Psychology 220: Introduction to Behavioral Neuroscience (5 credits)
Fall 2016

This syllabus is subject to change. Changes, if any, will be announced in class. Students will be held responsible for all changes.

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If necessary, appointments can be arranged via e-mail/Canvas

Instruction and Classroom Support Technician: Dr. Blair Duncan
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Teaching Assistants: Alex Loftus & Alex Mueser
***Direct questions re: Coloring Book to the TAs**

Class: TR 10:00-11:50AM
BI 234

Prerequisite: Psychology 101

Required Texts: 1) Introduction to Brain and Behavior, 5th Ed., Bryan Kolb, Ian Whishaw & G.Campbell Teskey
2) Colorful Introduction to the Anatomy of the Human Brain Coloring Book, John Pinel

Course Purpose and Description Statement:
Why does a person's heart race when they're home alone and hear a noise? How is it that the smell of fresh-baked cookies can remind someone of afternoons spent with a grandmother? And how do features such as shape, color and movement combine to form the singular perception of a field of tulips? These questions and many more can be answered by understanding the operations of the brain. In this course, we will discuss how the brain is organized by role, how electricity, chemicals and genes allow brain cells (a.k.a., neurons) to function and how neuron activity is at the root of our ongoing behavior, sensory experience and human identity. In other words, **the central goal of this course is to de-mystify the brain**, and in so doing, offer some insight into humans as biological organisms. Throughout this course you will be introduced to the ideas and seminal work of some of the most noted neuroscientists and by the end, in relation to psychological processes, the following three premises should be apparent:

- Changes in behavior require changes to neurons
- Your brain is a historical record of all your experiences, whether remembered or not
- Your brain will be different at the end of this course compared to at the beginning

Course Learning Objectives:

- Recognize and identify parts of the brain
- Label neuron segments, structures and organelles
- Describe how electricity, chemicals and ongoing gene expression are required for neurons to function
- Illustrate pathways of neuron activation that produce behavior
- Explain how stimuli such as color, sound, smell, are combined to be perceived as a single event
- Outline brain development and the time course of neuron survival over a lifetime
- Indicate how neurons and subcellular mechanisms are involved addiction as well as in forming memories

The above listed Course Learning Objectives address all of the **BNS Content Competencies** by facilitating student knowledge toward understanding:

1) Fundamental principles in molecular, cellular, and systems neuroscience and the neural basis of normal and abnormal behavior.
2) Foundational principles in the natural sciences, especially as they relate to understanding neuroscience.
3) The process and limitations of basic and applied biomedical research, especially as they relate to neuroscience.
4) Laboratory/diagnostic techniques and equipment common to the natural sciences, especially neuroscience.

The above listed Course Learning Objectives begin to address several of the **BNS Process Competencies** by providing opportunities to:

1) Think integratively and creatively about issues related to the natural sciences, especially neuroscience.
2) Think critically, in a scientific and quantitative manner, about issues related to the natural sciences, especially neuroscience.
3) Integrate principles from across the natural sciences, especially in the context of understanding neuroscience.
4) Communicate precisely and effectively, in written and spoken word, in general and in matters related to neuroscience.
5) Recognize the applicability of an education in neuroscience to real world settings and their lives post-graduation.

"Unofficial" Course Goals:

- Everyone possesses sufficient knowledge of Neuroscience to succeed in upper-level Neuroscience courses
- Everyone considers what is happening in their brain that results in their behavior and ultimately their human experience
- Knowing the internal processes of the brain will empower everyone to act to both protect, enhance and advocate for the well-being of their brains

Aim and Scope: This course will provide you with a basic understanding of the function of the human nervous system and how this function relates to different types of behaviors. The first series of lectures focus on basic neuroanatomy, genetics, neurophysiology, and neurochemistry. These lectures serve as the building blocks for the rest of the course and content-wise these sections are the most difficult of the quarter. Subsequent lectures examine how brains develop, and provide an overview of techniques for investigating brain processes. As well, it will be introduced how information is transduced to the brain via the senses using vision as an example and describe how information flows out from the brain to result in behavior. The course will conclude with an examination of brain plasticity including discussions of how experience physically changes the brain and how some recovery can occur following injury.

