



The Florida State University
College of Medicine

Clinical Neuroscience

BMS 6706C

Fall 2013

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Instructors

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Course Overview

Course Goals

This course is designed to provide students with a fundamental understanding of clinical neuroscience in an adult learning style environment. Students who complete this course will understand the normal anatomy and physiology of the nervous system and will recognize important symptoms and signs associated with common neurological disease. In addition, students will understand the functional and clinical significance of the three-dimensional organization of anatomical structures, and the interconnections and spatial relationships that link structures together in the nervous system. Mastery of these concepts will enable students to localize lesions in the central nervous system based on observed signs and to predict the neurological deficits associated with lesions. Our goal is to achieve long-term acquisition of neuroscience concepts such that students perform well in the neuroscience/neurology area as clinicians long after the course has been completed.

Learning Objectives

Knowledge

1. Develop a three-dimensional image and understanding of the brain and spinal cord.
2. Demonstrate an understanding of the relationship between lesion location and functional deficits.
3. Demonstrate a working knowledge of the functional anatomy of neuronal pathways.
4. Demonstrate understanding of the basic neuroscience concepts necessary for further study in other courses and clinical situations, especially those involving neurology.
5. Explain the normal and pathological neurological changes associated with aging, including Alzheimer's disease and other dementias.
6. Develop an understanding of how neuroscience information is used by clinicians in medical diagnosis.
8. Describe the cell biology of neurons, muscle cells and neurosecretory cells as well as the biophysical and physical chemical principles that underlie their function.
9. Describe the physiology and biochemistry of neurotransmission and other types of inter- and intra-cellular communication in the nervous system, including short and long-term modification.
10. Describe the neurophysiological mechanisms controlling movement, sensation, and overall integration of visceral function.
11. Describe current concepts related to higher brain functions such as cortical integration, learning and memory.
12. Describe the relationships and interdependency of the nervous system and the endocrine system.

Skills

1. Demonstrate a logical problem-solving approach to clinical neurological cases.
2. Demonstrate ability to identify knowledge gaps and use informatics to find information relevant to neuroscience.
3. Demonstrate ability to apply knowledge of neuroanatomy to interpret radiological images.

4. Use accurate and appropriate vocabulary and concepts to communicate effectively with peers and patients about neurological function.

Attitudes

1. Demonstrate professional behavior in interacting with peers, with guest patients, and with faculty.

Course Format

Neuroscience Laboratory

Neuroscience labs will be attended by hovering and nurturing faculty, but students are expected to take full responsibility for their learning (using their atlases, consulting with peers etc.). The goals are to develop a 3D appreciation of brain structure in order to facilitate clinical problem solving, and to learn what neural structures neighbor each other.

Clinical Case Presentations (attendance required)

Whenever possible, actual patients will share their stories and demonstrate signs of their neurological disease during Clinical Case Presentations. At these sessions, we ask that you wear your white coats and close your computers and other mobile devices as tokens of respect for these wonderful patients who are willing to teach us.

Lectures

A lecture format that invites discussion and student participation will be used. Students should come to class with a good familiarity with the lecture material, thus facilitating discussion and active learning during these sessions. We will help with this by preparing brief video recordings that you should review prior to lecture time. These videos will introduce the basic concepts to be developed in class.

Small Group Jigsaw Sessions (attendance required)

These exercises are designed for **active** learning. Students meet in small groups and each group is assigned a neurological presentation to discuss and form a hypothesis: Where is the lesion? What may be the cause? What more do you need or want to know? All members of the group share responsibility for analyzing and explaining the clinical presentation. Then the small groups re-mix such that each member of each new group has figured out a different case, which he/she then “teaches” to the new group – not just what the “answer” is, but how you arrived at your hypothesis. This is hard work, but students in the past have really enjoyed it and asked for more of these exercises. The focus of the exercise is not the “answer,” but how you get there. Faculty will be present to ask helpful questions if your group is “stuck” and to encourage your curiosity. During the exercise, you are free to use any resources except the Blumenfeld textbook.

Peer evaluation

Midway and at the end of the course, students will evaluate the other group members anonymously. These evaluations will be shared with the students and serve as a guide to how others see them. Lack of

participation in group efforts will get the attention of the faculty who will then work with the student to remediate the problem.

Narrative evaluation

Midway through the scheduled jigsaw sessions, and at the end of the semester, faculty will provide narrative evaluation to the students in his/her small groups.

Student-generated question bank

At the beginning of the semester you will be invited to participate in the NeuroMed Wiki <https://neuromed.wikispaces.com/home>, an on-line collaborative project to share high quality, student-generated study materials. Students are encouraged to write test questions they believe assess understanding of concepts and content from the course and post them to the NeuroMed Wiki, where other students can use, edit, and improve the questions (like the Wikipedia!). Questions which integrate content with other courses (Anatomy, Doctoring, Histology and Cell Biology) are particularly valuable. Help us transform medical education by taking advantage of new ways of learning!

