PSYC 2200, section 002
Physiological Psychology Syllabus, Fall 2015

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Location: Laurel Hall, 101

Date/Time: Tu/Th 12:30–1:45p

Instructor: Dr. R. Holly Fitch

TA: Samantha (Sam) Yohn

Instructor Email: Roslyn.h.fitch@uconn.edu (put “PSYCH 2200–your–last–name” in subject line)

TA Email: Samantha.Yohn@uconn.edu (put “PSYCH 2200–your–last–name” in subject line)

Who to contact about what: Please contact Dr. Fitch for all questions pertaining to exam/grading policies, accommodations, absences etc. Sam (TA) is available for study assistance on lecture and Study Guide material, & looking at old exams. She may be able to assist students by appointment outside of posted office hours. Please be considerate of her time -- give enough lead-time for requests.

Class Website: www.fitchlab.com
Click on the “Physio Psych 2200” button in menu (left). The syllabus is loaded on this site, with links to extra information organized by lecture date/topic. Downloadable PDFs for each lecture will be posted -- click to “Physio Psych Downloads” page. Also check the class website for weather and emergency cancellations, and other announcements. Grades will be posted on the downloads page after each test (organized by PeopleSoft ID number).

Instructor Office Hours/Location: Bousfield (Psychology) rm 113 (first floor), Tues 3–4p, Thurs 3–4, & by appointment.
Please email me to set up an appointment time if these hours do not fit your schedule.

TA Office Hours/Location: Bousfield (Psychology) Atrium, Tuesdays 4–5p and Thursdays 3–4p, and possibly by appointment.
Textbook (recommended for those with limited BIO background): Biological Psychology: An Introduction to Behavioral and Cognitive Neuroscience 6/e (Edition 6), 2010, Rosenzweig, Breedlove and Watson (note this is not the very newest version (v7, 2013) -- you can buy the 2010 (v6) either new ($40ish) or used (about $10)) ISBN: 978-0-87893-324-2

Test Schedule and Policy: There will be four sectional multiple-choice tests, one make-up opportunity, and a final (total 5 tests).

a) If you miss one of the 4 sectional tests for any reason (excused or unexcused), you can take the sectional make-up on Dec 8 to sub the missed grade. The make-up will be CUMULATIVE multiple-choice, covering material from all 4 sectional tests (plus 2 final lectures).

b) If you take all 4 sectional tests, you may also take the make-up on Dec 8 and I will use the top 4 test grades out of 5. The make-up will NOT hurt you if you have 4 higher grades, so it is great practice for the final! (Alternately, you may opt to take the day off!). You cannot sub the make-up for the final.

c) The final exam will be 50 multiple-choice, and will cover all material discussed over the semester (cumulative). See the UConn Final Exam schedule for date/time (tentative date Fri Dec 18, 10:30a). A student who misses the final exam will receive a class grade of “X” in PeopleSoft. If an absence is excused in writing by the Dean of Students Office, please email Dr. Fitch to reschedule the final (go to the DOS website (dos.uconn.edu) for acceptable reasons for missing a final & how to reschedule). If you cannot validate a missed final, your class grade will be calculated accordingly (20% of class grade = F).

Test Material:
Tests will be multiple-choice, 50 questions, and will cover material discussed in class. Items from readings that were not discussed in class will not be on the test (although some material covered in class may not be in the book and still be on the test). To help you study, I will post downloadable PowerPoint presentations for each lecture (in PDF). The PDFs for each lecture will normally be available the evening before class, so you can print the material and bring it to class for note-taking. Study guides with key terminology will be uploaded on the website a few days before test reviews. The
sylabus provides some preliminary info about material to be covered in each lecture, but please use the individual lecture PowerPoints and Review Study Guides to prepare for tests.

**Bubble sheets and Versions:**
All exams are 50 multiple-choice questions graded by ScanTron. If you provide a wrong PeopleSoft number, you may not see a grade on the posted list. Also, due to class size, I will use two versions of each test. It is really important to code this accurately in column K of the bubble sheet. Listing the wrong version, or no version, takes time to track down and hand-score -- students lose 4 points when this happens. Please be careful!

**Grading:**
Your grade will be the average score from the 4 sectional tests plus the final. If you take all 4 sectional tests and also take the make-up, the top 4 out of 5 grades will be used, plus the final. These 5 tests will be averaged equally (20% each).