Extra Learning Requirements: "Reasonable accommodation for persons with documented disabilities should be established within the first week of class and arranged through Disability Resources for Students: telephone 650-3083; email drs@wwu.edu; and on the web at http://www.wwu.edu/depts/drs/

Lectures: Remember that you are an independent learner so if something seems unclear or you have a comment relevant to the topic, please raise your hand and wait to be acknowledged – I will make an effort to get to your question in a timely manner. Mutual respect for everyone is key to ensuring a safe environment that promotes learning for all students. The most relevant and efficient learning generally occurs in an interactive environment and even though the class is relatively large, questions and stories from students greatly enrich this class. **Ask questions!!!**

Homework, Reading Assignments and Online Lectures
Prior to each class, a list of video links, online lectures and assignments relevant to the coming lecture should be viewed/completed. These lists can be seen on the **Tentative Schedules** posted to Canvas. Completing the assignments prior to lecture will allow us more time in class to discuss the impressive and fascinating discoveries in Neuroscience.

Discussion Board: This is an opportunity to post questions, comments or interesting facts that contribute to the greater body of knowledge and understanding for the course. Students are welcome to answer other student questions with periodic input from Dr. Rose & the student TA.

In-class Group Assignments: Groups will be assigned using CATME to help facilitate cohesive groupings. Each assignment is worth a small portion of your final grade, but they all add up! At the end of the course, group members will evaluate and provide feedback on the quality of participation of the other group members (worth 2.5% of final grade); submitted peer evaluations will also be graded (worth another 2.5%). Attendance is required to receive a grade for an in-class assignment and accounts for a large portion of the assignment grade.

Exams: There are three **non-cumulative <u>open-book</u>** exams comprised of multiple-choice questions, term identification, labeling, and short-answer questions. **Only a hardcopy of the textbook is allowed during exams**. **<u>Use of electronic devices is strictly prohibited during exams and will result in an 'F' grade for the course if this restriction is violated</u>.** Following the first two exams, students will submit a self-evaluation of exam performance (questionnaire on Canvas). Exam questionnaires must be completed to gain access to the next online quiz.

On exam day, please wait outside the classroom until an instructor says to enter; this allows for distributing exams prior to the arrival of students. Upon entry, please place your backpack either at the front of the classroom or alongside your row; this reduces the disruption of other students if you finish and exit early. All cell phones must be turned off.

Online Laboratory Modules: For some sections of the course, an online laboratory must be completed in addition to the assigned chapters from the required textbook and the assigned exercises from the Human Brain Coloring Book. Access to online modules occurs through the course Canvas site and each section will become available sequentially upon completion of earlier modules (details below).

CANVAS: The syllabus, announcements, and other related course information are available via the Canvas course site.

Virtual Labs: One of the best ways to learn about Neuroscience is to 'experience' the concepts covered in the course. To this end, a series of laboratory exercises have been posted to Canvas. The labs are posted in a sequence that corresponds to the course material. You cannot access the next lab module until you have completed the previous module. There are no start date restrictions for virtual labs so you can work ahead.

Quizzes: Each online lab will culminate in a final quiz. Quizzes must be completed before the next quiz will be made available and will be graded as late (-1 point) for each day after the deadline. **Only the top 5 quiz scores will count towards your final grade (not including the Week 1 quiz and questionnaire and the Intro to Behavioral Neuroscience quiz – those two quizzes are mandatory for everyone).**

Coloring Book Assignment Submission: Students must upload the assigned Coloring Book pages (yes, this means coloring in the coloring book) to Canvas (take a picture using a camera phone or scan). The required pages are listed in the course schedule and submission links are available in the Canvas modules. Late submission will be marked -1 point for each day late. **Be sure to write your name and W# on each page before you scan/capture for upload or you will not receive credit for the assignment**.

