

General Education Course Proposal

Proposed Course: Psych. 126 Cognitive Neuroscience **Units** 3
Prefix No. Title

Department: Psychology School: Natural Sciences

GE Category (Indicate one category only):

Foundation: A1___; A2___; A3___; B4___
Breadth: B1___; B2___; C1___; C2___; D___; E___
Integration: B X; C___; D___; International/Multicultural___

Existing Course___; Revised Course___; New Course X

Course Included in Current GE Program___

New courses require the Undergraduate Course Proposal form in addition to this form.

Revised courses require the Undergraduate Course Change Request in addition to this form.

Proposed catalog description: Limit course description to 40 words using succinct phrases. Include prerequisites, limitations, lecture/lab hours. Indicate former course number, e.g., (Former Biol 105)

Prerequisites: General Education Quantitative Reasoning and Area B Breadth Requirements. Biological mechanisms which mediate cognitive processes. Topics include the nervous system substrates of perception, memory, language, cerebral lateralization and specialization, attention, and consciousness.

Enrollment limit per section: 30

Expected number of sections per semester – Year 1 1; Year 3 1

Attachments:

1. A statement presenting the ways in which this course meets the Specifications provided in the appropriate section of the General Education Policy as well as in the Policies for Inclusion and Evaluation of General Education Courses.
2. A statement of elements common to all sections of this course, identifying content, objectives, required student activities, grading policy, representative texts, and an approximate schedule for the course. Required student activities include such things as papers, research projects, homework, laboratory and/or studio performance, recitations, participation, attendance, and exams.
3. A typical syllabus for a particular offering of the course.
4. Any special cost factors associated with this course.

Approval for Inclusion in General Education

[Signature] 9/22/98
Department Chair Date

Stanley M. Zogh 9/28/98
School Dean Date

Brandt Kehoe 12/22/98
Associate Provost Date

[Signature] 9/22/98
School Curriculum Committee Date

General Education Subcommittee Date

Forward Original and TWELVE copies to:
Associate Provost for Academic Affairs, M/S 54

August, 1998
Department of Psychology

ATTACHMENT NO. 2: General Syllabus

Proposed Course: Psychology 126 Cognitive Neuroscience

Psychology 126 Cognitive Neuroscience
3 units, no prerequisite

Catalog description: Biological mechanisms which mediate cognitive processes. Topics include the nervous system substrates of perception, memory, language, cerebral lateralization and specialization, attention, and consciousness.

General Education: This course meets General Education requirements.

Instructor: Name
Office: Instructor's office
Office Hours: Instructor's office hours (minimum of five hours per week)
Phone/E-mail: Instructor's office phone/voice mail number; e-mail address
Dept. Office: Psychology Human Services, Room 234; departmental hours: 0800-1700.
Dept. Phone: 278-2691

Textbooks: The following textbooks/software are required/recommended for the course; they can be purchased at the Kennel Bookstore

Author(s)/editor(s). Title, publisher

Fees: There are no fees attached to this course.

Course Goals:

1. To promote scholarship and critical/disciplined thinking.
2. To promote an understanding of science and scientific methodology
3. To learn to read primary resource material
4. To hone writing skills

5. To integrate foundational information from other courses in the context of understanding the neural substrates of cognition.
6. To provide an understanding of the current status regarding the biological bases of cognitive processes.

Course Topics:

- (Topic 1) Introduction to Cognitive Science (Approx. 1 wk.)
 Topic 1 includes minimally all of the following:
 a) historical perspective
 b) cognitive neuroscience
- (Topic 2) Substrates of cognition:
 neurons and neuronal processes (Approx. 1-2 wks.)
 Topic 2 includes minimally all of the following:
 a) nerve impulse/propagation
 b) synaptic transmission
- (Topic 3) Substrates of cognition:
 basic neuroanatomy (Approx. 1-2 wks.)
 Topic 3 includes minimally all of the following:
 a) peripheral nervous system
 b) central nervous system
- (Topic 4) Methods of cognitive science (Approx. 1-2 wks.)
 Topic 4 includes minimally all of the following:
 a) electroencephalography
 b) structural and functional imaging
 c) clinical neuropsychological measurements
- (Topic 5) Control of movement (Approx. 1 wk.)
 Topic 5 includes minimally all of the following:
 a) physiological bases of muscle contraction
 b) motor and motor association areas
- (Topic 6) Visual, auditory and higher-order
 perceptions (Approx. 1 wk.)
 Topic 6 includes minimally all of the following:
 a) visual, auditory and somatic senses
 b) coding of perception/agnosia
- (Topic 7) Attention and selective perception (Approx. 1 wk.)
 Topic 7 includes minimally all of the following:
 a) measuring attention
 b) electrophysiological correlates of attention

