

BIO 540. Functional Neuroscience for Occupational Therapists. 3 Credits
Fall 2023. Second Block
James Madison University

Lecture: T&Th 9:35-12:05 HBS 1090
 Lab: Th 1:00-4:30 HBS 2037

Instructor Information:

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Savanah Howe, MOT, OTR/L (Lab)

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Rachelle Dorne, M.Ed., Ed.D., OTR/L, CAPS (Lab)

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Office Hours: Mondays 1:00 to 4:30 p.m. Please email me for an appointment for other times/days.

GOALS OF THE COURSE:

The codes below correspond to the 2020 ACOTE Accreditation Standards for Master's Programs.

Objective (s) At the conclusion of the course, students will be able to:	ACOTE standards	Course Assessment Measure 1=Assignment 2=Lab test 3=Objective test 4=Essay test 5=Project 6=Presentation 7=Demonstration 8=Other (specify)
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.	B.1.1.	3 (lecture exams) 8 (class discussion)
Goal 2: To explain the basic vocabulary and normal structure of the central and peripheral nervous systems and appreciate changes that occur in neurological disease states.	B.1.1., B.3.5	3 (lecture exams) (class discussion)
Goal 3: To summarize the neuron, the action potential, and synaptic communication.	B.1.1.	3 (lecture exams) (class discussion)

Goal 4: To explain the hierarchy of the central nervous system and its levels of organization	B.1.1.	3 (lecture exams) (class discussion)
Goal 5: To identify the structure and functions of the sensory system, motor system, and sensorimotor integration.	B.1.1.	1 (weekly assignments, preparatory assignments) 3 (weekly quizzes)
Goal 6: Use clinical reasoning to select and perform standardized and nonstandardized assessments of client factors associated with neurological conditions, such as sensation, balance, muscle tone, cognition, cranial nerve function, including swallowing , and pain.	B.1.1, B. 3.5, B.4.2, B.4.5, B.4.16	1 (weekly assignments) 2 (practical) 3
Goal 7: Identify common qualitative neurological signs and symptoms presented during screening, and evaluation processes for clients.	B.4.4	8 (lab worksheet with ICE video)
Goal 8: Analyze the influence of neurological conditions on client factors, performance skills, and performance patterns related to clients' occupational engagement and participation in a variety of contexts.	B.1.1 B.3.2, B.3.5.	3 (weekly quizzes) 1 (preparatory assignments) 1
Goal 9: Explain the foundational knowledge, underlying principles, indications, contraindications, and precautions for use of physical agent modalities related to pain management.	B. 4.17	3,4
Goal 10: Explain the role of occupation in the promotion of health and the prevention of disease and disability for individuals with neurological impairments.	B.3.4.	3

COURSE DESCRIPTION: 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. Credit may not be applied to the biology major or minor. *Prerequisite: Admittance to the Occupational Therapy program and satisfactory completion of previous coursework in the curriculum.*

METHODS OF EVALUATION

GRADING POLICY: Review Graduate School Policies on grading in the OT Program Student Handbook. 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: The lecture component of this course will account for 50% of your overall grade, as will laboratory. There are two lecture exams scheduled for this course and one clinical lab exam. All exams are considered to be comprehensive in nature in that we will apply principles throughout the semester.

Lecture Exam 1	20%
Lecture Exam 2	20%
Readings, Class Participation	5%
Professionalism, Attitude toward learning	5%
	50% of Final Grade

Lab portion of the course, worth 50% of the final grade in the course.

Name of Evaluation Method	Points/Weight	Type of Evaluation Method	Due Dates
Lab class activities <ul style="list-style-type: none"> • Pain • Cranial nerve (& swallowing) • Motor control • Cognition 	6 points/6%	Rubric	Nov 5 Nov 12 Nov 26 Dec 3
Preparatory activities (related to recorded presentations)	6	Rubric	TBA
Neuroplasticity assignment	6	Rubric	10/26
Lab weekly quizzes	20 points/20%	In Canvas	10/26 11/2 11/16 11/30 12/7
Lab clinical final	12 points/12%	Rubric available on canvas	TBA
Total	50 points/50% of final grade		

Descriptions of evaluation methods

Preparatory activities:

These activities will provide feedback to you and the instructors about your learning of the assignment reading material prior to class. They will be incorporated in addition when there is a recorded lecture.