TWITTER: I have established a twitter account for my Neuroscience classes for posting Neuroscience-relevant links to stories/news items (@WWUNeuroRose). Students can mention any neuro- or course-related ideas or comments as well as neuro-related articles or news items they have found on their own. If a particularly intriguing neuroscience article is tweeted, and @WWUNeuroRose is mentioned, we may end up discussing the item in class. This is not the venue for posting complaints; this twitter feed will be moderated and any inappropriate comments will be noted.

Research Credit: Each student is expected to complete 1 hour of research credit. This requirement must be fulfilled by Monday, November 28th (first day of dead week). Links to the Research Participation sign-up can be found at the Psychology Department home page (https://chss.wwu.edu/psychology/sign-participate-research)

***Grading*:** Course grades are determined using the following system:

93.0-100 A	87.0-89.9 B+	77.0-79.9 C+	67.0-69.9 D+	0-59.9 F
90.0-92.9 A-	83.0-86.9 B	73.0-76.9 C	63.0-66.9 D	
	80.0-82.9 B-	70.0-72.9 C-	60.0-62.9 D-	

Grade Break-down:

Exam #1	25%	Tuesday, **October 25th**
Exam #2	25%	Tuesday, **November 15th**
Exam #3	25%,	Tuesday, **December 6th, 8 – 10AM**
In-class Group Assignments	5%	
Peer Review of Group Members	5%	
Canvas Labs and Quizzes	10%	
Coloring Book	5%	
Total	100%	

Make-up Exams: The exam dates in this syllabus are firm. If you have a conflict with one or more of the exam dates due to personal commitments, you should consider dropping the class. A make-up exam may be offered but **only** for UNIVERSITY APPROVED EXCUSES:
(1) Medical emergency (verified by a medical professional)
(2) Family emergency (verified by the Dean of Students Office)
Make-up exams will only be scheduled once I have received a medical note provided by your doctor or healthcare professional, or I have received notice from the Dean of Students Office. Other reasons for a missed exam – family holiday, friend/relative wedding, etc. – are NOT approved excuses.

Western encourages students to seek assistance and support at the onset of an illness, difficulty, or crisis:
• In the case of a medical concern or question, please contact the Health Center: 650-3400 or visit **http://www.wwu.edu/chw/student_health/.**
• In the case of an emotional or psychological concern or question, please contact the Counseling Center: 650-3400 or visit **http://www.wwu.edu/chw/.**
• In the case of a health and safety concern, please contact the University Police: 650-3555 or visit **http://www.wwu.edu/ps/police/index.shtml.**
• In the case of a family or personal crisis or emergency, please contact the Dean of Students: 650-3450 or visit **http://wp.wwu.edu/students/.**

Class conduct:
Attend Class: The material for the course is based on the text, but a substantial amount is derived from outside sources. Exams are based upon what and how we cover material in the lecture in addition to the assigned textbook chapters, coloring book exercises and the online Canvas material. To do well on the exams, you must come to class. If you miss a class, it is your responsibility to get notes from other students. Slides containing graphic illustrations and links to some web videos will be posted to Canvas; however, text slides and lecture notes will not be posted. **** Lectures will not cover all important material from the textbook chapters; you are still responsible for all material from listed textbook sections for exams**.**

Come to Class ON TIME: Arriving late is disruptive to the entire class. If you know you will be **leaving early** for an appointment, please sit near an exit door and exit quietly.
Cell Phones Off during class time: Self-explanatory.

Academic misconduct: During examinations, use of **any** electronic devices is strictly prohibited. In addition, students are prohibited from sharing information with classmates during exams. Instances of academic misconduct will be handled in accordance with guidelines set out by Western Washington University policy.