**Reviews:**
Review sessions are scheduled before tests, and students should bring questions to these class reviews. The class TA Sam Yohn will hold office hours in the Psychology Atrium on Tuesdays from 4–5p and Thurs 3–4p to answer questions and further explain class material. Also you can email Dr. Fitch or Sam with specific questions (but please don’t send questions at 11p before a test!).

**Readings:**
Class readings are assigned from the optional textbook. Readings are intended to elaborate/support the lectures, but all details covered in the specified text readings will not necessarily be covered in class, nor included in the tests. [No textbook material not covered in class will be included in tests].

Some additional readings are provided by links, as a supplement to special topics of interest covered at the end of each class ("Current Interests"). Detailed material from these websites will not be on tests unless the material is discussed in class. Again, the tests will cover material that has been discussed in class. Please use the PDFs and study guides to focus in on pertinent material.
Extra Credit:
Each student may write an extra credit paper (1 per student) that can be applied for up to 10 points (depending on quality) to the overall grade. (Since tests are on 100-point scale, this would be like increasing one test score by a letter grade). The paper will be a review of a current peer-reviewed science article. I will post 4–5 choices on the class website (selected to go with topics being studied) in early October (and will announce this in class) – please choose and print one of these. The student will be expected to write a synopsis of the scientific paper addressing the Problem being investigated (2 points), Hypothesis (2 points), Methods (2 points), Conclusion (2 points), and Why Do We Care (2 points). Minimum 3 pages (double-space), recommended 4 pages.

Extra credit papers must be turned in (hard-copy -- no email attachments) by the start of class on Tues Dec 1 (or anytime during the semester before Dec 1). Late extra-credit papers, or papers not addressing the assigned topic, will not be accepted.

Honors Conversion:
A once-weekly discussion group, focusing more in depth on original scientific papers relating to the topics of study, will be arranged for PSYC 2200 students who would like to convert this class to Honors credit. I will do my best to accommodate as many interested Honors students as possible, but no individual conversion options will be offered. For questions about Honors conversion, see the Honors website, or visit CUE Building Rm. 419.

Student Accommodations, Student Athletes, Religious Holidays:
Students who have received an accommodation through the Center for Student Disabilities (http://www.dsa.uconn.edu/csd.html), for example involving extra test time, should see Dr. Fitch at the start of the semester (well before the first test). Student athletes who will miss class due to competitions, or students travelling to school-supported conferences, should also see Dr. Fitch to discuss arrangements. Students observing Rosh Hashanah/Yom Kippur or other religious events that conflict with a test should also see Dr. Fitch as soon as possible to discuss arrangements.
Lecture and Test Schedule:

SECTION I, Fundamentals of the Brain

**Tues Sept 1** – Introduction
First class, no readings.
Review syllabus, tests, grading, and class format.

**Thurs Sept 3** – Fundamentals of the Brain 1 – Anatomic Structure and Organization
Reading: CH 2, 23–49 (to end of “ventricles”); CH 19, 604–607 (split–brain): (total pages 30).
**What you need to know:** Basic structure of a neuron; structures and subdivisions of the human brain (peripheral (cranial, spinal, autonomic)/central (brain, spinal cord)); developmental subdivisions; structural subdivisions; cortical hemispheres, cortical regions and function; basic ventricular system; laterality, contralateral–projections, ear–advantage, corpus callosum.
**Current interest:** Split–brain and hemispheric asymmetry.

**Tues Sept 8** – Fundamental of the Brain 2 – Mammalian Brain Evolution & Development
Reading: CH 6, 156 – 175 (evolution); CH 7, 179 – 194 (development) (total pages 36).
**What you need to know:** Phylogeny & ontogeny, evolution & natural selection, ways to assess evolutionary/species brain differences; stages of neurodevelopment; neural proliferation, migration, differentiation, synaptogenesis, pruning, & cell death (necrosis vs apoptosis).
**Current interest:** When does the brain stop developing? Adolescents, decision–making and frontal cortex.

**Thurs Sept 10** – Fundamentals of the Brain 3 – Neurons, synapses, & transmission
Reading: (CH 2, rev 23–34); CH 3, 57 – 79 (neurons, APs, synapses) (total pages 23).
**What you need to know:** Detailed neuronal structure/function (dendrite, soma, axon), glia, synapse, circuits; action potential, hyperpolarization/depolarization, ion channel, basics of synaptic transmission, EPSP/IPSP; synaptic vesicle and release, synaptic cleft.
**Current interest:** Synaptic dysfunction and mental disorders
**Tues Sept 15** – Fundamentals of the Brain 4 – Basic Experimental Design, Methods of Study (MRI, fMRI, electrophysiology)
Reading: CH 2, 50–55 (neuroimaging); CH 19, 600–603; see also: http://www.med.harvard.edu/AANLIB/home.html (neuroimaging primer)

*What you need to know:* Basics of experimental design (experimental/control groups, independent/dependent variables, “significant difference”); CAT scan, MRI, PET, fMRI, electrophysiology, MEG, TMS, applications for neuroimaging techniques in human health.

