CAMOSUN COLLEGE
School of Arts & Science
Department of Psychology

PSYC-215-001
Biological Psychology
Fall 2019

COURSE OUTLINE

The course description is available on the web @ http://camosun.ca/learn/calendar/current/web/psyc.html

Ω *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

1. Instructor Information

(a) Instructor	Michael Pollock		
(b) Office hours	Mondays 11:30-12:20, Tuesdays, 12:30-1:20, Wednesdays 11:30-12:20, Thursdays 12:30-12:50, Fridays 12:30-1:20		
(c) Location	Fisher 308B		
(d) Phone	250-370-3111	**Alternative:**	
(e) E-mail	pollockm@camosun.ca		
(f) Website	http://online.camosun.ca		

2. Intended Learning Outcomes

Upon completion of this course a student will be able to:

1. Summarize the history of biopsychology, and the relationship of biopsychological theories and methods to the broader field of psychology.
2. Compare the most important research methods used in biopsychology.
3. Discuss the basic concepts, supporting the evidence for the interaction of evolution, genetics and experience in the development of behaviour.
4. Label and summarize the basic structures and functions of the human nervous system.
5. Explain the processes involved in neural conduction and synaptic transmission.
6. Label images of the human visual system and explain basic visual processes in the central nervous system.
7. Discuss the mechanisms of perception, consciousness, awareness and attention.
8. Describe the functioning of the human sensorimotor system.
9. Summarize the processes involved in the development of the human nervous system and the ways in which the human brain attempts to cope with brain damage with an emphasis on neuroplasticity.
10. Discuss human learning, memory and amnesia as they relate to the human brain.
11. Summarize human sexual development, human sexual dimorphism and the effects of hormones on human development and behaviour.
12. Describe a model of drug addiction and a general model of the effects of various drugs on the neuronal function.
13. Discuss various disorders of cognition and emotion with regard to the human brain.
14. Summarize the effects of stress and emotions on human neurophysiology.
15. Discuss the neurophysiology of schizophrenia, depression and anxiety and attempts to treat these disorders.

3. Required Materials

Pinel, J.P.J. & Barnes, S.J. (2018). *Biopsychology.* (10th ed.). Toronto: Pearson.

4. Course Content and Schedule

Course Content:

Neuroscience is a relatively new field of study, but could its findings eventually provide an explanation for all of our behavior by reducing our thoughts and feelings down to the workings of the brain? This course familiarizes students with the current major findings and limitations associated with *biopsychology* - the study of how biological knowledge can be applied to psychological topics. In the process of trying to understand the biological mechanisms of the mind, topics will range from the microscopic (e.g., genetics, the electrophysiology of neurons, and neurochemistry) to the macroscopic (e.g., functional neuroanatomy and how the different parts of the nervous system interact). In addition to studying the concepts associated with these topics, students will have the option of engaging in their own independent research as part of their course assignments. This course is a must for anyone interested in understanding the biological underpinnings of our minds and the first-hand experience you will gain in conducting biopsychological research will allow you to be better able to critically evaluate research claims for their practical usefulness in your personal and professional life.

Deadlines:

The Course Schedule below lists the dates for when the different components of your course grade are due. There are no make-up exams/assignments for this course. Failing to complete an exam/assignment by its scheduled date will result in a score of zero for that exam/assignment. Exceptions may be granted at the discretion of the instructor for cases of hardship or extenuating circumstances (e.g., a medical emergency) if the proper documentation to show this can be provided.

