Fall, 2014 (IL: ANSC 592; TTU: ANSC 5318; ANSC 5001, section 010)

Topics in Stress, Behavior and Welfare: Brain Mechanisms of Stress

Syllabus

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Course Objective
The objective of this course is to allow students to become familiar with the state of science in areas of stress, with an emphasis on brain mechanisms/pathways and the consequences in terms of animal health, food safety, meat, memory, reproduction, and overall welfare.

Learning Outcomes
Students are expected to immerse themselves in the topics of stress and the brain. Students are expected to understand:

- General principles of stress and how they impact animal biology, including
  - Models of stress
  - Immunology
  - Learning and memory
  - Developmental and trauma effects on stress systems
- Brain and peripheral regions and organs that are involved in stress responses
- Neuroendocrine and endocrine responses during stress

Assessment of Learning Outcomes
Students will have their understanding of material presented in class assessed by the following means:

- Interactive questions during 10 teleconference classes
- Written answers to written questions provided by the instructors
- A summary of papers reviewed in the form of half-page abstracts
- A written (Powerpoint) and oral presentation in the area of their interest related to the topics
- A final written exam
Course Format
Students will read and summarize papers in a simple literature review format. Literature review will contain 2 sections: (1) is background information discussed in the course and (2) student’s topic of interest. Students will be required to prepare an abstract of each paper (half-page, single spaced with complete citation) and students will prepare a short (15-20 min) seminar relating to their specific topic of interest. Faculty will discuss mechanisms and students will discuss effects of stress on a system. Student’s seminar topic should relate to two aspects—cause and effects. For example, the cause may be a brain or an endocrine mechanism (ex., Amygdala, CRF, catecholamines, glucocorticoids) and the effects may be a system of interest of interest, including, but not limited to PTSD, addiction, learning and memory, immunity, reproduction, behavioral problems, fear, meat quality, food safety, etc. Students will participate in a weekly on-line discussion and will submit written assignments and they will also present a lecture/seminar on their topic area. Course meeting time will be by arrangement.

At TTU:

Aug 25th, 2014 First class
Dec 3rd Last day of classes
Dec 5-10 Final exams

At UIL:

Aug 25th
Dec 10th
Dec 12-17

Grading
Grades will follow the standard break points:

90.0% A
80.0-89.9% B
70.0-79.9% C
60.0-69.9% D
Below 60.0% F

Source of points

Written answers to questions and on-line/phone participation 200
Student written and oral presentation 200
Final exam 100
Total 500
Course Topics

- General models of welfare, stress, homoestasis, and allostasis
  - A review of animal welfare issues (Backus et al., 2014 review)
  - A review of allostasis by McEwen (2011)
- Brain and endocrine anatomy and physiology review
  - Hypothalamus
  - Hippocampus
  - Amygdala
  - Adrenal gland
  - CRF/CRH and glucocorticoid systems
  - Central and peripheral catecholamines
- Application of stress models to animal and human health problems (example papers)
  - A review of epigenetics in stress and development (Roth and Sweatt, 2011)
  - A review of developmental stress (Frodl and O’Keane, 2012)
  - A review of stress and its role in addiction (Koob, 2008)
  - A review of stress effects on learning and memory (Schwabe et al. 2011)
  - A review of stress and immunity in farm animals (Salak-Johnson and McGlone, 2006)
- Student interests (to be relevant and approved by instructor), examples may include:
  - Meat quality
  - Animal health
  - Stress effects on behavior
  - Stress in the mother and neonate
  - Pain
  - Reproduction
  - Addiction
  - Learning and memory
  - Others

Class technical information
The weekly teleconference will be from 2-3:30 Tuesdays. The instructor will send call-in information before class meeting times. We will use the Lync system. This allows both telephone and webcam meeting. Computer screens can be shared as well.

Students must select their topics by September 9, 2014 for instructor approval.
Class meeting times (can be adjusted depending on schedules) and general dates. Student abstracts (1/2 page each) are due before class

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<th>Topic</th>
<th>Lead Instructor</th>
<th>Reference materials</th>
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<td>Introduction and system test</td>
<td>John McGlone and Janeen Salak-Johnson</td>
<td>Syllabus</td>
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<td>Sept 9</td>
<td>Overview of Animal welfare issues and Allostasis</td>
<td>John McGlone</td>
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<td>Sept 16</td>
<td>Hypothalamus, amygdala, hippocampus anatomy</td>
<td>John McGlone and Janeen Salak-Johnson</td>
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<td>Sept 23</td>
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<td>Sept 30</td>
<td>Developmental and epigenetic effects</td>
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<td>Oct 7</td>
<td>Addiction, learning and memory, PTSD</td>
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<td>Oct 14</td>
<td>Stress and immunity</td>
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<td>Oct 21</td>
<td>Review and summary</td>
<td>All</td>
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<td>Oct 28</td>
<td>Student papers/reports</td>
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<td>Dec 2</td>
<td>Final exam sent to students by email</td>
<td>Due by 8 pm Central time by e-mail</td>
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Papers for Student Reviews


TTU University Policies:

ADA Statement

Any student who because of a disability may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary accommodations. Students should present appropriate verification from Student Disability Services during the instructor’s office hours or by appointment with the instructor. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact Student Disability Services office at 335 West Hall or (806) 742-2405.

Withdrawal from a Course

The last day to drop a course without academic penalty is September 10th. Students will receive an automatic “W” regardless of the current grade in the class. There is no longer a grade of “WF.” Last day to drop a course with academic penalty is September 26th. Last day to withdraw from the University is November 26th.

Scholastic Dishonesty

It is the aim of the Texas Tech University faculty to foster a spirit of complete honesty and high standards of integrity. The attempt by students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension. Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misinterpreting the facts, taking cell phones pictures of an exam/quiz, and any act designed to give unfair academic advantage to the student or the attempt to commit such an act. Further information can be found in the Student Handbook.

Absence for Observance of a Religious Holiday

A student who intends to observe a religious holy day should make that intention known to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holiday shall be allowed to take an examination or complete an assignment scheduled for the day within a reasonable time after the absence. A student may not be penalized for the absence, but the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.