In class activities:

Weekly class activities provide an application of the content in lecture and lab and are completed in your groups. These activities are started during the labs, completed outside of class, as needed, and due as listed in Canvas. The estimated amount of time to complete these assignments outside of class is up to 1 hour. Further details will be provided with each assignment. See due dates in the chart above.

- Cranial nerve assignment
- Pain assignment
- Tone assignment
- Cognition Assignment

Neuroplasticity Assignment:

This assignment relates to the Kleim & Jones (2008) article on principles of experience-dependent neural plasticity. Further information will be provided in class and in Canvas.

Weekly Lab quizzes:

Course objectives for each week will be posted on Canvas to direct your study in preparation for a weekly quiz. These quizzes will be taken on Canvas using Respondus Lockdown Browser at the beginning of class. The 5 weekly 10-question quizzes from the **prior week's course content**, with the exception that quiz 3 will focus on the objectives from weeks 3 & 4 and will be 15 questions in length. The questions will be primarily multiple choice with a few short answers.

Lab Clinical Final

The lab clinical final will be in two parts:

1. You will have an assignment with a partner to demonstrate a neurological screen. Each partner will be assigned a different screen. The "client" will display a neurological impairment specific to the screen. The plan is to do this FTF and more details will follow. You will be expected to
 - a. Verbally identify ONE observable impairment using clinical terminology, i.e., the term associated with that impairment.
 - b. Identify and explain ONE specific effect on occupational performance resulting from the impairment, e.g., not just that they would have trouble dressing, but WHY & HOW they would have trouble dressing.

Lab Methods and Statement of Purpose:

The "lab" is not just a lab. The lab provides an opportunity for OT students to learn how OTs apply neuroscience information from Dr. G.'s lectures to OT practice. There will be additional lecture content on OT theoretical foundations, e.g., frames of reference, assessments and intervention approaches. The lab uses a variety of learning activities during class sessions, mixing lectures, discussions, skills-oriented experiential learning, web-based observation, worksheets, and self-reflections to provide opportunities for students to gain knowledge, problem-solve, & apply professional skills. In addition, the OTPF, 4th Edition will be used to clinically frame client factors, performance skills, environments, contexts and occupational performance to help students learn how to express their understanding of important concepts in professional language, orally, graphically, and in written formats.

TEXTS AND OTHER RESOURCES

Required Texts:

Lundy-Ekman, Laurie. (2018). *Neuroscience: Fundamentals for Rehabilitation* (5th ed.) 978-0323478410; St. Louis, Mo. Saunders/Elsevier (lecture & lab)

Doidge, N. (2007). *The Brain that Changes Itself: Stories of Personal Triumph from the Frontiers of Brain Science*. 978-0143113102; New York, NY: Penguin Books; Note: Any Edition is Fine

Pendleton, H.M. & Schultz-Krohn, W. (2017). *Pedretti's occupational therapy: Practice skills for physical dysfunction* (8th ed.). Atlanta, GA: Elsevier. (Note new edition will be published 3/2024) OR

Dirette, D.P. & Gutman, S.A. (Eds.) (2020). *Occupational therapy for physical dysfunction* (8th ed). Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins. ISBN 9781975110550 (available as e-book or in print) (preferred)

Schell, B.A.B. & Gillen, G. (2019). (Eds.). *Willard & Spackman's occupational therapy* (13th ed.). Philadelphia, PA: Wolters Kluwer. (from summer courses)

Required Articles and Resources:

AOTA membership is required.

American Occupational Therapy Association. (2007). Specialized knowledge and skills in feeding, eating, and swallowing for occupational therapy practice. *American Journal of Occupational Therapy*, 61, 686–700.

American Occupational Therapy Association. (in press). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74 (Supplement 2). Advance online publication.

Shotwell, M. (2019). Evaluating clients. In B.A.B. Schell & G. Gillen (Eds.). *Willard & Spackman's occupational therapy* (13th ed., p.p. 369-389). Philadelphia, PA: Wolters Kluwer.

Schell, B.A.B. (2019). Professional reasoning in practice. In B.A.B. Schell & G. Gillen (Eds.). *Willard & Spackman's occupational therapy* (13th ed., p.p. 482-489). Philadelphia, PA: Wolters Kluwer.

