Hormones, Neurochemistry, and Behaviour
Psychology 3Y03: January - April, 2005

Instructor
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Background
This is a senior, high-level course that will demand active student participation. Students should be in 3rd or 4th year of an Honours program with a solid background in Biology as well as Psychology.

Course Objectives
We will examine hormonal and neurochemical processes that interact with behaviour in vertebrates, with especial focus on mammalian processes that shed light on human psychology.

Textbook and Readings
Assigned readings from this textbook are given on the next page.

Evaluation
1) Midterm Test #1: This is worth 25% of the final grade, and will be held in the normal class hour on Wednesday Feb. 16th. It covers all readings and lectures prior to that date.
2) Essay & Presentation: Each student should prepare an essay, on a unique specialized topic, structured and pre-approved as described in a separate handout. Each student is expected to make a brief oral presentation during one of the tutorials on their topic and to submit a full written essay. This component is worth 35% of the final grade, with 10% for the oral presentation and 25% for the written paper. The deadline for the written essay is March 28th, but it may be submitted at any time before that date.
3) Class and Tutorial Participation: Students are encouraged to participate actively in classes and especially in tutorials. Attendance at tutorials will be recorded. There may be a brief (one-question) quiz at the beginning of each tutorial. The instructor's and tutorial leader's individual appraisal will comprise 10% of the final grade.
4) Final Examination: This will be scheduled by the Registrar’s Office, and is worth 30% of the final grade. This will cover the whole course, with some extra emphasis on material since the midterm test.
Evaluation (continued)
Students are responsible for both lecture material and assigned readings, with roughly equal weighting. The midterm test can only be written at the time indicated, so plan to attend. Normally, there can be no make-up tests or special sessions for any student. Students with valid reasons for missing the midterm test must consult the Dean of Studies office for their faculty (e.g. Science or Social Science). If (and only if) there is adequate written justification for missing the test, such students will normally have the components of their final grade reweighted at the instructor's discretion. Essay deadline extensions will not be granted unless there are legitimate reasons validated by the Dean of Studies office. The test and examination will consist of questions in diverse formats, including true-false, multiple choice, short answer, and essay questions, at the instructor's discretion. Grades will be assigned according to the following convention: 90-100% = A+, 85-89% = A, 80-84% = A-, 77-79% = B+, 73-76% = B, 70-72% = B-, 67-69% = C+, 63-66% = C, 60-62% = C-, 57-59% = D+, 53-56% = D, 50-52% = D-, 0-49% = F. Appeal procedures for the test and essay are strictly structured, as will be explained by the instructor. Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty. Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at http://www.mcmaster.ca/senate/academic/ac_integrity.htm.

Schedule of Lecture Topics and Readings
(Lecture dates are approximate)

Thursday classes (except Jan. 6th) will be tutorial sessions. The class will be divided into sections, where there will be discussion and student presentations. Sections will meet at either 10:30 or 13:30.


Feb. 2 - 7: Sex differences and sexual differentiation. Chapters 3, 4

Feb. 7 - 14: Male and female reproductive behaviour. Chapters 5, 6

Feb. 16: MIDTERM TEST (Held in class)

Feb. 28 - Mar. 2: Parental behaviour. Chapter 7

Mar. 7 - 14: Affiliative and aggressive behaviour. Chapter 8

Mar. 16 - 21: Homeostasis, biological rhythms, and stress. Chapters 9, 10, 11

Mar. 23 - 28: Hormones, learning, and memory. Chapter 12

Mar. 28: ESSAY DEADLINE

Mar. 30 - Apr. 6: Neurochemistry and mood. Psychonutrition. Chapter 13

FINAL EXAMINATION SCHEDULED BY THE REGISTRAR
The assignment involves a literature review that is focused on one of the specific topics below or any other relevant topic that is preapproved by the instructor and/or tutorial leader. Each student will be assigned to one of the tutorial sessions. He/she will sign up for a topic that is unique within the particular group. Each student will then prepare a written essay (due March 28th) and give a presentation (approximately 15-20 minutes) to the tutorial group on this topic at a time arranged with the tutorial leader.

