

# **PSY 429: Psychophysiology**

Spring 2016  
209 O'Brian Hall  
11-11:50am MWF  
3 credits

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## **SYLLABUS**

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**TEACHING PHILOSOPHY AND OBJECTIVES**

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Hi, and welcome to our course on Psychophysiology. I'm excited for what we have ahead this semester, and hope you are too. Our mission for the semester will be for you to understand and think critically about psychophysiological methods and the physiological aspects of psychological processes. Specifically we will work to:

Objective	Description	Assessment
A) Background	<ol style="list-style-type: none"> <li>1. Understand the major psychophysiological <u>methods</u></li> <li>2. Understand major <u>principles and theories</u> of psychophysiology and their historical background</li> <li>3. Understand the range of <u>applications</u> that psychologists study</li> <li>4. Become familiar with current psychophysiological research <u>findings</u> that are of specific interest to you</li> </ol>	Quizzes, exams
B) Synthesize and Apply	<ol style="list-style-type: none"> <li>5. Understand what psychophysiolgists do, how they think about psychology and behavior, and <u>DO</u> some of that yourself! Apply background to understand human behavior, emotions, cognition, and development.</li> </ol>	In class discussion, exams, presentation, research proposal
C) Synthesize and Critique	<p>Reflect on the field of psychophysiology and your personal goals...</p> <ol style="list-style-type: none"> <li>6. Consider the <u>future</u> of psychophysiology: what studies and applications will emerge, how important will they be, and what will/should the field look like?</li> <li>7. Synthesize background knowledge in new ways—apply it to new situations, interpret it based on both critical analysis and your personal perspectives and interests, and generate new <u>insights</u> and ideas</li> </ol>	Article critiques, in class discussion, exams, presentation, research proposal

The student learning outcomes for this course address the goals detailed for the Department of Psychology's Undergraduate Program as described on the Department's web site ([www.psychology.buffalo.edu](http://www.psychology.buffalo.edu)).

You'll notice that the background resembles what goes into the introduction of a term paper—this is the “set up”. The set-up is the raw material we will synthesize in B and C as we think about...“where do we go from here?”...guided by your own compass. While the *content* is specific to our course, the *process* is relevant no matter what you do. The content is crucial if you're going work in a field that psychophysiology is relevant to (neuroscience, neuropsychology, psychology, clinical psychology, research, medicine, psychiatry, human development ...). But the process—taking some background content, applying it to new situations, and infusing it with your own views and ideas—is the same regardless of what

content you are studying or field you choose to go into. It involves a strong grasp of the background content (A), and the confidence to leave that beaten path and carry that background in new directions (B and C). This process is a crucial but often neglected part of your college training. You'll hear it boringly referred to as critical thinking. But really what it means is *serious thinking*—being serious about knowledge, and using that knowledge to contribute to society. That is, knowing what you're talking about (A) and being motivated to make an impact with that knowledge (B). (This is important because thinking isn't super useful to society if it isn't grounded in and critical of background knowledge; and critical thinking isn't super useful to society if you just sit on your critical thoughts☺).

**Overall Course Goal:** The overarching goal for the course is to add an understanding of psychophysiological aspects of behavior, emotions, and cognition to your foundation of knowledge and skills from which you will contribute to society, whether that be in the context of psychophysiology and related fields, a different field, or even just through your own actions as a citizen and individual (employee, parent, son or daughter, friend, etc.).

**Prerequisites:** The course assumes you have experience in psychology, neuroscience, and statistics. In the first week we will do a brief, ungraded background assessment to give me a sense of where we are all starting from. The course also takes into account that you have varied backgrounds, interests, and educational/occupational goals. **Please come to me early and often if any background area or course objective is a concern for you so that we can work out a plan to make sure the course is a good fit, and that you get the most out of it!** Given students' varied backgrounds and interests, I will do my best to allow flexibility in assignments to pursue your individual interests. And I am open to your suggestions and proposals as well—e.g., if there is an assignment you would like to do in place of than something I have suggested, something you've done in a previous class that worked really well, please let me know.