Kleim, J. A., & Jones, T. A. (2008). Principles of experience-dependent neural plasticity: implications for rehabilitation after brain damage. *Journal of speech, language, and hearing research*, 51, S225-S239. doi:10.1044/1092-4388(2008/018)

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ATTENDANCE

Due to the experiential nature of learning within the MOT Program, class attendance is mandatory as scheduled. In some cases, group work or in-class activities cannot be duplicated outside of class (referred to as a mandatory course component in Academic Affairs Policy #16). The MOT Program adheres to the Academic Affairs Policy #16 related to absences from required class, extracurricular and co-curricular activities. Whether present or absent, students are responsible for reading and learning all required content, demonstrating all skills, and completing all assignments on time. Promptness, regular and consistent class attendance, and participation are professional behavior expectations. Students who anticipate missing class should contact the professor, prior to an absence, including events when the student is representing the University in an official capacity or attending a university-sponsored event. Missing class due to absence and/or tardiness may result in a reduction of 1 point of the participation grade for each absence, at the discretion of the instructor.

Should an emergency or urgent medical need arise, please notify the course instructor by phone or email as soon as possible if you will be late or unable to attend class. Please see the Graduate Catalog for other policies related to attendance.

If you are ill, please do not attend class in person. You will be provided with the opportunity to participate in class virtually. You are expected to attend all classes as stipulated above. Attendance is critical for you to perform well. However, due to COVID, performance will not be evaluated based on a record of attendance, so no grade penalty will be assessed directly for absences. You are expected to report the reason for your absence

(e.g. health-related, family emergency, or any other reason) by email prior to the absence. If that is not possible, you must make contact within 72 hours of the absence. Your proactive communication is required! As a condition of the Honor Code, you are required to be honest about any absence or face an Honor Code violation. Therefore, no documentation is required to prove your reason for absence. Should an emergency arise please notify the course instructor by phone or email prior to the class meeting if you will be late or are unable to attend class.

Inherent Risks for Healthcare Students

The academic preparation of a healthcare practitioner has potential risks including, but not limited to, physical injury or illness, emotional stress, and/or psychological impacts. Communications from University administration, student handbook policies and procedures, syllabus policies, and specific instructions provided by the faculty are intended to mitigate these risks. Additionally, training in lecture, laboratory and fieldwork will provide you with knowledge of specific preventative measures and best practices to minimize these risks, based on available information. Your responsibility is to comply with these policies and inform faculty of any concerns that may need to be addressed.

We adhere to the JMU policies regarding the coronavirus. Students are not allowed to attend class *in person* or fieldwork if they are ill or symptomatic with any communicable disease (such as flu, conjunctivitis, [COVID](#), or strep), have a fever, or [test positive](#) for COVID. [Here](#) are the updated policies from the UHC regarding COVID exposure as a close contact. For additional policies in response to COVID-19 and other illnesses, please see the following [webpage](#).

RELIGIOUS AND CULTURAL ACCOMMODATIONS

Students should notify the faculty by no later than the end of the Drop-Add period the first week of the semester of potential scheduled absences and determine with the instructor if mutually acceptable alternative methods exist for completing the missed classroom time, lab or activity. Students who experience chronic medical/health conditions that are likely to affect their regular participation in class should email the instructor so that we can meet with a representative from Disability Services to discuss an attendance contingency plan.

DIVERSITY AND INCLUSIVITY

We strive to create a classroom environment that supports diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.) To accomplish this, please let us know if you have a name and/or set of pronouns that differ from those that appear on your official records. If you feel like your performance in the class is being impacted by your experiences outside of class, please come and speak with one of your instructors. We want to be a resource for you. If you prefer to speak with someone outside of the course, JMU has several Diversity Programs as well as Thrive, a program for graduate students. As part of our commitment to being inclusive and providing an inclusive environment in the classroom, we welcome and ask that you bring any instances of non-inclusivity to our attention either in person, electronically, or through appropriate anonymous feedback mechanisms.

INCLEMENT WEATHER AND OTHER EMERGENCIES

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

ACADEMIC HONESTY AND HONOR CODE

Making references to the work of others strengthens students' work by granting them greater authority and by showing that they are part of a discussion located within an intellectual community. When students make

references to the ideas of others, it is essential to provide proper attribution and citation. Failing to do so is considered academically dishonest, as is copying or paraphrasing someone else's work. The results of such behavior will lead to consequences ranging from failure on an assignment to failure in the course to dismissal from the university. Students should ask if they are in doubt about the use of a citation. Honest mistakes can always be corrected or prevented.

