

BISC 423

From Epilepsy to Ecstasy: Biological Basis of Neurological Disorders

General Information: Spring 2016
Wednesday and Friday, 8:00am
RRI 101

Instructor: Michael W. Quick, Ph.D.
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ADM 102
0-2101
Office Hours: anytime-- just contact me

Credit: This is a 4-unit course that includes lectures, clinical correlations, and case-based learning situations led by both the instructor and students.

Purpose: The recent explosion of research in the field of neuroscience has produced an increasingly thorough understanding, at multiple levels of description from the molecular to the behavioral, of many of the major disorders of the nervous system. These disorders span the range of neurobiological inquiry from development (e.g. mental retardation, spina bifida, cerebral palsy) to signaling (e.g., myasthenia gravis, epilepsy, multiple sclerosis), to anatomical systems (e.g., Parkinson's disease, pain, amblyopia), to combinations of fields (e.g., schizophrenia, Alzheimer's disease, amyotrophic lateral sclerosis, addiction). Thus, these disorders will serve as entry points for students to learn the basic principles of nervous system function from the molecular, cellular and systems level.

Pre-Requisites: Either BISC 421 or permission of instructor.

Approach and Course Structure: Think of this as a semester-long version of *House*, with you as the intern or resident. Briefly, I divide the course into seven modules: development, cytology & signaling, head & circulation, anatomy, sensory systems, motor systems, and higher brain function. Each section has a similar format. The first part of the block will be devoted to reviewing the major concepts in that topic area, concepts that were covered in-depth in BISC 421 or other classes. Within each block will also be one or

two clinical correlations illustrating an important disease state. The remaining hours in the block (3 - 4) are disorders that are presented in case-based question-and-answer learning situations.

Grading: There are five components to the final grade:

20% is your class participation

20% is your participation in a student-led presentation

20% is your contribution to a class project

20% is a final project which involves developing a case and its resolution

20% is one mid-term examination

Students with Disabilities: Students requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to the instructor as early in the semester as possible. Disability Services and Programs is located in Student Union 301 and their phone number is (213) 740-0776.

Text: There is no mandatory text. Handouts will be provided. Access to general neuroscience text books will be useful. For example:

Fundamental Neuroscience. Zigmond et al., eds.

Neurobiology. Matthews, ed.

Neuroscience. Purves et al., eds.

Principles of Neural Science. Kandel et al, eds.

Syllabus

Module I: Disorders of Development

Week 1:

Overview of Course
Review: Development

Week 2:

Cases:
Clinical Correlation: Cerebral Palsy

Module II: Disorders of Cytology and Signaling

Week 3:

Review: Cytology and Transmitters
Clinical Correlation: Myasthenia Gravis
Cases:

Week 4:

Review: Signaling
Cases:

Module III: Disorders of Cranium, CSF, and Blood Supply

Week 5:

Review: Cranium, CSF, and Blood Supply
Clinical Correlation: Stroke

Module IV: Disorders of Anatomy

Week 6:

Review: Anatomy
Review: Anatomy

Week 7:

Cases:
Cases:

Week 8:

Cases:
Cases:

Module V: Disorders of Sensory Systems

Week 9:

Review: Sensory Systems
Clinical Correlation: Headache

Module VI: Disorders of Motor Systems

Week 10:

Review: Motor Systems

Student-Led Case:

Week 11:

Clinical Correlation: Parkinson's Disease
Student-Led Case:

Week 12:

Cases:
Student-Led Case:

Module VII: Disorders of Higher Function

Week 13:

Review: Motivation and Cognition
Student-Led Case:

Week 14:

Clinical Correlation: Epilepsy
Student-Led Case:

Week 15:

Cases:
Student-Led Case:

Finals Week:

Case Due