*Current interest:* Neuroimaging & vegetative state: surprising activity using fMRI.

**Thurs Sept 17** – Section I -- Review Session and discussion, with Q&A.
Reading: Review all Section I readings; bring questions.

**Tues Sept 22** – ****Test, Section I, Fundamentals of the Brain ****

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**SECTION II – Things that Affect the Brain**

**Thurs Sept 24** – Things that Affect the Brain 1 –Hormones (emphasis on *steroid hormones*)
Reading: CH 5, 117–120 (top) & 123 (bottom) – 138 (note table 5.2); CH 12, 365 – 382 (sexual differentiation)(total pages 36).

*What you need to know:* Hormone categories (protein, amine, steroid); major glands, their products & basic functions; sexual differentiation, organizational versus circulating (activational) steroid effects, cognitive sex differences.

*Current interest:* Sex differences in cognition: Myth or reality?

**Tues Sept 29** – Things that Affect the Brain 2 – Experience & Genes (Nature vs Nurture)
Reading: CH 7, 194– 203; CH 9, 261–262 (auditory experience); CH 17, 531 – 532 (enrichment); CH 19, 586–587 (birdsong); (total pages 16).

*What you need to know:* intrinsic versus extrinsic influence, critical/sensitive periods, Hubel & Wiesel, twin/adoption studies, genetic abnormalities, deprivation, enrichment, plasticity, experience.
Current interest: Does early music training alter brain development?

Thurs Oct 1 – Things that Affect the Brain 3 –Aging, Injury & Disease
Reading: CH 3, 83 (epilepsy/seizures); CH 7, 206–209 (aging/Alzheimer’s); CH 11, 338 (bottom) – 346 (motor and Parkinson’s); CH 18, 570 – 571 (hemi–spatial neglect) & 578 – 579 (Phineas Gage); CH 19, 590 – 596 (aphasia) & 610 – 615 (prosopagnosia, functional recovery) (total pages 30).

What you need to know: How brain function changes with aging; alzheimer’s and dementia; brain trauma (stroke, etc) and functional effects (Wernicke and Broca’s aphasia, prosopagnosia, hemispatial neglect, dementia pugilistica), spinal injury, apraxia, Parkinson’s disease, Huntington’s, ataxia.

Current interest: Stem cells and spinal cord injury: Can paralysis be cured?

Tues Oct 6 — Things that Affect the Brain 4 – Drugs and Alcohol
Reading: CH 4, 87 - 116 (total pages 30)

What you need to know: receptors, receptor sub-types, endogenous/exogenous, affinity, competitive and non-competitive agonist and antagonist, re-uptake inhibitors, neuromodulators (e.g., caffeine), recreational drugs and their effects.

Current interest: The neural effects of alcohol and other recreational drugs; new data on medical marijuana.

Thurs Oct 8 – Section II – Review and Discussion w/Q&A
Reading: Review section II readings; bring questions.

Tues Oct 13 – *****Test, Section II – Things that Affect the Brain*****

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SECTION III – How the Brain Works, Part I

Thurs Oct 15 – How the Brain Works Pt. Ia – Touch, Pain, and Smell
Reading: CH 8, 215 – 245 (touch & pain); CH 9, 272 (middle) – 275 (smell) (total pages 34)

What you need to know: sensory receptors, detection thresholds, sensory transduction, intensity, adaptation, somatosensory
receptors and cortical targets, receptive field, nociceptor, endorphins; olfactory cilia, mitral neurons, olfactory bulb. 
*Current interest: Life without pain receptors: CIPA*

**Tues Oct 20** – How the Brain Works Pt. 1b – Hearing (*SFN*)
Reading: CH 9, 247 – 257 (total pages 10)
*What you need to know: Outer, middle and inner ear; cochlea, organ of corti, hair cells, stereocilia, tonotopy; sound properties (frequency, intensity, AM, FM); basic mechanisms of sound transduction; ascending auditory structures, basic organization of primary and secondary auditory cortices.
*Current interest: Reorganization of auditory cortex in the congenitally deaf.*