**Student Motivation:** My courses are geared toward intentional learners—motivated, engaged, and active. You've chosen this course for a reason; this semester we need to keep that reason in sight so that you can maintain an active role in your learning, which will help you acquire deeper and more long-lasting knowledge than if I just give you pre-digested material. To that point, the course is designed around an active, engaged model of learning. As the Nobel Laureate cognitive scientists Herbert Simon (ironically one of the founders of the field of *artificial* intelligence) said, **“Learning results from what the student does and thinks and only from what the student does and thinks.”** This course will guide your learning about psychophysiology, but it cannot (nor can I) do the learning for you. I will do my best to keep it interesting—if something isn't working, please let me know! I'll ask for anonymous feedback at various points in the course, but you are always free to shoot me a candid email, or drop an anonymous note in my mailbox in the main psychology office (2<sup>nd</sup> floor, Park Hall).

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**SCHEDULE**

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So that we can adjust our schedule based on in-class discussions and student interests, the schedule is tentative and will be adjusted as we go. We will review the schedule frequently to keep it up to date based on what we have covered, and I will notify you of any changes *in class*. (See Missing Class Time policy below—you *must* contact me if you miss a class, leave early, etc. in order to ensure that you have the most up to date course topics and assignments.) **Warning: classes will occasionally begin with a brief, unannounced quiz** related to the assigned reading.

**Unit 1. Foundations, Body, and Brain**

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<b>Week</b>	<b>Date</b>	<b>Topic</b>	<b>Assignment Due</b>
1	1/25	Introduction	
2	2/1	Nervous system and psychophysiological signals	
3	2/8	Skin and skeletomotor (EDA, SCR, EMG)	
4	2/15	Eyes (movements, blinks, pupilometry)	
5	2/22	Cardiovascular and pulmonary (EKG, BP, ICG, respiration)	Critical thinking paper 1
6	2/29	Psychoneuroendocrinology/immunology	

**Unit 2. Brain, Imaging, and Applications**

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<b>Week</b>	<b>Date</b>	<b>Topic</b>	<b>Assignment Due</b>
7	3/7	EEG I	Unit 1 Exam
8	3/14	<i>No meetings (Spring break)</i>	
9	3/21	EEG II	Research Proposal draft
10	3/28	ERP I	
11	4/4	ERP II	
12	4/11	Brain imaging I (lesion method, PET, fMRI)	
13	4/18	Brain imaging II (fMRI)	Critical thinking paper 2
14	4/25	Stimulation (TMS, DCS, DBS)	
15	5/2	Applications (biofeedback, BCI, psychopathology, etc.)	
	5/9	<i>Finals week</i>	<i>Research Proposal</i>
	5/13	<i>Finals week</i>	<i>Unit 2 Exam</i>

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## COURSE ASSIGNMENTS

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Below are the graded course assignments. Details for each assignment will be provided in class to offer more information about the assignment and grading.

### A. Class Participation

Learning objective: The student will be able to engage in professional, academic interactions and discussion with peers on topics related to psychophysiology.

*Ungraded...*

Show up (aka, Policy on Missing Class Time): Think of it this way: I won't miss class without letting you know, and you should do the same. Our class is a *meeting* time— if you have a standing meeting with someone, you let them know ahead that you won't be there, communicate clearly if there is a barrier to your full engagement, etc. There is no grade for showing up, and I won't keep attendance; but if you aren't around to participate in classroom activities it will adversely affect your grade (see graded participation below). Of course, extenuating personal circumstances, participation in university-sanctioned activities (e.g., athletics), religious observances, documented illness, public emergencies, weather related issues (snow!), and documented personal or family emergencies may require class absences that are excusable. If you are going to miss a class, leave class more than 5 minutes early, or arrive more than 5 minutes late you are responsible for contacting me ahead of time or in a timely fashion afterward so I can provide you the pages for brief quizzes and any material, updates to the course topics/assignments, or other information you may have missed. If this happens more than two times, contact me to arrange an in person meeting to discuss the circumstances. In the event of an individual missing class time repeatedly, I reserve the right to determine the coursework required to make up for the absence and the student will be responsible for the prompt completion of any alternate assignments.