Academic dishonesty is not limited to plagiarism. Other examples of academic dishonesty include cheating on tests or homework, taking an exam or writing a paper for someone else, and selling or uploading unauthorized documents from a class. Students should talk with their instructor if they have questions regarding academic honesty.

The JMU community uses a plagiarism and AI detection system called Turnitin. Turnitin is integrated into Canvas and is available for use by all JMU faculty and students. Use this link for more information about Turnitin, refer to <http://www.jmu.edu/academicintegrity>. Students are advised to review their original work in Turnitin to be sure that it complies with academic integrity standards before submitting their assignment to the instructor.

The JMU Honor Code is available from the Honor Council Web site: <http://www.jmu.edu/honor/code.shtml>.

TESTING POLICY

Online testing may be conducted by the faculty, using Lockdown Browser for testing integrity and security. For information about downloading Lockdown Browser, please visit this [webpage](#). Students may be asked to scan their rooms and provide continuous monitoring via the **Zoom** camera or Respondus Lockdown Monitor may be used. Those details will be provided by the course instructor, where applicable.

- The JMU [Honor Code](#) will be enforced in all testing situations.
- Exams are announced prior to the scheduled date and each student is required to take exams at the scheduled time. If a student misses an exam without advanced notice and an approved excuse (e.g., personal illness or death in the family), the student will not be allowed to make up the exam and will receive a grade of zero.

INTELLECTUAL PROPERTY

All exams, handouts, and materials for this course, including those posted on Canvas 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.

DRESS CODE

Students are expected to dress and groom in a way that maintains a safe and professional environment. Accessories, hair, and nails must be worn in a way that prevents contamination and poses a safety hazard. Use of strong fragrances is discouraged, and deodorant should be used. Students should become aware of contextually relevant dressing, indicating that the dress code will vary according to activities and situations. Please speak with the instructor associated with the activity or course. In general, the following rules apply. All students must wear clothing that covers the abdomen, chest, and backside. Students should make sure that undergarments are completely covered by their outer clothes, and pants are secured just below the waist to avoid any exposure, as students will be assuming various positions to simulate treatment, such as squatting, bending, leaning over, reaching overhead, etc. Shorts and skirts should be no shorter than fingertip length. Tunic tops or hip length tee shirts should cover any leggings. Logos on t-shirts should be respectful of all students. Shoes or sandals must be worn at all times in the classroom or lab, unless otherwise indicated by the professor.

Special events or circumstances, such as formal presentations, off-campus field trips, fieldworks, etc. require different dress that is typical in the classroom. Students should dress in business casual for presentations.

Faculty will indicate attire for off-campus trips. In the nursing simulation lab, students should wear scrubs typically used in medically based fieldwork settings. No sandals or open toed shoes may be worn in many practice settings. Scrubs are not acceptable attire for mental health, community-based, pediatric clinics and other educational settings. Faculty and/or the fieldwork supervisor will indicate the appropriate dress in those settings, but it is also important for the student to clarify in advance. For presentations, students will be expected to dress in business casual. Consult instructors for clarification as needed. Students at a fieldwork site or at other offsite locations are required to follow the specific dress code for that facility.

ADDING/DROPPING CLASSES:

Students are responsible for registering for classes and for verifying their class schedules on MyMadison. For more information, refer to the Registrar's website. Policies for adding and dropping courses can be found here: <http://www.jmu.edu/syllabus>

Requests to withdrawal from the course 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 $< 70\%$.

CONTACTING YOUR INSTRUCTORS

Please do not use Canvas as a means for getting in touch with your instructors. Instead, please email us directly.

Dr. Gabriele: I try hard not to check my email outside of normal business hours. If we do not have balance, we have nothing. During normal business hours, I will try to respond to you quickly, but may not be able to respond right away - I could be in the middle of a teaching, research, or other service commitment. When I need to get in touch with you or send you an announcement outside of class, I will email you directly using your JMU @dukes email address. I do not expect a reply from you outside of normal business hours, unless you wish. I'd like you to prioritize your work-life balance too as much as you can. That said, please reply as promptly as possible. I have arranged my office hours so that I am available as much as possible outside of your scheduled class time.

Savanah: Please contact me via email. I will endeavor to reply within 24 hours. It will usually be outside of regular business hours as I work in a hospital setting 8-5.