**Thurs Oct 22** – How the Brain Works Pt. 1c – Vision
Reading: CH 10, 281 – 319 (total pages 29)
*What you need to know: Structures of the eye (retina, fovea, optic disk, lens, blind spot); photoreceptors, rods & cones, rhodopsin, basic mechanisms of light transduction, acuity, visual properties (spatial frequency, motion), ascending visual structures, basic organization of primary and secondary visual cortices.
*Current interest: Visual illusions: How we trick the brain.*

**Tues Oct 27** – How the Brain Works Pt. 1d – Motor Function (half-class) and Review w/Q&A (half class)
Reading: CH 11, 322 – 330 (muscle, pyramidal) & 336 – 338 (extra—pyramidal); CH 11, p. 334 (motor learning); rev Section III readings; bring questions.
*What you need to know (motor function): Muscle fibers, myosin, actin, smooth & striated muscle, neuromuscular junction, acetylcholine, spinal reflex, pyramidal system, extra—pyramidal system, proprioception & motor feedback.*

**Thurs Oct 29** – ***Test, Section III – How the Brain Works Pt I***

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**SECTION IV – How the Brain Works, Part II**

**Tues Nov 3** – How the Brain Works Pt. Ila –Sleep
Reading: CH 14, 413–442 (total pages 30).
*What you need to know: Circadian rhythm, diurnal/nocturnal, SCN, pineal, melatonin, entrainment, stages of sleep, brain structures/circuits in sleep.*
Current interest: Does sleep deprivation affect memory?

**Thurs Nov 5** – How the Brain Works Pt. IIb – Emotion
Reading: CH 15, 445 – 470 (total pages 26)
**What you need to know:** Limbic system, amygdala & fear, anterior cingulate, aggression & androgens, stress & cortisol, bonding & oxytocin, norepinephrine/epinephrine & excitement.
Current interest: Surfing, snowboarding, skydiving – addicted to adrenalin?

**Tues Nov 10** – How the Brain Works Pt. IIc – Learning and Memory
Reading: CH 17, 511 – 531 (middle) (total pages 20)
**What you need to know:** Anterograde/retrograde amnesia, declarative/procedural memory, Korsakoff’s, classical conditioning, operant conditioning (shaping), short vs long term memory, brain structures involved in learning and memory (e.g., medial temporal lobe), primacy & recency effects, LTP.
Current interest: 50 First Dates: Does it really happen?

**Thurs Nov 12** – How the brain Works Pt. IId – Cognitive & Language Development
Reading: (review CH 7, 179 – 194 (development)). Read cognitive milestones over the first 5 years of life, class website link.
**What you need to know:** Review stages of brain development; sensory/motor maturation and milestones; how to test babies; timescale of language development; language lateralization and development – implications for brain injury.
Current interest: How can we ask babies questions?

**Tues Nov 17** – Section IV -- **Review** Session and discussion, with Q&A.
Reading: Review all Section IV readings; bring questions.

**Thurs Nov 19** – ***Test, Section IV-- How the Brain Works Pt. II****

**Tues Nov 24** – **NO CLASS, THANKSGIVING BREAK**

**Thurs Nov 26** – **NO CLASS, THANKSGIVING BREAK**
SECTION V – Wrapping Up

_Tues Dec 1_ -- Developmental Disorders
Reading: CH 7, 204 – 206 (ADHD, autism); CH 19, 597 – 600 (dyslexia), 603 (bottom) – 604 (Williams)
What you need to know: Dyslexia, autism and autistic spectrum disorders and other PDDs, mental retardation, Williams syndrome, ADHD, fetal alcohol syndrome; clinical diagnosis versus biological criteria, “risk” genes, prematurity, DSM Guide.
Current interest: Savant -- mysterious genius.
****Extra Credit Papers Due today*****

_Thurs Dec 3_ -- Adult Psychiatric Disorders and Treatment
Reading: CH 16, 477 – 507 (total pages 32).
What you need to know: Schizophrenia, antipsychotics, depression, bipolar, anxiety, phobia, panic disorder, PTSD, OCD.
Current interest: US war veterans and PTSD.

_Tues Dec 8_ --Cumulative make-up test (optional)

_Thurs Dec 10_ – Last class; General Review and Discussion for Final, Q&A. Class game of "Brain Jeopardy" using sample test questions.
Reading: Review all readings; bring questions.

Final Exam  -- Cumulative (covers all material) ---- Tentative date/time, Friday Dec 18, 10:30a.
http://registrar.uconn.edu/preliminary-final-exam-schedule/