Classroom Focus: Phones, texting, internet browsing, side conversations, etc. during class are a distraction to yourself, your classmates, and your instructor, and will not be tolerated. The class is a *cell-phone free zone*. If you have a personal reason I need to make an exception to this policy, let me know ahead of time (no questions asked) and you will be asked to step out of the class to use your phone (ongoing text conversations will not be allowed in class). Laptops are acceptable, but fair warning: I will make a point to check in with laptop users (so what did you think about this reading?) to ensure that they are engaged with our meeting and not with Facebook!

Technical Troubleshooting: If you are having technical problems (e.g., with a laptop that you're using to take notes), please take the computer out of the room to address them. And always have a pad and pen with you in case of technical failure. If

technical issues become a distraction, I will ask you to wait until after class or leave the room to address them.

In-Class Discussion: Active students learn better than passive students, so you will be expected to actively participate during our in-class meetings. You will be expected to have read and thought about the readings, and come prepared to ask and answer questions: think speaking up (think-jot-share; group discussions; muddiest point) and think QUIZZES (see below). Please let me know privately if you have any issues with the speaking up requirement, or see ways that I can help improve the classroom environment to make it easier to speak up. I also will not be shy about providing you (private!) feedback to let you know how your class participation is going.

*Graded...*

Take Note: The 20 points below are the difference between grades of A and C, or B and D, so don't plan on being successful in the course without participating in class.

Group Discussions (5 points): We will form groups early in the semester and use them throughout the semester for in-class discussions and for reviewing each other's work. Participation in group work will be assessed during class time by the instructor checking in on the groups during class, and verifying that all members are actively participating. Reflection questions that will be the topic of group discussions may be distributed in prior classes (again, see policy on Missing Class Time).

Field Trip: I will try to arrange several field trips to labs relevant to the course. Details will be announced in class. Attending the field trips and participating in the discussion will be important.

Brief Quizzes (15 points): During the semester there will be four brief quizzes at the start of classes worth 5 points each. Your best three scores will count toward your final grade. At the end of class, I will often refer you to a few "focus pages" in the reading for the next class--it's a safe bet that if I do this, quiz and exam questions will come from these. These "hints" will not be provided by in instructor after class, except in the event of an excused class absence (see policy on Missing Class Time). No make-up quizzes will be allowed, except in the event of an excused class absence that was discussed with me *prior to the class* (the dropped quiz score is provided to cover a last minute, emergency class absence; if this happens more than once, see Missing Class Time policy regarding make-up coursework).

## **B. Critical thinking papers (2x; 3 pages)**

Learning objective: The student will be able to critically evaluate psychophysiological research and generate new insights into human behavior, cognition, and emotion.

You will briefly summarize the hypotheses, methods, and conclusions of the study. Discuss strengths and weaknesses of the study, specifically regarding its use of psychophysiological measures. And potential future studies or applications based on the research findings.

### C. Presentation

Choose a course topic (method) from the schedule and give a presentation on an application of that method that interests you. Your job will be to get the class excited about the application and teach them about the specific aspects of the method relevant to the application.

### D. Research proposal (8 pages)

You will propose an experiment that would test a novel hypothesis using psychophysiological measures. I strongly recommend your presentation and research proposal focus on the same method, although this is not required.

### E. Exams

There will be 2 (non-cumulative) take-home exams during the semester, for unit 1 and 2. The exam questions will come primarily from the brief in class quizzes and the pages from the readings that were highlighted for those quizzes. Other exam questions will involve the synthesis of that material or application of that material to new contexts or examples.

