

BIO 540. Functional Neuroscience for Occupational Therapists. 3 Credits
Fall 2016. Second Block. Lecture Component.
James Madison University

Instructor: Dr. Mark Gabriele
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Office Hours: W 10:00-12:00
F 11:15-12:15

Section (0201): Lecture: T 9:30-12:00 H&BS 2063
Th 9:30-12:00 H&BS 2063

Required Course Material: *The Brain That Changes Itself*; Doidge, (1st Edition)

Recommended Text: *Neuroscience: Exploring the Brain*; Bear et. al., (4th Edition)

NATURE OF COURSE CONTENT: This course will examine functional performance of all aspects of the human nervous system. Specific nervous system conditions will be introduced and their impact on occupational performance, performance components and environmental contexts discussed.

Prerequisite: Admittance to the Occupational Therapy program and satisfactory completion of previous concentration course work.

GRADING POLICY: The lecture component of this course will account for 50% of your overall grade. The other 50% will involve laboratory and tutorial performance. There are two lecture exams scheduled for this course. All exams are considered to be comprehensive in nature in that we will apply principles throughout the semester. Weekly quizzes will account for 10% of your grade to ensure that you are keeping up with the material. Group presentations will account for 5% of your grade. Final letter grades will be assigned according to the defined OT grading scale (93-100% = A, 90-92% = A-, 86-89% = B+, 80-85% = B, 70-79% = C, <70% = F).

Lecture Exam 1	15%
Lecture Exam 2	20%
Quizzes	7%
Primary Literature	5%
<u>Professionalism, Attitude toward learning</u>	<u>3%</u>

50% of Final Grade

*Graduate Specific Course Components:

1. Graduate lecture exams entail additional graduate essays focused on the mechanisms of neuroplasticity and how it relates to the OT profession.
2. Graduate students will be required to lead formal class discussions of selected chapters of *The Brain that Changes Itself*.
3. Graduate students will lead formal classroom discussions on primary literature reviews of autism spectrum disorders, fetal alcohol syndrome, cerebral palsy, sensory processing disorders, and associated pathologies of the basal ganglia.

HONOR SYSTEM: All students are expected to be familiar with and to abide by the University Honor Code at JMU. A complete description of the University Honor System can be found in the JMU Student Handbook or here: <http://www.jmu.edu/honor/code.shtml>

INTELLECTUAL PROPERTY: All exams, handouts, and materials for this course, including those posted on Blackboard and faculty and course websites, are intellectual property. Therefore, dissemination of any of these items, in whole or in part, through any extracurricular agency including other websites is a violation of the honor code and will be punished as such.

ATTENDANCE: Attendance is absolutely critical to the successful completion of this course. You are expected to attend ALL lecture, laboratory, and small group sessions. Officially excused absences from laboratory must be approved **prior** to the absence. Make-ups for **lecture and laboratory exams** will be given for **officially excused absences ONLY** (official school business, illness with M.D. excuse, death in the family). If you are unable to attend a lecture exam, you must contact me directly **prior** to the scheduled exam time.

ADDING/DROPPING CLASSES:

Policies for adding and dropping courses can be found here: <http://www.jmu.edu/syllabus>

Requests to withdrawal after the university stated deadlines are strictly at the discretion of the instructor. **In extraordinary circumstances only**, the instructor may choose to use the WP/WF option for students unable to complete the course. WP will be assigned for a course average $\geq 70\%$; WF will be assigned for averages $< 70\%$.

ACADEMIC HONESTY:

Policies for academic honesty and plagiarism can be found here: <http://www.jmu.edu/syllabus>

OFFICE OF DISABILITY SERVICES:

Policies for disability accommodations can be found here: <http://www.jmu.edu/syllabus>

It is the student's responsibility to provide documentation from the Office of Disability Services to the lecture instructor to ensure that appropriate arrangements are made.

INCLEMENT WEATHER POLICIES

Policies for inclement weather can be found here: <http://www.jmu.edu/syllabus>

RELIGIOUS OBSERVATION ACCOMMODATIONS

Policies for religious observation accommodations can be found here: <http://www.jmu.edu/syllabus>

GOALS OF THE COURSE:

Goal 1: To demonstrate knowledge and understanding of the structure and function of the central and peripheral nervous system and their impact on human development, behavior, and occupational performance.

Goal 2: To learn the basic vocabulary and normal structure of the central and peripheral nervous systems and appreciate changes that occur in neurological disease states.

Goal 3: To understand the neuron, the action potential, and synaptic communication.

Goal 4: To understand the hierarchy of the central nervous system and its levels of organization.

Goal 5: To demonstrate an understanding of sensory systems, sensorimotor integration, and basic motor system function.

Goal 6: To apply problem-solving skills to clinical situations based on course content (tutorials).

Goal 7: To gain an appreciation for the impact that neurological deficits have on occupational performance, to be able to recognize common signs in neurology, and to use this knowledge in screening and assessing patients.

BIO 540: Tentative Lecture Schedule

Second Block, Starts Oct. 18th

WEEK 8:	<i>Doidge:</i> Oct 18 th Oct 20 th	Chapter 5: Midnight Resurrections Gross Anatomy, Development of the Nervous System, and Introduction to the Neuron (<i>Bear</i> : Chapters 1 & 7) The Neuron, Neurotransmission, and Noneuronal Cells (<i>Bear</i> : Chapters 2-4)
WEEK 9:	<i>Doidge:</i> Oct 25 th Oct 27 th	Chapter 2: Building Herself a Better Brain Continue Neuron & NT (<i>Bear</i> : Chapters 5 & 6; Begin Chapter 12) Finish Neuron & NT
WEEK 10:	<i>Doidge:</i> Nov 1 st Nov 3 rd	Chapter 7: Pain Intro Sensory Systems; Begin the Somatosensory System (<i>Bear</i> : Chapters 5 & 6; Begin Chapter 12) Finish Somatosensation, Chemosenses (Gustatory & Olfactory Systems; <i>Bear</i> : Chapter 12)
WEEK 11:	<i>Doidge:</i> Nov 8 th <i>Doidge:</i> Nov 10 th	Chapter 3: Redesigning the Brain The Visual System (<i>Bear</i> : Chapters 8-10) Chapter 1: A Woman Perpetually Falling The Auditory and Vestibular Systems (<i>Bear</i> : Chapter 11)
WEEK 12:	Nov 15 th Nov 17 th	LECTURE EXAM 1 Review Exam, Intro Motor Systems, Motor 1: Lower Centers (<i>Bear</i> : Chapter 13)
WEEK 13:	Nov 22 nd Nov 24 th	Thanksgiving Break – No Class Thanksgiving Break – No Class
WEEK 14:	<i>Doidge:</i> Nov 29 th Dec 1 st	Chapter 8: Imagination Motor 2 and Sensorimotor Integration (<i>Bear</i> : Chapter 14); Basal Ganglia Handouts IN CLASS DISCUSSIONS 1) Basal Ganglia and Parkinson's (<i>handouts</i>) 2) Ethics in Neuroscience Research (<i>small group led discussions</i>)
WEEK 15:	<i>Doidge:</i> Dec 6 th <i>Doidge:</i> Dec 8 th	Chapter 6: Brain Lock Unlocked Emotional Disorders, Learning, Memory, and Sleep (<i>Bear</i> : Chapters 18, 24, 25) Chapter 9: Turning our Ghosts Into Ancestors Autonomic Nervous System (<i>Bear</i> : Chapter 15)
WEEK 16:	TBD	FINAL LECTURE EXAM