

Course Information Sheet (Syllabus)

CRN#	Subj	Crse	Sect	Course title	Units	Days	Time	Bldg	Rm	Instructor
15181	BIO	424	01	Neuroscience	3.0	MWF	1000-1050	3	128	Kageyama, GH

Professor: Dr. Glenn H. Kageyama Office hours: M-F 11:00-12:00
 8-129, (909) 869-5305 (leave voice mail message)
 E-mail: ghkageyama@csupomona.edu **and** ghkageyama@excite.com

Prerequisites: a. BIO 115, and preferably BIO 310 & BIO 435 or equivalent
 b. Chemistry, through Organic Chemistry
 c. A proficiency in basic Biology, Chemistry and Physics

Required: M. Bear, B. Connors, M. Paradiso, Neuroscience, Exploring the Brain, 1st or 2nd ed. 1996, 2001, Williams & Wilkins **or**

For the serious: Eric Kandel, James Schwartz, Thomas Jessell, Principles of Neuroscience, 3rd Ed 1991, Elsevier Science Publishing Co., Inc.

Recommended: Neuroscience Lecture Notes, by Dr. Kageyama (ASK Copy)

Laboratories: Lab coats and gloves suggested for special laboratory demonstrations.

Exams and quizzes: Scientific or statistical calculator

Course Objectives: To give students an exposure to basic principles of neuroscience, accomplished via classroom lecture-discussions and laboratory demonstrations.

Hopefully, students will develop an appreciation for a basic understanding of neuroscience. Through a review of the history of neuroscience, the student may learn the philosophy of science. Hopefully, the student will use the knowledge in a constructive way to advance humanity.

General Requirements and Policies:

Students should read text assignments before lectures so that they may better understand lectures and participate in class discussions. Questions and curiosity are important aspects of learning. Students should attend all lectures (except for illness or other valid reason).

Assessment: Two midterms (60 pts each), 6 quizzes (10 pts each), 4 projects (10 points each), and a final (100 pts). The general nature of the exams will be announced. The three exams will be cumulative. Each exam will include information from lectures, readings, & demonstrations. The exams and quizzes missed due to unavoidable events (e.g. accidents or illness), can be made up at a time & place specified by the instructor.

Examination Method: The exams will include problem sets, fill-ins, multiple choice and/or short answer questions on lecture, text readings and laboratory demonstration material. Bring a scantron sheet to exams.

Grading: The total of all assessment scores will be added and the overall letter grade will be determined by the

class curve. (Make-up midterms may be made up if students contact Dr. Kageyama prior to the regularly scheduled exam.). Make-up exams will be taken at the Learning Resource Center (LRC) on the bottom floor of the Library (call Laura at x3503 to schedule your exam). There will be no make-up for the final exam.

Midterm I	60 points	18.8%
Midterm II	60 points	18.8%
Quizzes/projects	100 points	31.2%
Final Examination	100 points	31.2%
Total	320 points	100%

Date Day # Topic

Part I: Foundations

Week 1: Introduction: Neurons-the Building Blocks of Nervous Systems

- 1/6 M 1 Introduction to Neuroscience (Ch. 1, pp. 3-21)
- 1/8 W 2 Neurons and Glia (Ch. 2, pp. 23-41)
- 1/10 F 3 Neurons and Glia (Ch. 2, pp. 42-49)

Week 2: Neurophysiology:

- 1/13 M 4 The Neuronal Membrane at Rest (Ch. 3: 51-72)
- 1/15 W 5 Action Potential (Ch. 4: 74-97)
- 1/17 F 6 Synaptic Transmission (Ch. 5, pp. 99-129)

Week 3: Neurochemistry and nervous System Structure:

- 1/20 M **Martin Luther King School Holiday**
- 1/22 W 7 Neurotransmitter Systems (Ch. 6, pp. 131-162)
- 1/24 F 8 Structure of the Nervous System (Ch. 7, pp. 164-173)

Week 4: Evolution and Development of the Nervous System:

- 1/27 M 9 Evolution of the Nervous System (Handouts)
- 1/29 W 10 Development of the Nervous System (Ch. 7, pp. 175-202)
- 1/31 F **MIDTERM I** (60 points)

Part II: Sensory and Motor Systems

Week 5: Sensory Systems:

- 2/3 M 11 The Chemical Senses (Ch. 8, pp. 255-279)
- 2/5 W 12 The Eye (Ch. 9, pp. 281-312)
- 2/7 F 13 The Central Visual System (Ch. 10, pp. 314-348)

Week 6: Auditory System:

- 2/10 M 14 The Peripheral Auditory System (Ch. 11, pp. 351-366)
- 2/12 W 15 The Central Auditory System (Ch. 11, pp. 368-384)
- 2/14 F **School Holiday**

Week 7: Somatic Sensorimotor Systems:

- 2/17 M 16 The Vestibular System (Ch. 11, pp. 385-395)
- 2/19 W 17 The Peripheral Somatic Sensory System 1 (Ch. 12, pp. 397-420)
- 2/21 F 18 The Peripheral Somatic Sensory System 2 (Ch. 12, pp. 421-435)

Part III: Brain and Behavior

Week 8: Motor Systems:

- 2/24 M **MIDTERM II** (60 points)
- 2/26 W 19 Spinal Control of Movement (Ch. 13, pp. 437-464)
- 2/28 F 20 Brain Control of Movement (Ch. 14, pp. 466-475)

Week 9: Regulation of Motor Activity:

- 3/3 M 21 Basal Ganglia and Movement Initiation (Ch. 14, pp. 477-484)
- 3/5 W 22 Cerebellum and Movement Coordination (Ch. 14, pp. 487-493)
- 3/7 F 23 Chemical Control of Brain and Behavior (Ch. 15, pp. 497-521)

Week 10: Memory, Language and Cognitive Brain Function:

- 3/10 M 24 Memory Systems (Ch. 23, pp. 740-774)
- 3/12 W 25 Molecular Mechanisms of Memory (Ch. 24, pp. 776-807)
- 3/14 F 26 Language and Attention (Ch. 20, pp. 638-674)

Week 11: Final Exam Week

- 3/19 W **Cummulative Final Exam** (100 points: 9:10 a.m.-11:10 a.m.)