COURSE SCHEDULE

Week	Lab or Lecture	Date	Lecture Topic	Research Stage	Readings*, **Exam**, or *Assignment* due
Week 1					
	Lecture	Sep 3 Tuesday	Course Overview		
	Lab	Sep 4 Wednesday		Research Question & Rationale	
Week 2		Sep 8 Sunday			Read Ch.1 & p.104-108
	Lecture	Sep 10 Tuesday	Biopsychology & its Methods		
	Lab	Sep 11 Wednesday		Literature Search	
Week 3		Sep 15 Sunday			Read p.36-43 & 47-50
	Lecture	Sep 17 Tuesday	Behavioral Genetics		
	Lab	Sep 18 Wednesday		Article Summaries	

Week 4		Sep 22 Sunday			Read p.57-62 & 77-87
	Lecture	Sep 24 Tuesday	Electrophysiology		
	Lab	Sep 25 Wednesday		Hypotheses	
Week 5		Sep 29 Sunday			
	Lecture	Oct 1 Tuesday	Review for Midterm1		
	Lab	Oct 2 Wednesday		Correlational Methods	**Midterm Exam1**
Week 6		Oct 6 Sunday			Read p.87-100, 396-404, & 473-489
	Lecture	Oct 8 Tuesday	Neurochemistry & Neuropharmacology		
	Lab	Oct 9 Wednesday		Correlational Results	
Week 7		Oct 13 Sunday			Read p.53-57, 62-68, & 375-378
	Lecture	Oct 15 Tuesday	PNS & Brainstem		
	Lab	Oct 16 Wednesday		Correlational Table & Figure	
Week 8		Oct 20 Sunday			Read p.69-74, 165-169, 178-184, 198-201, 203-205, 231-232, 406-409, & 449-465
	Lecture	Oct 22 Tuesday	Forebrain		
	Lab	Oct 23 Wednesday		Experimental Methods	
Week 9		Oct 27 Sunday			

	Lecture	Oct 29 Tuesday	Review for Midterm2		
	Lab	Oct 30 Wednesday		Experimental Results	**Midterm Exam2**
Week 10		Nov 3 Sunday			Read Ch.16 & p.464
	Lecture	Nov 5 Tuesday	Lateralization		
	Lab	Nov 6 Wednesday		Experimental Table & Figure	
Week 11		Nov 10 Sunday			Read p.146-151, 156-163, 181-182, 189-192, & 291-294
	Lecture	Nov 12 Tuesday	Perception		
	Lab	Nov 13 Wednesday		Discussion	
Week 12		Nov 17 Sunday			Read p.198-206, 216-219, & 492-494
	Lecture	Nov 19 Tuesday	Action		
	Lab	Nov 20 Wednesday		Research Paper	
Week 13		Nov 24 Sunday			Read Ch. 11
	Lecture	Nov 26 Tuesday	Memory		
	Lab	Nov 27 Wednesday			
Week 14		Dec 1 Sunday			
	Lecture	Dec 3 Tuesday	Review for Final		

	Lab	Dec 4 Wednesday			*Research Project* or *Alternative Assignment*
		TBA			**Final Exam**

* All assigned readings are taken from the course textbook

5. Basis of Student Assessment (Weighting)

Evaluation:

Your course grade will be based on a weighted average of the percentage points you achieve across the following course components:

Course Component	Weight
Midterm Exam1	22.5%
Midterm Exam2	22.5%
Final Exam	30%
Assignment	25%
Bonus Questions	Maximum 6% extra credit

Each of these components is described in more detail in the sections below. You can check the course D2L website at any time during the semester for your current class standing and you are invited to discuss any concerns about your grade with the instructor.

Final grades that end with a decimal point of 0.5 or above will be rounded to the next higher whole number, and grades that end with a decimal point below 0.5 will be rounded to the next lower whole number. The grades of the entire class may be scaled up or down at the discretion of the instructor or department. Grades are not official until they appear on a student's academic record.

Exams:

Exams will be in-class, closed book, and not cumulative (e.g., the final exam will only cover material that came after the last midterm exam). Exams will cover solely the concepts from the assigned readings listed in the concept lecture notes. Questions will describe points about the concepts and ask for the correct names of those concepts. The format of the questions will be similar to a matching style, in that each question will have a list of all the concept names from the relevant lecture(s) and you must choose one of those concept names as the answer. Half of the questions will be *knowledge*-type questions which use for descriptions of the concepts the same wording as the points in the concept lectures notes, while the other half of questions will be *understanding*-type questions which reword these points usually in the form of a real-life scenario.