Competencies

FSUCOM – Competencies –Clinical Neuroscience BMS 6706C		
Competency Domains	Competencies Covered in the Course	Methods of Assessment
Patient Care	<p>Develop an understanding of how neuroscience information is used by clinicians in medical diagnosis.</p> <p>Demonstrate a logical problem-solving approach to clinical neurological cases.</p> <p>Demonstrate ability to apply knowledge of neuroanatomy to interpret radiological images.</p>	Jigsaw exercises
Medical Knowledge	<p>Develop a three-dimensional understanding of the brain and spinal cord.</p> <p>Demonstrate an understanding of the relationship between lesion location and functional deficits.</p> <p>Describe the functional anatomy of neuronal pathways.</p> <p>Explain the normal and pathological neurological changes associated with aging.</p> <p>Describe the cell biology of neurons, muscle cells and neurosecretory cells.</p> <p>Describe the mechanisms of neurotransmission and other types of inter- and intra-cellular communication in the nervous system.</p> <p>Describe current concepts related to higher brain functions.</p> <p>Describe the relationships and interdependency of the nervous system and the endocrine system.</p>	Block exams, NBME subject exam, classroom discussions, jigsaw evaluations
Practice-based Learning	Demonstrate ability to identify knowledge gaps and use informatics to find information relevant to neuroscience.	Jigsaw exercises
Communication Skills	Use accurate and appropriate vocabulary and concepts to communicate effectively with peers and patients about neurological function.	Faculty and TA observation; peer and self-evaluation within the assigned teams and during course activities.
Professionalism	Demonstrate professional behavior in interacting with peers, with guest patients, and with faculty.	Faculty observation; peer and self-evaluation
System-based Practice		
<p>NOTES: * Students observe physician-patient encounters when patients are presented to the class and in films of patient/physician encounters. Students are also encouraged to ask their own questions when patients are being interviewed in front of the class.</p>		

Policies

Americans with Disabilities Act

Candidates for the M.D. degree must be able to fully and promptly perform the essential functions in each of the following categories: Observation, Communication, Motor, Intellectual, and Behavioral/Social. However, it is recognized that degrees of ability vary widely between individuals. Individuals are encouraged to discuss their disabilities with the College of Medicine's [Director of Student Counseling Services](#) and the FSU Student Disability Resource Center to determine whether they might be eligible to receive accommodations needed in order to train and function effectively as a physician. The Florida State University College of Medicine is committed to enabling its students by any reasonable means or accommodations to complete the course of study leading to the medical degree.

[The Office of Student Counseling Services](#)

Medical Science Research Building
G146

Phone: (850) 645-8256 Fax: (850) 645-9452

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center
97 Woodward Avenue, South
Florida State University
Tallahassee, FL 32306-4167
Voice: (850) 644-9566
TDD: (850) 644-8504

sdrc@admin.fsu.edu

<http://www.fsu.edu/~staffair/dean/StudentDisability>

Academic Honor Code

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. (Florida State University [Academic Honor Policy](#))

Attendance Policy

The College of Medicine has detailed attendance policies as they relate to each cohort and events that conflict with course schedules. See pages 28-29 of [FSUCOM Student Handbook](#) for details of attendance policy, notice of absences and remediation.

Unexcused absence from a scheduled examination may result in a score of zero (0 %) being assigned for that assessment. Unexcused absence from an activity for which attendance is required (for example, Small Group session) may be considered as an issue of Professionalism. Any unexcused absence may require completion of the Performance Improvement Program (see Grading System, below)

Required Materials

1. Neuroanatomy Through clinical cases, 2nd edition, Blumenfeld.
2. Clinical Neuroanatomy made ridiculously simple, S. Goldberg.

Suggested Materials

Neuroscience, 4th edition, Purves, et al.

Basic Clinical Neuroanatomy, Young and Young.

Squire, L.R. "Fundamental Neuroscience" Academic Press 1998. Good for reference.

Neuroanatomy, an Atlas of Structures, Sections and Systems, 7th (or latest) edition, Duane Haines,

Interactive Neuroscience Learning Modules (Library Course Pages Online Library Resources
(<http://resources.med.fsu.edu.ezproxy.med.fsu.edu/neuro/>)

Useful Web sites

<http://www.medlina.com/neuroanatomy.htm> General neurology web sites

<http://www.vh.org/adult/provider/anatomy/BrainAnatomy/BrainAnatomy.html> Brain atlases

<http://www.med.harvard.edu/AANLIB/home.html> The Harvard brain atlas

<http://library.med.utah.edu/kw/hyperbrain/animations/pathways/> Pathway Quizzes in Neuroanatomy

<https://www.msu.edu/~brains/brains/human/index.html> The Human Brain Atlas

<http://meded.ucsd.edu/clinicalmed/neuro3.htm> A Practical Guide to Clinical Medicine: The Neurological Exam

