



The Florida State University  
College of Medicine

# Clinical Neuroscience

**BMS 6706C**

**Fall 2012**

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# Instructors

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## **Course Director**

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## **Course Overview**

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### **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 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 bind structures together in the nervous system. Mastery of these concepts will enable students to localize lesions in the central nervous system and 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 of the brain and spinal cord.
2. Understand the relationship between lesion location and functional deficits.
3. Acquire a working knowledge of the functional anatomy of neuronal pathways
4. Acquire the basic concepts necessary for further study in other courses and clinical situations, especially those involving neurology.
5. Develop an understanding of neurological changes associated with aging, such as Alzheimer's disease and other dementias.
6. Develop an understanding of how neuroscience information is used by clinicians in medical diagnosis.
8. Understand the cell biology of neurons, muscle cells and neurosecretory cells as well as the biophysical and physical chemical principles that underlie their function.

9. Understand the physiology and biochemistry of neurotransmission and other types of inter- and intra-cellular communication, including short and long-term modification.
10. Understand the neurophysiological mechanisms controlling movement, sensation and overall integration of visceral function.
11. Understand current physiological concepts related to higher brain functions such as cortical integration, learning and memory.
12. Understand 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 familiarity using informatics to find information relevant to neuroscience.
3. Demonstrate ability to apply neuroanatomical knowledge to radiological images.

### **Attitudes**

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

## ***Course Format***

### **Neuroscience laboratory and clinical case presentations (attendance required)**

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 that facilitates clinical problem solving, and to learn what neural structures neighbor each other. When possible, actual patients will be presented in clinical case presentations.

### **Lectures**

A lecture format that invites discussion and student participation will be used. Students should come to class with a good familiarity of the lecture material, thus facilitating discussion and active learning during lectures. We will help with this by preparing brief recordings, to be viewed prior to lecture time that cover the basic concepts to be discussed in class.

### **Jigsaw sessions (attendance required)**

These 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 to know? Then the small groups re-form such that each member of each new group has figured out a different case, which he/she then “teaches” to the new group. 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.

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

# Competencies

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FSUCOM – Competencies –Clinical Neuroscience BMS 6706C		
Competency Domains	Competencies Covered in the Course	Methods of Assessment
Patient Care	X *	Formative video quizzes
Medical Knowledge	X	Internal exams and NBME subject exam, formative quizzes, classroom discussions, jigsaw evaluations
Practice-based Learning	X *	
Communication Skills	X	Faculty and TA observation; peer and self-evaluation within the assigned teams and during course activities.
Professionalism	X	Faculty observation; peer and self-evaluation
System-based Practice		

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.

## Policies

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### ***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](mailto: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 or quiz 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

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1. The Human Brain, 5<sup>th</sup> (or newest) edition, Nolte, ISBN 0-323-01320-ed.6
2. Neuroanatomy Through clinical cases, 2<sup>nd</sup> edition, Blumenfeld.
3. Clinical Neuroanatomy made ridiculously simple, S. Goldberg.

## Suggested Materials

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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, 7<sup>th</sup> (or latest) edition, Duane Haines, ISBN 0-683-03817-6

### Useful Web sites

<http://www.medline.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

## Grading System

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### ***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 31](#) 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

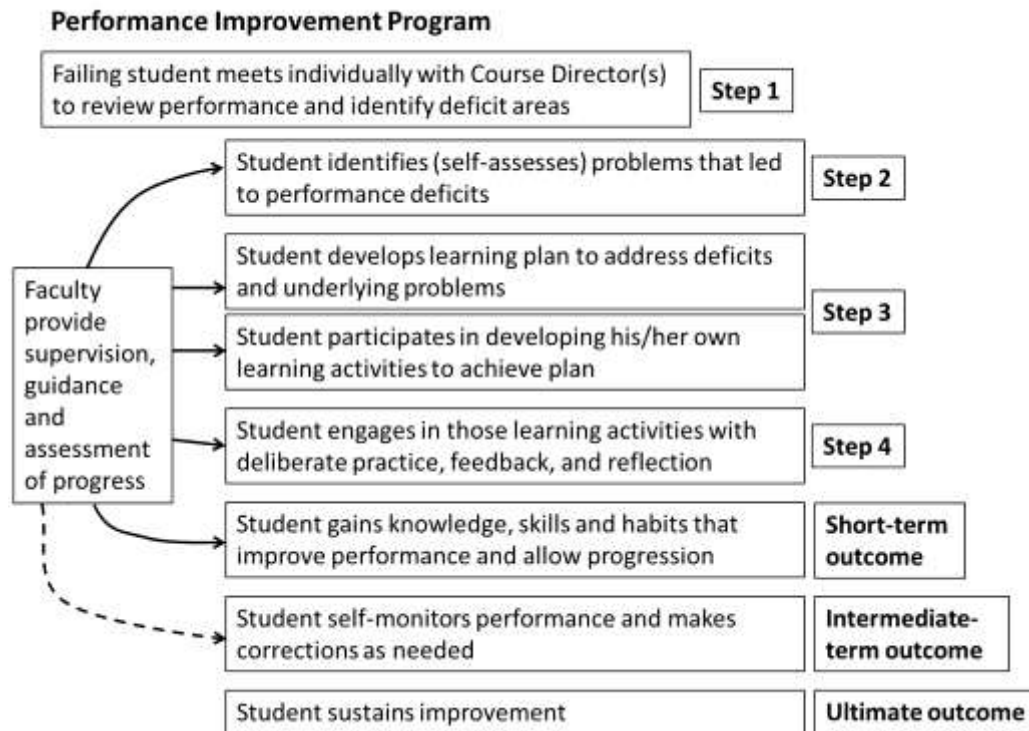
- <65% on any one exam

OR

- <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) Completion of all formative quizzes as scheduled.
- 3) Achieving the competency level performance on the final video quiz.
- 4) Passing grade on the NBME subject exam, as determined by the Course Director.
- 5) 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.
- 6) Satisfactory preparation for and participation in all Team Based Learning exercises, as determined by the Course Director and peer evaluation.
- 7) Satisfactory completion of all assignments, as determined by the Course Director.
- 8) 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 and Quizzes***

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.

Weekly quizzes will be mandatory but formative, i.e., you must take them when scheduled, but they do not contribute to exam average. The course will use a unique format: a set of video clips of patients with common neurological problems, paired with a quiz in which the questions increase in complexity as the semester progresses, followed immediately by in-class discussion facilitated by neurologists and basic scientists. Each quiz is not only a formative assessment, but an active learning process. These formative quizzes will allow students and the course director to track their progress toward an important course competency: recognition and basic understanding of 20 common neurological problems.

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.