Dr. Dorne: Please contact me by email. I will strive to reply within 24 hours, except over weekends. I am available in my office in HBS 2052. Please email me if you would like a FTF appointment or stop by during my office hours.

Should an emergency arise please notify the course instructor responsible for that day's class by phone or email prior to the class meeting if you will be late or are unable to attend class. Please see the MOT Handbook for further guidance about communication.

ACCESSIBILITY FOR CLASSES FOR STUDENTS WITH DISABILITIES/NEED FOR ACCOMMODATIONS

To remain qualified within the OT Program, you must demonstrate the ability to meet all program requirements with or without accommodation. The MOT program requirements and [technical standards](#) were established to protect clients and serve the public by ensuring that graduates possess entry-level knowledge and skills. Course and program requirements may not be waived under any circumstances; however reasonable accommodation

may be made, implementing the process required by the Office of Disability Services. Students should be advised that what may be reasonable in some circumstances is often not in others. No retroactive accommodation is allowed.

The Accommodations Process at JMU: Students need to register with the Office of Disability Services (ODS) (540) 568-6705. If ODS determines that students need accommodations, ODS will create an Access Plan for them. Students are responsible for scheduling a meeting with their instructors to discuss the Access Plan and accommodation. When agreement is reached for accommodations within the course(s), the instructor will sign the Access Plan and implement those accommodations. For more information about ODS, please visit this page (<https://www.jmu.edu/syllabus/#disability>) and visit the MOT Student Handbook.

TITLE IX

JMU is a learning, working, and living environment free from gender and sex-based discrimination. Title IX receives, responds to, and addresses all reports of sexual misconduct involving members of the university community. Sexual misconduct encompasses sexual assault, sexual violence, sexual harassment, dating violence, domestic violence, relational violence, sexual exploitation, stalking, and non-consensual relationships. Sexual misconduct can involve persons of the same or different sex, sexual orientation, gender, or gender identity. JMU faculty are considered responsible employees and therefore have a duty to disclose to the [Title IX Office](#) all reports of sexual misconduct that they receive within the course of their employment.

DISRUPTIVE BEHAVIOR

Students who demonstrate disruptive behavior in the classroom, whether in person or virtually, are subject to policy [Academic Affairs Policy #12, Disruption of Class](#). Disruptive behavior includes any inappropriate student behavior that a reasonable faculty member would view as interfering with the ability of instructors to teach and students to learn. While taking virtual or in-person classes, students should conduct themselves in an appropriate manner and do their best to minimize distractions that might compromise the ability of themselves, other students, and the instructor to have a quality learning experience. The following language in the [Student Handbook](#) applies:

Disorderly Conduct

Regardless of proximity to campus, including online and virtual environments, no student shall cause, incite or participate in any disturbance or behavior that creates excessive inconvenience, annoyance, alarm, or behavior that interrupts the orderly operation of the university or community, either on or off campus. Examples may include, but are not limited to, excessive noise, creating an unnecessary burden on university or first responder resources, and impeding a University Official, Law Enforcement Officer, or Medical Expert in the performance of their duties. The full policy about class disruptions is available from the [Academic Affairs website](#).

PROFESSIONAL BEHAVIOR EXPECTATIONS

All JMU students are expected to be familiar with and abide by the [JMU Honor Code](#). In addition, occupational therapy students are required to abide by the Code of Ethics of the American Occupational Therapy Association and [NBCOT Code of Conduct](#). Students are expected to demonstrate professional behaviors at all times. Phone/device use is permitted in the classroom for class-related activities only. Phones/devices should be turned to vibrate during classes. Refer to MOT Student Handbook for more information.

Teamwork is an inherent aspect of the work life of occupational therapists; therefore, students can continue to build these skills throughout this course. Respect for the shared workload required for success by your team is expected. When there are issues, the team is expected to solve them and/or get assistance from the professor. Students are expected to check CANVAS **the evening prior** to each class session. They are also expected to prepare for class by completing assigned tasks and readings prior to class.

Students are responsible for their learning. If a student has difficulty with the course expectations, content or requires clarification of any of the assignments, then it is their responsibility to contact the professor. If students do not agree with the way an assignment is graded, they should request an appointment with the professor during office hours to discuss their concerns.

