

TENTATIVE SYLLABUS
BBB 469, Stress Neuroscience
Fall 2015

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DATE	TOPIC
Aug. 31	Stress Definitions and Concepts
Sep. 14	Integrative Aspects of Stress Response
Sep. 21	Memory and Stress
Sep. 28	Food intake and stress
Oct. 5	Immune System Response to Stress
Oct. 12	Cardiovascular System and Stress
Oct. 19	Midterm exam #1
Oct. 26	Reproduction and Stress
Nov. 2	Effects of Maternal Stress
Nov. 9	Neurodegenerative Effects of Stress
Nov. 16	Psychiatric Disorders and Stress
Nov. 23	Pain and Stress
Nov. 30	Methods to Decrease the Effects of Stress
Dec. 7	Midterm exam #2
Dec. 14	Final Exam

Stress Neuroscience is a seminar course designed to familiarize students with current research in the field. After surveying introductory material, primary journal articles will be discussed each week. Each student will be assigned to lead the discussion of a specific research article but the journal club format requires that all students contribute to the discussion each week.

The articles to be discussed will be available on the course Canvas website approximately one week beforehand. Please visit: <https://upenn.instructure.com/> to access the course site. Course grades will be based on two midterm exams (25% each), the presentation of one journal article (15%), a final exam (25%) and class participation and attendance (10%).

Class Participation and Attendance:

Students are expected to read all journal articles before coming to class. Students should be prepared to participate in discussions following presentations.

Students are expected to attend all class meetings. All absences must be reported through the Course Absence Report System. The system allows a student to inform his or her instructor about absences of five days of class or less. Students can submit a Course Absence Report through Penn InTouch. Repeated tardiness will be counted towards an absence. Students are responsible for making up any work assigned during an absence and for understanding the material presented in their absence. If an absence is for more than a week's worth of classes, the College Office must be contacted for assistance.

Midterm Exams:

The exams will consist of essay questions that correspond to the topics and techniques discussed in class. Because of the large amount of cross-talk between the systems that will be covered, students should be able to apply and extend ideas from one system to other areas.

Journal Article Presentation:

Students should be prepared to lead in-depth discussions of the articles to which they are assigned. This includes not only understanding of the background and methods used but also the implications of the research. Students must read the article critically and be prepared to defend the methodology and conclusions or to suggest alternative explanations or directions for future work that could elucidate mechanisms of action. Student leaders may give a formal presentation, although they are not required to do so, but should develop an outline to direct the discussion.

Final Exam:

The final exam will involve analysis of a novel research article that integrates material from the entire semester. Students will be expected to demonstrate understanding of the article as it relates to other papers discussed in class as well as the ability to critique the paper.

Missed exams will only be given at a later date with an authorized university absence. If an exam is submitted for a re-grade, it must be done in writing within *one week* of receiving the graded exam. All submitted exams will be re-graded in their entirety and the resulting score may be higher or lower than the original grade. A fraction of exams are photocopied before being returned to the students. If an exam is found to have been altered before submission for re-grading, the student will be reported to the Office for Student Conduct.

Example of articles which may be discussed in class:

Auditory and non-auditory effects of noise on health.

Basner, Babisch, Davis, Brink, Clark, Janssen, Stansfeld. *Lancet*. 2014 Apr 12;383(9925):1325-32.

Glucocorticoid regulation of brain-derived neurotrophic factor: relevance to hippocampal structural and functional plasticity.

Suri D1, Vaidya VA. *Neuroscience*. 2013 Jun 3;239:196-213.

Inflammatory cytokines in depression: neurobiological mechanisms and therapeutic implications.

Felger JC1, Lotrich FE. *Neuroscience*. 2013 Aug 29;246:199-229.

Chronic variable stress activates hematopoietic stem cells.

Heidt, Sager, Courties, Dutta, Iwamoto, Zaltsman, von Zur Muhlen, Bode, Fricchione, Denninger, Lin, Vinegoni, Libby, Swirski, Weissleder, Nahrendorf. *Nat Med*. 2014 Jul;20(7):754-8.

Lifestyle factors and ghrelin: critical review and implications for weight loss maintenance.

Adams CE1, Greenway FL, Brantley PJ. *Obes Rev*. 2011 May;12(5):e211-8.

Chronobiology, endocrinology, and energy- and food-reward homeostasis.

Gonnissen HK1, Hulshof T, Westerterp-Plantenga MS. *Obes Rev*. 2013 May;14(5):405-16.

Enhancing offspring hypothalamic-pituitary-adrenal (HPA) regulation via systematic novelty exposure: the influence of maternal HPA function.

Dinces, Romeo, McEwen, Tang. *Front Behav Neurosci*. 2014 Jun 5;8:204.

Effects of milnacipran on cognitive flexibility following chronic stress in rats.

Naegeli KJ1, O'Connor JA, Banerjee P, Morilak DA. *Eur J Pharmacol*. 2013 Mar 5;703(1-3):62-6.

Activity-dependent, stress-responsive BDNF signaling and the quest for optimal brain health and resilience throughout the lifespan.

Rothman SM1, Mattson MP. *Neuroscience*. 2013 Jun 3;239:228-40.