

**SYLLABUS**  
**Human Functional Neuroanatomy (ANAT 6160)**

**COURSE DESCRIPTION:**

ANAT 6160 is a graduate course for certificate level designed to provide knowledge about the anatomy and function of the human central and peripheral nervous systems with a strong emphasis on clinical relevance. General neuroanatomy topics will include the gross and microscopic structure, embryology, and neurophysiology of the brain, spinal cord and nerves with descriptions of alterations in normal anatomy through disease or injury. Students will be assigned online weekly discussions on journal articles matching the topic of the week's lecture (see *Readings*). Discussion of these topics will be monitored via an online discussion board in blackboard. In addition, students will prepare a clinical presentation on a neuroanatomical topic relevant to lecture content and derived from an article featured in popular media (e.g., *Washington Post*, *Time*, etc). Students will also be provided with interactive PowerPoint lab manual tailored to the content of the lectures that will constitute the foundation for three practical exams taken on blackboard for each neuroanatomy block. Finally, lecture material will be supplemented with laboratory demonstrations of human brain materials in the Medical School Anatomy Lab.

**LEARNING OBJECTIVES:**

- 1) Recognize the major features of the external and internal morphology of the adult and developing brain, spinal cord, and peripheral nerves, including the blood supply, meninges and ventricular system.
- 2) Describe the connections between anatomical structures that comprise the sensory and motor systems of the CNS.
- 3) Interpret common PNS and CNS lesions and recognize their etiology.

**CREDIT HOURS:** 3

**PREREQUISITE:** Introductory Biology for Science or non-Science Majors. Enrollment in the Graduate Certificate in Anatomical and Translational Sciences or permission of the Director of the Graduate Certificate.

**LECTURE CONTACT TIME/HOURS:** two 1-hour 15-minute lectures per week.

**CONTACT TIME/HOURS:** Tues. 11:15 am – 12:30 pm.  
Thurs. 11:15 am– 12:30 pm

Room TBD

**LABORATORY SESSIONS:** Periodic attendance in the Medical School Anatomy Lab where Anatomy faculty will demonstrate relevant anatomy of human brain specimens. Students should supplement these demonstration sessions by studying illustrations, schematic diagrams, and computer images to enhance their learning.

**METHOD OF ASSESSMENT:** There will be four types of assessments, as follows:

1. **3 Written Exams** : consisting of multiple choice and short answer questions; each exam comprises 16.7% of the total grade for the course
2. **3 Practical Exams** consisting of short answer questions (indep; each exam comprises 10% of the total grade; to be completed online (*individually, closed-book*) via Blackboard by 11:59pm as denoted in lecture schedule
3. **1 Clinical Presentation**: consisting of a written PowerPoint comprising 15% of total grade; to be submitted via email to Dr. Brown one week prior to the written and practical exams as denoted in lecture schedule
4. **Online weekly blackboard discussion groups**, comprising 5% of total grade; responses are due each Thursday by 11:59pm as denoted in lecture schedule (note: there is no discussion board due the week of the Thanksgiving holiday)

**FACULTY:** *Kirsten Brown*, Ph.D., Course Director, Assistant Professor of Anatomy and Regenerative Biology (Lecturer and Lab Instructor); Ross Hall 452A; Email: [kmbrown@gwu.edu](mailto:kmbrown@gwu.edu)

*Ronald C. Bohn*, Ph.D., Associate Professor of Anatomy & Regenerative Biology (Lecturer, and Lab Instructor); Ross Hal 431; Email: [rbohn@gwu.edu](mailto:rbohn@gwu.edu)

**REQUIRED TEXTS:** Text: The Human Brain, J. Nolte, 6<sup>th</sup> ed.  
Atlas: Netter's Atlas of Neuroscience, Felten & Shetty, 2<sup>nd</sup> ed.

**READING LIST:** None

### **CLASS POLICIES**

Attendance policy: mandatory

Late work: accepted with permission, penalty may be incurred if unduly late as determined by instructor  
Religious Holidays: will be accommodated if requested

[NOTE: for university policies on teaching, see <http://www.gwu.edu/~academic/Teaching/main.htm> ]

### **ACADEMIC INTEGRITY**

I personally support the GW Code of Academic Integrity. It states: “Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information.” For the remainder of the code, see: <http://www.gwu.edu/~ntegrity/code.html>

## **SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM**

### *DISABILITY SUPPORT SERVICES (DSS)*

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: <http://gwired.gwu.edu/dss/>

### *UNIVERSITY COUNSELING CENTER (UCC) 202-994-5300*

The University Counseling Center (UCC) offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include:

- crisis and emergency mental health consultations
  - confidential assessment, counseling services (individual and small group), and referrals
- <http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices>

## **SECURITY**

In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.