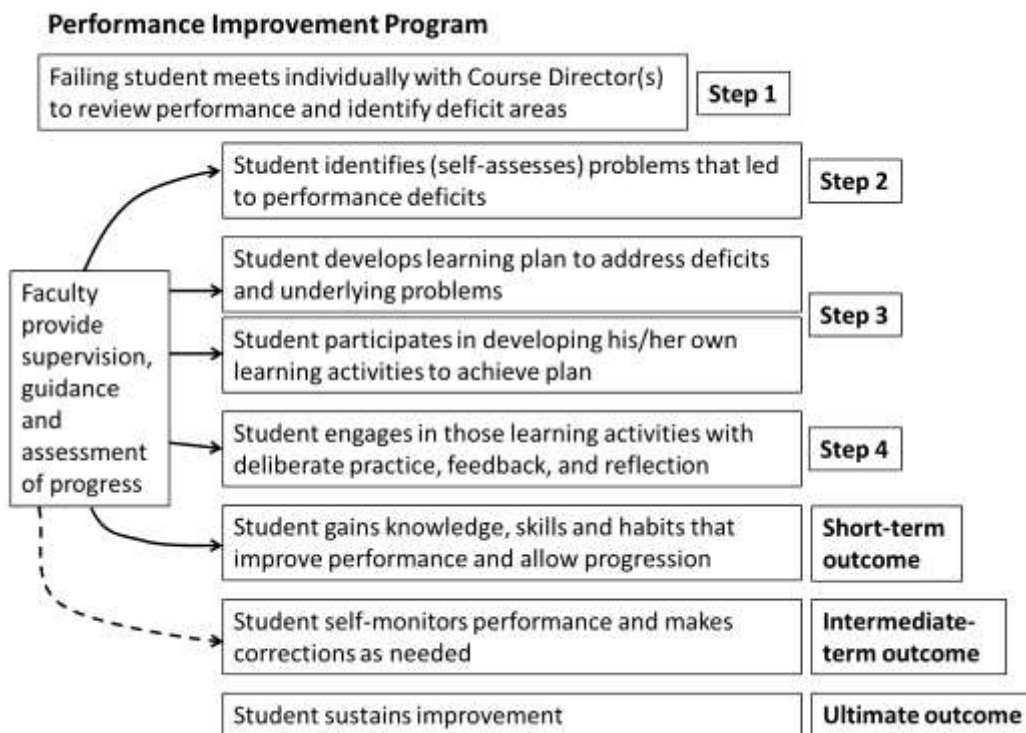
Grading System

Assignments and Grading

FSU COM has adopted a pass/fail grading system which is used in the curriculum for the first and second years (See [page 32](#) of Student Handbook). To achieve a grade of Pass in [Course number] a student must meet all of the following requirements:

- 1) A final average > 70% on all examinations and graded quizzes. An average below 70% will receive a grade of fail which will require remediation or repetition of the course, as determined by decision of the Student Evaluation and Promotion Committee. A student whose performance is below passing during the semester
 - <65% on any one examOR
 - <70% on any two exams in the semester

is required to engage in and complete the Performance Improvement Program in consultation with the Course Director. The purpose of this program is to assist the student in developing the skills and habits necessary to succeed in the curriculum as well as to address specific performance deficits.



- 2) Passing grade on the NBME subject exam, as determined by the Course Director.
- 3) Attendance and satisfactory participation in all required sessions, as determined by the Course Director. Unexcused absence from an activity for which attendance is required (for example,

small group jigsaw session) may be considered as an issue of Professionalism and require completion of the Performance Improvement Program.

- 4) Satisfactory preparation for and participation in all Team Based Learning exercises, as determined by the Course Director and peer evaluation.
- 5) Satisfactory completion of all assignments, as determined by the Course Director.
- 6) Demonstration of the attitudes and behaviors of Medical Professionalism in all aspects of the course. Issues of Professionalism may require completion of the Performance Improvement Program.

Examinations

There will be 3 integrated block exams which include content from all Year 1 Fall semester courses. Neuroscience items on each exam will be in a “board-type” multiple choice format that emphasizes problem solving rather than rote memory. The course endorses a criterion-referenced teaching philosophy in which exams test the specific ideas that all students are expected to master (criteria), with no attempt to rank order student performance. Thus, there is no reason for students to feel competitive with each other. On the contrary, higher achievement can be expected when students work cooperatively. While all students are expected to pass each exam with a score $\geq 70\%$, we encourage you to aspire to mastery (100%) of the material and will do everything we can to help you achieve scores of 80% or higher.

At the end of the semester, students will take the NBME subject exam in Neuroscience. Students should be aware that because Neuroscience is taught as late as Year 2 in some medical schools, this exam covers related content they will not yet have studied (e.g., physiology, pathophysiology). Be confident that the course director takes that into account in setting the “passing” performance level. It’s important that you take this exam “seriously” and strive for your best performance. This is your opportunity to assess your overall knowledge against USMLE content. The FSU COM clerkship grading policy requires students to score no less than the 10th percentile on NBME exams to achieve a grade of Pass in a clerkship. In the Neuroscience course, a score below the 10th percentile on the NBME exam is considered in the context the individual student’s overall performance in the course. For example, an NBME score at the 4th percentile coupled with marginal block exam scores (e.g., 70, 71, 70) or block exam failures (<70%) could receive a grade of Fail on the basis of failure to demonstrate minimal knowledge standards.