

# Attention!

This is a *representative* syllabus.

The syllabus for the course when you enroll may be **different**.

Use the syllabus provided **by your instructor** for the most up-to-date information. Please refer to your instructor for more information for the specific requirements for a given quarter.

## **NEUROSC 3050: STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM**

**3 semester hours**

**Offered Fall Semester**

**Class Schedule: 80 minute period meets twice a week**

### **Instructors:**

Dr. Georgia Bishop  
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**Text:** Neuroscience Third Edition. Purves et al. Sinauer Associates, Inc.

This textbook is required

Additional Texts: From Neuron to Brain, Nicholls et al., Sinauer Associates, Inc.

Website: <http://carmen.osu.edu>

### **LECTURES:**

The material presented in the lectures will cover the most important parts of the reading assignments, therefore class attendance is essential.

### **ACADEMIC INTEGRITY (ACADEMIC MISCONDUCT)**

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct and this syllabus may constitute "Academic Misconduct." The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an "excuse" for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct. If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include suspension or dismissal from the University and a failing grade in this course. If you have any questions about the above policy, please contact me. Other sources of information on academic misconduct (integrity) include: COAM's web page (<<http://oaa.osu.edu/coam/home.html>>) "Eight Cardinal Rules of Academic Integrity" (<<http://www.northwestern.edu/uacc/8cards.html>>)

### **EXAMS AND GRADING:**

2 quizzes (25 points each) and a final exam (100 points) will be given in this course. The final grade will be based on 150 points, Tests will be composed of short answer questions.

Grade	Total points	%
A	135-150	90-100
B	120-134	80-89
C	105-119	70-79
D	90-104	60-69
E	<90	<60

**OFFICE HOURS:** At specific times (TBA) as well as by appointment.

**ACCOMODATIONS FOR DISABLED STUDENTS:** Everything possible will be done to make every reasonable program or facility adjustment to assure success for each student.

### **COURSE DESCRIPTION:**

This course is designed for biology majors or non-majors with a basic knowledge of biology. This course will serve as an introduction to basic principles of neuroanatomy and neurophysiology. It will begin with lectures covering the general organization of the brain including its blood supply. Next basic properties of ion channels, mechanisms of action potential generation and propagation, and principles of synaptic transmission will be covered. In the last part of the course, the basic concepts will be incorporated into a discussion of specific systems such as the motor, sensory, and autonomic nervous systems.

### **SCHEDULE**

#### **Week 1:**

- Session 1: Overview of the Nervous System and Histology**
- Session 2: Basic Organization of the Somatic and Autonomic Nervous System**

#### **Week 2:**

- Session 1: Dural Sinuses, vascular and ventricular organization of the brain and spinal cord**
- Session 2: Histological organization of the spinal cord. Ascending and descending tracts**

#### **Week 3:**

- Session 1: Cranial Nerves – Components and Peripheral Distribution**
- Session 2: Organization of the Medulla and Pons**

#### **Week 4:**

- Session 1: Organization of the Midbrain and Diencephalon**
- Session 2: Organization of the Forebrain**

#### **Week 5:**

- Session 1: EXAM 1**
- Session 2: Methods for Studying the Nervous System. Anatomical and Physiological**

#### **Week 6:**

- Session 1: General overview: Electric Potentials across nerve cell membranes**
- Session 2: Comparison of Channels and the ionic basis of resting membrane and action potentials**

**Week 7:**

**Session 1: Action potential generation and propagation**

**Session 2: Neurotransmitters and their receptors: Ionotropic vs metabotropic transmission**

**Week 8:**

**Session 1: Synaptic Transmission: Excitatory and inhibitory transmission; Electrical Transmission**

**Session 2: Synaptic modulation and synaptic plasticity: LTP and LTD**

**Week 9:**

**Session 1: EXAM 2**

**Session 2: Somatosensory system and Nociception**

**Week 10:**

**Session 1: Special Senses – Vision**

**Session 2: Special Senses – Auditory**

**Week 11:**

**Session 1: Special Senses – Taste/Olfaction**

**Session 2: Spinal Cord Reflexes**

**Week 12:**

**Session 1: Descending Pathways that control movement**

**Session 2: Cerebellar and Vestibular control of movement**

**Week 13:**

**Session 1: Basal Ganglia control of movement**

**Session 2: Hypothalamus and Autonomic Nervous System**

**Week 14:**

**Session 1: Limbic System and hippocampus**

**Session 2: Cerebral Cortex – Functional Organization**

**FINAL EXAM (EXAM WEEK)**