## **LECTURE TOPICS:**

1. **Tuesday January 12:** Introduction to Course and Classification of Nervous Structures
2. **Thursday January 14:** Neurocytology I: Neurons and Glia (Clinical Correlation: Multiple Sclerosis )
3. **Tuesday January 19:** Neurocytology II: Neurons and Glia (CC: Brain Tumors)
4. **Thursday January 21:** External Anatomy of the CNS
5. **Tuesday January 26:** Internal Anatomy of the CNS
6. **Thursday January 28:** Ventricular System and Cerebral Spinal Fluid (CC: Hydrocephalus)
7. **Tuesday February 2:** *Neuroanatomy Laboratory Session*
8. **Thursday February 4:** Spinal Cord I- Structure and Function (CC: Clinical Testing of Spinal Segments)
9. **Tuesday February 9:** Spinal Cord II- Spinal Nerves and Reflexes (CC: Deep Tendon Reflexes)
10. **Thursday February 11:** Introduction to Sensory Pathways (CC: Dorsal Column Lesions and Tabes Dorsalis)
11. **Tuesday February 16:** Introduction to Motor Pathways (CC: Upper and Lower Motor Neuron Lesions)

**WRITTEN EXAM I on Thursday February 18:**

**PRACTICAL EXAM I taken between February 18 and 22**

12. **Tuesday February 23:** Meninges: the Coverings of the Brain (CC: Herniation Syndromes and Intracranial Bleeds)
13. **Tuesday March 1:** Brainstem and Intro to Cranial Nerves (CC: Tonsillar Herniations)
14. **Thursday March 3:** Cranial Nerves IX, X (CC: Clinical Tests, Dysphagia, and Otitis Media)
15. **Tuesday March 8:** Cranial Nerves XI, XII (CC: Clinical Tests, Accessory and Hypoglossal Nerve Injuries)
16. **Thursday March 10:** Cranial Nerves III, IV, and VI (CC: Clinical Tests, Oculomotor Ophthalmoplegia)
17. **Tuesday March 22:** Cranial Nerves III, IV, and VI (CC: Clinical Tests, Trochlear and Abducens Nerve Injuries)
18. **Thursday March 24:** Cranial Nerves V, VII (CC: Clinical Tests, Trigeminal Neuralgia, Bell's Palsy)

**WRITTEN EXAM II on Tuesday March 29**

**PRACTICAL EXAM II taken between March 29 and April 1**

19. **Thursday March 31:** Cranial Nerve II-Visual System (Clinical Tests, Visual Field Defects)
20. **Tuesday April 5:** Cranial Nerve III- Auditory System (CC: Clinical Tests, Hearing Loss)
21. **Thursday April 7:** Cranial Nerve VIII-Vestibular System (CC:Vertigo)
22. **Tuesday April 12:** Basal Ganglia (CC: Hypokinetic and Hyperkinetic Disorders)
23. **Thursday April 14:** Cerebellum (CC: Ataxia and Cerebellar Lobe Syndromes)
24. **Tuesday April 19:** Blood supply of the CNS (CC: Strokes)
25. **Thursday April 21:** Cerebral Cortical Functional Areas (CC: Contralateral Hemineglect Syndrome)
26. **Tuesday April 26:** Cerebral Cortical Functional Areas (CC: Aphasia)

**WRITTEN EXAM III TBD**

**PRACTICAL EXAM III TBD**

**CLINICAL POWERPOINT DUE TBD**

Credit Hours Calculator. What is a Credit Hour? AIC uses the industry-standard Carnegie Unit to define credit hours for both traditional and distance courses. Each credit hour corresponds to a minimum of 3 hours of student engagement per week for a traditional 14-week course or 6 hours per week for a 7-week course. This time may be spent on discussions, readings and lectures, study and research, and assignments. Most courses at AIC are three credit hours. Credits to be earned. Hours per week, 7-week course. A credit is the recognition for having taken a course at school or university, used as measure if enough hours have been made for graduation. In a college or university in the United States, students generally receive credit hours based on the number of "contact hours" per week in class, for one term; more well known as Semester Credit Hours. A contact hour includes any lecture or lab time when the professor is teaching the student or coaching the student while they apply the course information to an