- (Topic 8) Learning and memory systems (Approx. 1-2 wks.)
Topic 8 includes minimally all of the following:
a) study of learning and memory
b) human amnesia
c) long-term potentiation
- (Topic 9) Frontal lobes and cognition (Approx. 1-2 wks.)
Topic 9 includes minimally all of the following:
a) working memory
b) damage to frontal lobes
- (Topic 10) Language and the brain (Approx. 1-2 wks.)
Topic 10 includes minimally all of the following:
a) theories of language
b) Wernicke-Geschwind model
c) functional imaging and language
d) neurophysiological correlates of language
- (Topic 11) Cerebral lateralization and specialization (Approx. 1-2 wks.)
Topic 11 includes minimally all of the following:
a) anatomical correlates of specialization
b) study of commissurotomed patients
c) mediation of visuospatial tasks
- (Topic 12) Consciousness (Approx. 1 wk.)
Topic 12 includes minimally all of the following:
a) definition of consciousness
b) unconscious processing

The order and emphasis in coverage of these topics may vary contingent upon the specific instructor for the course and the textbook used.

**TABLE RELATING COMMON CONTENT TOPIC AREAS
TO GENERAL EDUCATION AREA B SPECIFICATIONS**

GE Specifications For Area B	Common content topics covered in this course	Example Readings*	Total % Time
Instructions in the fundamental principles and methods of the biological systems being studied	Topics 2-11	2,3,10,4,6,7,8,9	40-50
...and the development & testing of hypothesis	Topics 1,10,11	1,8,9	20-30
Instruction pertaining to...a linkage among the biological sciences to further the under- standing of human behavior	Topics 5-11	10,4,6,7,11,8,9	40-50

***please see assigned chapter readings in the "idea syllabus" attachment no. 3**

Assignments:

- 1. Homework/classwork.** Students are expected to keep up with the assigned reading and turn in their essays on the due date. This is especially true for essays whose content will serve as the basis of classroom discussions. Students are expected to actively contribute to classroom discussions.

2. **Exams.** Examinations over textbook and other assigned readings will test the student's mastery of material.
3. **Essays.** The University General Education policy states that each course in upper division GE must have a 4,000 word writing requirement. In order to fulfill this mandated requirement essays on topics related to cognitive neuroscience will be assigned.
4. **Final Exam.** Day, date, time place.

Course Calendar: Approximate dates for: topics to be covered, reading assignments, exams, final exam, and completed essays.

Criteria for evaluating student work: Each syllabus will contain the specific criteria which will be used in evaluating the student and in assigning a letter grade.

Eligibility for a passing grade: Each syllabus will contain a statement of the necessary conditions for passing the course.

Grades: Each syllabus will contain a grading policy which articulates all course requirements, the points awarded for the requirements and the explicit number of points needed earn a particular letter grade.

General information:

1. **Attendance policy.**
2. **Missed exams, make-up exams and work, late paper policy.**
3. **Cheating and plagiarism.** Cheating is the practice of fraudulent or deceptive acts for the purpose of improving a grade or obtaining course credit. Plagiarism is a specific form of cheating which consists of the misuse of published and or unpublished works of another by representing the material as one's own work. The consequences of cheating or plagiarism,

according to CSUF Faculty Handbook, pp. 87-90, Section 41301: Title 5: Executive Order No. 158, may lead to a student being expelled, suspended, placed on probation or given an F for the course in which a memorandum explaining the offense will be placed in the student's permanent file.

4. **Student Disabilities.** Students with disabilities who have registered with Disabled Student Services will be accommodated according to their specific needs.

ATTACHMENT NO. 3: Ideal Syllabus

Proposed Course: Psychology 126 Cognitive Neuroscience

Psychology 126
Cognitive Neuroscience
Course Syllabus (3 units, no prerequisite)
MWF 1010-1100, IA 123
Spring, 1998

Dr. Thomas Breen

Catalog description: Biological mechanisms which mediate cognitive processes. Topics include the nervous system substrates of perception, memory, language, cerebral lateralization and specialization, attention, and consciousness.

Course Description: The course is designed to provide you with an understanding of the biological mechanisms which mediate cognitive processes. Foundational information on neurons and neuronal processes, synaptic transmission, basic neuroanatomy, neuroscience research techniques, sensory processes and motor processes is covered. Building on that foundation, the neural substrates of perception, memory, language, cerebral lateralization and specialization, attention and consciousness serve as the main topic areas of the course.

Goals and Objectives:

1. To promote scholarship and critical/disciplined thinking.
2. To promote a more thorough appreciation and understanding of science and scientific methodology
3. To provide an opportunity to read primary resource material in the area of cognitive neuroscience and to further hone writing skills by writing about the ideas, concepts, theories and empirical data contained in this reading material.
4. To provide the opportunity to discuss course material with other students and the instructor

5. To provide the occasion to integrate foundational information from other courses into a more complete whole in the context of studying the neural substrates of cognitive processes.
6. To present the current status of our understanding regarding the biological bases of various cognitive processes.

