5 review papers and 8-12 research papers).

***Instructions for Oral Presentation:*** These instructions are to help you organize your presentation. Most of the instructions are NOT REQUIRED, but highly recommended. For a presentation to be successful, you need to consider:

***What material to present:*** The purpose of a presentation is to convey information. You need to know the general background as well as specific aspects of the topic. For example, you need to know the overview of gene-behavior interactions, as well as a specific aspect of the topic such as increased aggression in males of human families lacking monoamine oxidase A despite elevated serotonin. Your presentation will be an oral report on the topic of your term paper so presumably you will have done a lot of background reading.

***How to organize the material:*** Organized information is easier to remember for you as you present and easier for your audience to understand. Do not simply read your term paper; an organized outline or a list is much easier to write and more useful for a presentation.

***How to present the information:*** There are many ways to present material in an interesting manner. The best format is the one that allows you to convey information clearly. A controversial topic might require a debate format, and statistics might be presented best graphically, etc.

***How to search the existing literature:*** You need to know what information is available, as well as "hot" or controversial topics in the field (see instructions for term paper). To gain a comprehensive view of the field, you should begin with a book chapter or a review article. Use the reference sections from those to find more detailed information. I have some start-up materials in my office (books, articles, etc.) that you can borrow. You can also get a lot of feedback from me at any point during the preparation. Added benefit to consultation with the instructor is that you can get feedback early in the process, so that you will know how much and what kind of work you have to do to earn a good grade. Providing the professor with an early draft of the outline well in advance is a great way to receive a feedback, for example.

***What's Required: Summary/outline:*** you need to give me a one page summary (2.2 cm margin, 12 pt font, double-spaced), at least two weeks before your presentation. This can be an early draft. This will help me determine your progress, and allows me to give you a feedback with enough time for you to make any changes. I'll distribute copies of your summery to the class, so you need to give me a final version at least two days before the presentation. A list of references; you need to give me a list of references that you are using, at least two weeks in advance. You also need to give me the final list at least two days before presentation. The materials that you use should be from the primary or secondary scientific literature. Do not use newspapers, magazines, encyclopedias, textbooks, or websites as primary references.

*Presentation:* The presentation should be about ~20 minutes each. Try not to read a prepared paper. Go slowly and emphasize your main points. Do not try to give too much information, but try to summarize the information. You can use PowerPoint, overhead or slide projectors, or video. Let me know at least 2 weeks in advance so I can have the appropriate A-V equipment in the classroom.

*Grading:* Grades are based on satisfaction of requirements (outline and references) and the quality of presentation. I'll evaluate the extent to which (1) you present high quality information (scientific survey vs. reader's survey in Cosmopolitan?), (2) you demonstrate good comprehensive understanding of material (minor mistakes are fine, huge ones are not), (3) your presentation is clear and understandable (partially based on the evaluation from your classmates).

NB: Some materials presented will be on the exams. You also need to evaluate other groups' presentations. This means that your absence will be very noticeable!

### **Academic Ethics:**

All students enrolled in courses at The Ohio State University should be familiar with the University's policy on academic integrity. The instructor is committed to maintaining a fair assessment of student performance in this course. There are two major ethical considerations in this course. First, the exams are 'closed book'. No notes may be used during the examination and you may not confer with your fellow students or look at other examinations for answers during the exam period. Prior to the examinations, all students are encouraged to study in small groups to facilitate your preparation for the tests. However, once you enter the examination room, you are expected to work alone. Second, your paper must be an original document for this course. It may not be a version of a previous paper written by you or someone else.

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct ([http://studentaffairs.osu.edu/info\\_for\\_students/csc.asp](http://studentaffairs.osu.edu/info_for_students/csc.asp)).

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

## SCHEDULE OF CLASSES

25 March	Introduction, Aims, Requirements, Course Overview, Methods of Scientific Inquiry, Critical Thinking, "Strong Inference"	Nelson, Ch 1; <u>Platt; Miczek et al.</u>
27 March	Biological Approaches to the Study of Aggression	Nelson, Ch 3; Niehoff, Ch 1-3
01 April	Ethological and Comparative Approaches to the Study of Aggression	Nelson, Ch 8; <u>Barash</u>
03 April	Development of Aggression	Nelson, Ch 14 and 15
08 April	Hormones and Aggression: Sex Differences	Nelson, Ch 9 and 10
10 April	Hormones and Aggression: Testosterone	Nelson, Ch 9 and 10; Niehoff, Ch. 6
15 April	Hormones and Aggression: Testosterone II	Nelson, Ch 9 and 10; Niehoff, Ch. 6
17 April	Neurotransmitters and Aggression: Serotonin <b>(<u>Paper topic must be approved by today</u>)</b>	Nelson, Ch 4; Niehoff, Ch 5;
22 April	Neurotransmitters and Aggression: Genetic Manipulations	Nelson, Ch 5; <u>Nelson &amp; Chiavegatto;</u>
24 April	Behavior Genetics of Aggression	Nelson, Ch 1 and 2; Niehoff, Ch 8
29 April	Facilitation of Aggression with Drugs and Alcohol	Nelson, Ch 16 and 17
01 May	"Treatments" for Violence <b>(<u>Comprehensive Outline Due</u>)</b>	Nelson, Ch 18; Niehoff, Ch 7; <u>Lavine; Walsh &amp; Dinan</u>
06 May	Stress and Aggression <b>(Midterm exams will be given out at the end of class)</b>	Nelson, Ch 12





08 May	Neural Circuits, Brain Damage and Aggression <b>(Midterm Exams are due at the start of class)</b>	Nelson, Ch 15; Niehoff, Ch 4 (Ch 9 is optional)
13 May	Functional Asymmetry and Aggression	
15 May	Student presentations	
20 May	Student presentations	
22 May	Student presentations	
27 May	Student presentations	
29 May	Student presentations <b>--TERM PAPERS DUE IN CLASS--</b>	