PARTICIPATION

Students are expected to be active participants in the learning process, including but not limited to discussion and hands on lab activities. Courses include such non-graded activities to promote application of important content. The domains on the Professional Development Self-Assessment Form include the following expectations for participation by MOT students: self-management, time management, commitment to learning, respect for others and facilities and equipment management are considered when evaluating your participation. See the Methods of Evaluation section for the weight of participation and other activities in the course. Please note that regular attendance is not a substitution for active participation.

TEACHING AND LEARNING

At times, the classroom may be flipped, meaning students are assigned to read texts and articles, watch pre-recorded lectures and other short videos, and at times, complete brief assignments BEFORE class. By actively learning content independently BEFORE class, students will gain knowledge and prepare for higher level learning IN class. Independent research and accountability will be important for individual, team, and class success.

The rationale behind this approach is practical. In fieldwork and in your careers as occupational therapists, you will be expected to take initiative to learn, look up what you do not know, be well-prepared, justify your clinical decision-making, and explain your impressions and plans to clients and their families. Throughout your professional lives, you will be earning trust, developing relationships, receiving and giving constructive feedback, negotiating roles, co-constructing plans of care—in intra- and interprofessional teams. This course provides opportunities to develop those skills and be in the driver (rather than the passenger) seat.

RECORDINGS

Class sessions may be recorded by the instructor. Any recordings will be available only to the instructor(s) and students enrolled in the class during that particular class term. Students who have concerns about being recorded should contact the instructor privately and prior to the first recorded session to share those concerns or to request an alternate assessment option(s). Only instructors may record class sessions. Students are prohibited from unauthorized recording and are prohibited from downloading recordings. Students requesting the use of assistive technology, including recording, as reasonable accommodation should direct their request to the Office of Disability Services. See Academic Affairs Policy #15 Class Session Recordings and Distribution for further information.

Inclusive excellence

The College of Health and Behavioral Studies supports inclusive excellence. For further information, students are directed to review the [CHBS website](#).

Reporting Resources for Students

- Students have the right to access information and support when they experience negative interactions, microaggressions, harassment or discrimination.
If you have experienced discrimination, negative treatment, an accessibility challenge or need to report any violation of JMU community standards or accountability, you may make a report directly at Not@JMU.
Additionally, several campus offices are available to respond to your concerns:
- If you have experienced an accessibility challenge or have questions about disability services, contact the [Office of Disability Services](#).
- If you have experienced sexual misconduct or have questions about sex or gender discrimination, contact the [Title IX Office](#).
- If you have experienced harassment or discrimination, contact the [Office of Equal Opportunity](#).
- To report a violation of JMU community standards or for questions about student accountability, contact the [Office of Student Accountability and Restorative Practices](#) (OSARP).
- To report a concern or for questions about campus diversity, equity and inclusion, contact the [Office of Access and Inclusion](#).

ASSIGNMENT POLICIES

Assignments are due as listed in the syllabus (and on Canvas). Late assignments may incur a reduction of 10% of the potential points of the assignment per calendar day. Exceptions are at the discretion of the professor.

Students are responsible for missed assignments and exams. If group work is assigned, students need to speak with the instructor to see if it is possible to make it up. Students who miss a quiz or exam given in class may make it up, at the discretion of the professor.

Written or presented work must follow the specific style of the Publication Manual of the American Psychological Association 7th Edition (APA) unless otherwise specified by the instructor. The JMU Library has an online APA resource (OWL). The style includes 12-point sans serif font, double-spacing, in-text citations and reference list. All work must be typed, unless otherwise indicated by the instructor. Documents must be formatted as Microsoft Word .docx, .doc, or a .pdf, unless otherwise noted by the instructor, for viewing in Canvas. Students are responsible for determining if their document is properly formatted and submitted to Canvas. Points will be deducted for lack of adherence to the APA 7th edition format, written work that is not well-organized, concise, accurate, substantive, within specified page limits, and free from errors in spelling, grammar and sentence structure beyond those made for content.

The course will use community universal notetaking. An instructor will share a OneDrive folder for the course with a signup sheet and 7 weekly notes templates. Two students will sign up per week to complete the notes pages that are shared with the class. As time permits, faculty will have the opportunity to review the notes to provide feedback, and students may use the notes to stimulate their questions for the instructor.