Assignments:

Research Project

For this assignment, you will develop in stages throughout the semester a biopsychological research project involving a longitudinal study of yourself. Instructions, templates, and examples of each stage will be given by the instructor in class and then you will perform the project outside of class time, with additional help available during office hours.

Stage #1. *Research Question & Rationale* – You will identify a biopsychological question/problem/goal about yourself that you wish to have answered/solved/achieved. (IMPORTANT NOTE: make sure to choose a question you are comfortable sharing with the rest of the class the results you will collect on yourself about it.) In your lab, you will then find fellow students interested in a similar topic as yourself and form a group with them to work with on this project. You will list the reasons why your group members are personally interested in this topic and agree upon on a single phrasing of the research question that is broad enough to apply to each of them.

Stage #2. *Literature Search* – You will perform a literature search to see what possible answers to your research question have already been identified by biopsychological research. You will then track

down primary research articles that provide evidence for each of these claims, with each member of your group contributing different primary research articles.

Stage #3. *Article Summaries* – For each of the primary research articles that you personally contributed to your group, you will summarize *in your own words* both what that article did (based on its Methods section) and what it found (based on its Results section) that is of relevance to your research question. You will also provide supporting quotes, citations, and references in APA format to back up your summaries of these articles.

Stage #4. *Hypotheses* – For each of the possible answers that your group discovered in their literature search, your group will generate hypotheses that each make testable predictions about the direction of the relationship between the two main variables (the predictor variable and the outcome variable) in that claim.

Stage #5. *Correlational Methods* – For each of the variables in your group's hypotheses, you will describe in detail how your group plans to quantitatively measure natural variations in that variable over time (i.e., longitudinally) within each of your group's members. The methods your group chooses for measuring the variables can be based on those previously used in the scientific literature (i.e., your group's primary research articles) or can be entirely of your own creation.

Stage #6. *Correlational Results* - Following the instructor's approval of your group's proposed correlational methods, you will start carrying out those methods. (IMPORTANT NOTE: findings from a project whose methods have not been approved will receive a mark of zero. Do not start data collection until you have first received written approval of your methods.) Based on the data collected on just yourself, you will then perform correlational analyses to test each of your group's hypotheses. In order to verify the time course of your measurements, on each day of your correlational study you must submit to D2L's Assignments tool all of the data you have collected on yourself up to that point and an update of your correlational analyses.

Stage #7. *Correlational Table & Figure* – You will construct a table displaying for each of your group's hypotheses the correlation coefficients from each of your group's members and from their pooled (raw and standardized) data, as well as reporting the statistical significance of each correlation coefficient. The hypothesis that from the pooled data has the highest correlation coefficient in the direction originally predicted will be judged to have received the strongest support from your group's correlational study. You will also produce a properly labelled scatterplot that visually represents the relationship your group found between the two variables in this hypothesis.

Stage #8. *Experimental Methods* – For the hypothesis that received the strongest support from your group's correlational study, you will describe in detail how your group plans to further experimentally test on themselves whether a causal relationship exists between the two variables (now called the independent variable and the dependent variable) in that hypothesis. The methods your group chooses for manipulating the independent variable and for measuring the dependent variable can be based on those previously used in the scientific literature (i.e., your group's primary research articles) or can be entirely of your own creation. You will also describe how your group proposes to reduce the possibility of confounding variables (i.e., order effects, placebo effects, and experimenter expectancy effects).

Stage #9. *Experimental Results* – Following the instructor's approval of your group's proposed experimental methods, you will start carrying out those methods. (IMPORTANT NOTE: findings from a project whose methods have not been approved will receive a mark of zero. Do not start data collection until you have first received written approval of your methods.) Based on the data collected on just yourself, you will then calculate descriptive statistics (means and standard deviations) for each of your experimental and control conditions, and perform inferential statistics (*t*-test) to determine if there was a statistically significant difference between them as predicted by the hypothesis for your experiment. In order to verify the time course of your measurements, on each day of your experimental study you must submit to D2L's Assignments tool all of the data you have collected on yourself up to that point and an update of your descriptive and inferential statistics.