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## GRADING

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A grade of B will be for a solid level of work (all assignments complete on time, consistent class attendance and participation, and display of master of course material). Work that exceeds that solid level will be higher than a B, below that solid level be lower than a B. Course grades will be assigned as follows:

		Grade	Quality Points	Percent
<b>Group discussion</b>	<b>5</b>	A	4.0	93.0 - 100.00
<b>Quizzes</b>	<b>15</b>	A-	3.67	90.0 - 92.9
<b>Critical paper 1</b>	<b>10</b>	B+	3.33	87.0 - 89.9
<b>Critical paper 2</b>	<b>10</b>	B	3.00	83.0 - 86.9
<b>Presentation</b>	<b>10</b>	B-	2.67	80.0 - 82.9
<b>Research proposal</b>	<b>20</b>	C+	2.33	77.0 - 79.9
<b>Exam 1</b>	<b>15</b>	C	2.00	73.0 - 76.9
<b>Exam 2</b>	<b>15</b>	C-	1.67	70.0 - 72.9
	<b>100</b>	D+	1.33	67.0 - 69.9
		D	1.00	60.0 - 66.9
		F	0	59.9 or below

**Note:** I will not make very fine distinctions for in class assignments; if you show up and do the work competently, you'll get the credit (e.g., quizzes will have bonus questions).

**Late Assignments:** Late assignments will be docked 10% for every day they are late (this includes weekends, so an assignment due on a Wednesday but submitted on Saturday will be docked 30%; if this was the podcast recording, you could get a maximum of 14 points).

**Incomplete Grades:** A grade of incomplete ("I") indicates that additional course work is required to fulfill the requirements of a given course. Assignment of an "I" grade is at the discretion of the instructor. See the UB Undergraduate Incomplete Policy (<http://undergrad-catalog.buffalo.edu/policies/grading/explanation.shtml#incomplete>).

**Mid-Semester Review:** To help undergraduate students achieve academic success, I will provide mid-semester evaluations. Mid-semester grades will be standard A-F grades calculated by dividing the points the student has earned so far by the points so-far available (with the participation points are based on what the student would earn should the semester end that day). You are encouraged to promptly follow up with me if you feel your performance is less than satisfactory. For grades below C you are required to meet with me.

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## UB POLICIES

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**Course Expectations:** Unless otherwise stated in this syllabus, this course will follow the policies outlined in the UB Course Expectations (<http://undergrad-catalog.buffalo.edu/policies/course/index.shtml>).

**Academic Integrity:** Academic integrity is a fundamental university value. Through the honest completion of academic work, students sustain the integrity of the university while facilitating the university's imperative for the transmission of knowledge and culture based upon the generation of new and innovative ideas. Reference UB Undergraduate Academic Integrity policy for details. (<http://undergrad-catalog.buffalo.edu/policies/course/integrity.shtml>).

Instructor note: I take seriously my commitment to academic integrity. "Students usually have little difficulty knowing that they should not "cheat" in the sense of copying homework or an exam. There is far more difficulty in understanding how to use and cite sources when writing. The general concept is to avoid making someone else's ideas or words appear (even if unintentionally) as your own. If you take more than a few words directly from a source (*including a website!*), they should be placed in quotation marks, and the specific source (including page numbers or website) given. If you are paraphrasing someone else's ideas, theories, or findings, you should provide a citation to the original work. If you are in doubt, please feel free to check with me and refer to the *Publication Manual of the American Psychological Association.*" (Perez-Edgar, 2011, *PSYC 592 Syllabus*)



**Accessibility Resources:** If you have any disability which requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources, 25 Capen Hall, 645-2608, and also the instructor of this course. The office will provide you with information and review appropriate arrangements for reasonable accommodations. <http://www.student-affairs.buffalo.edu/ods/>

Instructor note: Please let me know as soon as possible if there are any accommodations I can make to help you succeed in this course.