BIO 540: Tentative Lecture/Laboratory Schedule

Associated readings or assignments for lecture and lab are shown in *blue* and *green*, respectively

WEEK 1: Oct 12th Lecture 01: Introduction. Neurodevelopment. Neuroplasticity.
Doidge: Chapter 5: Midnight Resurrections
Lundy-Ekman: Chapter 7: Neuroplasticity
Lundy-Ekman: Chapter 8: Development of the Nervous System

Lab 01: Intro to clinical application of neuroscience and neuroplasticity. Application professional reasoning for neurological conditions.

Schell (2019). Chp. 13. Professional reasoning.

Lundy-Ekman: Chapter 7: Neuroplasticity

Dirette & Gutman, chp. 2: Importance of occupation for health, occupation as therapy
Kleim & Jones (2008): Principles of experience-dependent neural plasticity

WEEK 2: Oct 17th Lecture 02: The Neuron, Neurotransmission, and Nonneuronal Cells
Doidge: Chapter 2: Building Herself a Better Brain
Lundy-Ekman: Chapter 5: Physical and Electrical Properties of Cells of the N.S.
***No lab this week!*

Oct 19th No class--enjoy Fall Break!

Week 3: Oct 24th Lecture 03: Continue the Neuron, Neurotransmission, and Nonneuronal Cells
Lundy-Ekman: Chapter 6: Neural Communication

Oct 26th Lecture 04: Intro Sensory Systems; Begin the Somatosensory System
Lundy-Ekman: Chapter 10: Peripheral Somatosensory System

Lab 02: Sensory systems (Somatosensory)

In class Quiz 1. Neuroplasticity Assignment due.

WEEK 4: Nov 1st Lecture 05: Finish Somatosensory
Doidge: Chapter 7: Pain
Lundy-Ekman: Chapter 11: Central Somatosensory System
Lundy-Ekman: Chapter 12: Pain as a Disease

Nov 3rd Lecture 06: The Visual System
Doidge: Chapter 3: Redesigning the Brain
Lundy-Ekman: Chapter 21: Visual System

Lab 03: Sensory systems: Vision, Cranial nerves, Pain

Lundy-Ekman: Chapter 3 (p. 54-60), Dirette & Gutman, chp. 20 has assessment with images and occupational impacts.

In class quiz 2

WEEK 5: Nov 7th Lecture 07: Vestibular System and a quick glance at Auditory & Chemosenses
Doidge: Chapter 1: A Woman Perpetually Falling
Lundy-Ekman: Chapter 22: Vestibular System

Nov 9th Lecture: LECTURE EXAM 1

Lab 04: Finish Sensory (Vestibular), Motor Part 1: Reflexes
Lundy-Ekman: Chapter 13-15: Motor System

WEEK 6: Nov 14th Lecture 08: Intro Motor Systems, Motor 1: Lower Centers
Lundy-Ekman: Chapter 13: Motor System

Nov 16th Lecture 09: Motor 2: Higher Centers and Cerebellum
Doidge: Chapter 8: Imagination
Lundy-Ekman: Chapter 14: Motor System
Lundy-Ekman: Chapter 15: Motor System

Lab 05: Motor Part 2: Functional uses of neurological approaches
In class Quiz 3.

WEEK 7: Nov 21th **Thanksgiving Break – No Class**
Nov 23th **Thanksgiving Break – No Class**

WEEK 8: Nov 28th Lecture 10: In-Class Discussion (Breakout Sessions):
Basal Ganglia and Associated Disorders
Basal Ganglia Handouts and Readings
Lundy-Ekman: Chapter 16: Motor and Psychological Functions

Nov 30th Lecture 11: Memory, Consciousness, Intellect, Aging and Dementia
Doidge: Chapter 9: Turning our Ghosts Into Ancestors
Lundy-Ekman: Chapter 27: Memory, Consciousness and Intellect

Lab 06: Cognition & Psychiatry: Introduction to functional approaches to cognition
In class Quiz 4.

WEEK 9: Dec 5th Lecture 12: Psychological, Emotional, Limbic
Doidge: Chapter 6: Brain Lock Unlocked
Lundy-Ekman: Chapter 28: Behavior, Emotions, Decision-Making, Personality

Dec 7th Lecture 13: Autonomic Nervous System.
Lundy-Ekman: Chapter 9: Autonomic Nervous System

Lab 07: Functional application of the ANS: intro to evaluation & intervention; Course Synthesis
In class Quiz 5.

WEEK 10: **FINAL LECTURE (12/14 8-10 a.m.) & LAB EXAM (12/14 1-4:30 by appointment)**