Stage #10. *Experimental Table & Figure* – You will construct a table displaying for each of your experimental and control conditions the descriptive statistics from each of your group's members and from their pooled (raw and standardized) data, as well as reporting their statistical significance. You will also produce a properly labelled bar graph that visually represents the difference in means between conditions.

Stage #11. *Discussion* – Based on your group's correlational study, you will state which of your group's hypotheses were originally confirmed and, based on your group's experimental study, whether a causal relationship exists between the two variables in the hypothesis that received the strongest support. (IMPORTANT NOTE: Your assignment mark is not dependent on whether your

hypotheses were confirmed or not, but rather whether you have correctly interpreted this based solely on the data your group collected.) You will then relate these findings to the possible answers your group encountered in the literature search and compare your group's results to those of the past studies your group summarized from the primary research articles. You should discuss any discrepancies in the results of such studies and speculate upon their possible reasons due to methodological differences. Finally, based on your group's studies, you will make conclusions about the best answer(s) to your research question, and reflect on the implications and practical applications of these findings.

Stage #12. *Research Paper* – You will collaborate with your group to co-author in proper APA-style format a report of your group's research project that encompasses all of the work accomplished in each of the above stages. The research paper will include in it each of the following sections: Title Page, Abstract, Introduction, Methods (with separate Correlational Study and Experimental Study subsections), Results (with separate Correlational Study and Experimental Study subsections), Discussion, References, Tables, and Figures.

Alternative Assignment

As an alternative to performing research on yourself, you may complete a critical literature review of various research claims made by the course textbook. This assignment entails signing up (on a first-come, first-served basis) to study, for each of the assigned chapters, one finding which the textbook provides a reference for from the scientific research. After the instructor has given you written approval to analyze a finding, you will read the source referenced by the textbook for that finding and, if it is only a review article/book, further track down the primary research article in which the original study was first reported that provided the evidence for this claim. You will then summarize *in your own words* both what that primary research article did (based on its Methods section) and what it found (based on its Results section) that is of relevance to the finding you were approved to investigate. You will also provide supporting quotes, citations, and references in APA format to back up your summaries of these articles. Finally, you will numerically analyze the effect size of each finding based on the primary articles, with instructions, templates, and examples on how to do this given by the instructor.

Participation & Bonus Questions:

In order to enhance your learning of the course material, to increase your knowledge of psychological research, and to improve the teaching of this course, you will be offered extra credit for participating in the testing of experimental teaching methods applied to this course. To assess the effectiveness of the teaching methods, in each class you will fill out anonymous surveys (subjective measures) and answer bonus questions (objective measures). In addition to providing an opportunity for general feedback on the course, the surveys will specifically measure (at the beginning of class) your expectations about and (at the end of class) your actual experiences with that day's teaching method in terms of the following three factors.

1. Enjoyment: how much you enjoyed the teaching method
2. Knowledge/understanding: how much the teaching method helped improve your knowledge/understanding of that day's course material
3. Motivation: how much the teaching method motivated you to want to study more about that day's topic.

In each class, bonus questions will be given to assess (at the beginning of class) your baseline levels of and (at the end of class) your improvement in knowledge/understanding about that day's course material. The format of the bonus questions will be the same as that used for the exam questions (see the Exams section above), with half of the questions being knowledge-type questions and the other half being understanding-type questions. Each bonus question correctly answered will be worth 0.01% extra on your final course grade, with a maximum extra credit of 6% in total possible (i.e., the equivalent of a letter grade). In order to be eligible to receive credit for answering bonus questions in a given class, you will need to fully participate in class activities for the entire duration of that class.

6. Grading System

[X] Standard Grading System (GPA)

☐ Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

8. College Supports, Services and Policies

Immediate, Urgent, or Emergency Support
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS http://camosun.ca/about/policies/index.html

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	*Compulsory Withdrawal*: A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.