**Some suggested topics**

- Thyroid hormones and endocrine disruptors
- Estrogens and endocrine disruptors
- Effects of birth control pills on development and behaviour
- Post-menopausal estrogen treatment
- Human castration, antiandrogens, and sexual deviance
- Premenstrual syndrome
- DHEA supplements, health, and behaviour
- Melatonin supplements, health, and behaviour
- Ritalin (methylphenidate) treatment for ADHD in developing children
- Aspartame and neurotransmission
- Steroid use and behaviour among athletes
- Antidepressant drugs and long-term adaptation
- Congenital adrenal hyperplasia and behavioural development
- Precocious puberty
- Histamines and behaviour
- Sex reassignment at birth
- Seasonal affective disorder
- Long-term consequences of cocaine/amphetamine usage
- Cannabis use and anandamides
- Hermaphroditism and androgyny
- Mother-infant pheromonal communication and endocrine dynamics
- Menstrual synchrony among women
- Human reproductive pheromones
- Mammalian stress pheromones
- How concealed is ovulation in humans?
- Steroid fluctuations and schizophrenic symptoms
- Neurotransmitters and schizophrenia
- Biochemical factors and autism
- Family structure, male contact, and menarche
- Hormones and infanticide
- Circadian rhythms and jet lag
- Hormonal treatment of obesity
- Dietary amino acids and mental performance
- Prenatal stress and subsequent behaviour
- Steroid systems in reptiles
- Steroid systems in amphibians
- Steroid systems in fish
- Steroid systems in avians
- Phytoestrogens
- Neuroprotective effects of estrogens
- Vomeronasal organ in mammals

*Students are welcome to suggest other topics. All topics must be preapproved by the tutorial leader. You are welcome and encouraged to discuss your topic with the instructor and/or tutorial leader for guidance in preparing your presentation and written essay.*
Guidelines for the tutorial presentation

Your presentation should present the highlights of your essay topic to the class, in about 15 minutes with 5-10 additional minutes for class discussion. Organization and preparation are the keys to any successful presentation. Prepare some overhead transparencies for visual aids as appropriate to your topic. It generally helps if the first of these overheads gives the outline of your presentation. Usually, it is best not to read your entire presentation, although written notes help many people. The optimal sentence style in an oral presentation is not entirely the same as that for a written essay. Shorter sentences tend to communicate more clearly. Make sure terms are defined and clear. Watch your audience for signs that they have understood and that you sustain their interest, and be prepared to adjust your presentation accordingly.

We recognize that public speaking is new and often stressful for many undergraduates. We will try to be encouraging and make this a positive experience for everyone, and we ask that other students be supportive, constructive, and noncompetitive.

Form of the written paper

The paper should not exceed 2500 words in length, excluding references. Quality is much more important than quantity. You are not required to type the paper if your handwriting is clear, but you are advised to use a modern wordprocessing package. You may single-space to conserve paper, but separate your paragraphs by a space if you do so. Subheadings are usually a good idea, because they help you and the reader to see the organization at a glance. State the purpose of your paper clearly in the introductory paragraphs of your essay, so that the reader knows what to expect. You should have a reference list at the end of your paper. This reference list should include all published sources of information to which you refer in the paper. In the paper itself, be sure to give your sources for every substantial body of evidence that you cite. You may do so in either of two manners. The first is to give the name(s) and date(s) of the article(s) within parentheses (e.g. Jones, 1993) in the first sentence discussing the work. The second method, which is common in physiology and medical journals, is to number the articles in the reference list and simply give the number(s) in parentheses instead of the name and date. If in doubt, mimic the form used in the journal articles that you read. Footnotes are not necessary with this referencing system. Cite only papers that you have actually read. Please also include a brief (<100 word) summary or abstract, separated from the main text, before the actual introduction at the beginning of your paper.

Content

In grading, attention will be given to the quality of your library work, the scientific nature of your references, organization and clarity, accuracy of referencing, and the coherence of any arguments that you present. Use scientific journals, not the popular press. It is important to consult primary research reports, i.e. scientific papers presenting methods and data. Secondary sources such as textbooks and review articles can be useful, but you should not base your paper entirely on them. Be as objective and scientific as possible. Avoid personal information, sentiment, and unsubstantiated opinion, but don't be afraid to address controversial issues. Material relevant to this course is found in all of the university's libraries (Thode, Mills, and Health Sciences). Plan the outline and scope of your paper very carefully. Draft and redraft the paper until it is clear. Be concise and to the point. Make it easy to read rather than laborious. That means you should avoid unnecessary jargon and long cumbersome sentences.

We will take measures to verify the uniqueness of your work, and may request an interview with you as part of the evaluation of the work. This may include consultations with instructors of courses with similar assignments, internet searches, and reading of your references.