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Office: Psychology Human Services (PHS) 245
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Dept. Office: Psychology Human Services 234; departmental hours: 0800-1200; 1300-1700.
Dept. Phone: 278-2691

Texts: Gazzaniga, M.S., Ivry, R.B., & Mangun, G.R. (1998). Cognitive Neuroscience. New York: W.W. Norton.
 [see attachment No. 5 For a table of contents of this text].

Hill, W.H. Learning Thru Discussion. (1977). (2nd Rev. Ed.). Newbury Park: Sage Publications.

Selected primary source articles from Science, Nature, Nature Neuroscience, Cognitive Neuroscience, Scientific American and others

Course Breakdown:	Writing Assignments(8)	40%	800 pts
	2 Exams (13% each)	26%	520 pts.
	Discussion Participation	9%	180 pts.
	Final Examination	25%	<u>500 pts.</u>
			2000 pts.

Grading Criteria:

- A - Complete all writing assignments and earn 1800 or more points.
- B - Complete all writing assignments and earn 1600-1799 points.
- C - Complete all writing assignments and earn 1400-1599 points.
- D- Complete all writing assignments and earn 1200-1399 points.
- F - Failure to complete all writing assignments and/or earn 1200 or more points.

Nature of Exams: Examinations cover the textbook, assigned reading and lecture material. The exams will be identification and short answer in nature.

Nature of Final Exam: The final examination will be comprehensive and will be essay in nature. A list of questions which require integration of course material will be provided the student prior to the final exam period; during the final examination period, the student will be asked to write on several of these essay as selected by the instructor.

Make-up Exam: Students will be allowed to make up a maximum of one (1) missed exam. A legitimate, verified excuse (as determined by the instructor) must be provided in order to be eligible for taking a make-up exam. Make-up exams will be essay in nature.

Writing Assignments: A minimum of eight (8) two-page essays written on topics relevant to cognitive neuroscience will constitute the writing requirement for this course. The topics for the essays will be provided by the instructor. The articles and other reference sources upon which the essays will be based will be placed on reserve in the library. Some topics will be instructor-selected and some will be student-selected. Some of the writing assignments will be generated in order to insure preparedness for the Learning Thru Discussion sessions. Points for the essay will be awarded based upon content (understanding of the material) organization, clarity of thought, continuity, cohesiveness and the use of correct grammatical form. Failure to turn in the completed written assignments on the designated due date will result in a loss of points awarded the essay.

Learning Thru Discussion:

Learning Thru Discussion (LTD) sessions will take place during the last one-half hour of most Friday class periods. Prior to the first LTD session students will be asked to read Hill's book Learning Thru Discussion. This easy-to-read 64 page book explains learning in group discussion, group cognitive maps, group roles and member skills, and provides a list of criteria for a good group. The discussion session will be based upon a specific assigned reading and written work on that reading.

Cheating and Plagiarism:

Cheating is the practice of fraudulent or deceptive acts for the purpose of improving a grade or obtaining course credit. Plagiarism is a specific form of cheating which consists of the misuse of published and or unpublished works of another by representing the material as one's own work. The consequences of cheating or plagiarism, according to the CSUF Faculty Handbook, p. 87-90, Section 41301: Title 5: Executive Order No. 148, may lead to a student being expelled, suspended, placed on probation or given an F for the course in which a memorandum explaining the offense will be placed in the student's permanent file.

Student Disabilities:

Students with disabilities who have registered with Disabled Student Services will be accommodated according to their specific needs.

LECTURE TOPICS AND EXAMINATION SCHEDULE

Date	Topic	G, I & M
January	26 Introduction to Cognitive Science (ICS)	1
	28 ICS: historical perspective	
	30 ICS: cognitive neuroscience	Hill (LTD)
February	2 Substrates of Cognition: neurons and and neuronal processes (NNP)	2(23-44)
	4 NNP: nerve impulse/propagation	
	6 NNP: synaptic transmission	
	9 Substrates of Cognition: Basic Neuroanatomy (BN)	2(44-68)

	11	BN: peripheral nervous system	
	13	BN: central nervous system	
	16	Presidents' Day - No Class	
	18	BN: central nervous system	
	20	Methods of Cognitive Neuroscience (MCS)	3
	23	MCS: electroencephalography	
	25	MCS: structural and functional imaging	
	27	MCS: clinical neuropsychological measurements	
March	2	Control of Movement (COM)	10
	4	COM: physiological bases of muscle contraction	
	6	COM: motor and motor association areas	
	9	Visual, Auditory and Higher-Order Perceptions (VAP) 4, 6	
	11	VAP: visual, auditory and somatic senses	
	13	VAP: coding of perception/ agnosia	
	16	Examination I	1-5, 10
	18	Attention and Selective Perception (ASP)	6
	20	ASP: measuring attention	
	23	ASP: electrophysiological correlates of attention	
	25	Learning and Memory Systems (LMS)	7
	27	LMS: study of learning and memory	
	30	LMS: human amnesia	
April	1	LMS: long-term potentiation	
	3	Frontal Lobes and Cognition (FLC)	11
	6-10	Spring Recess	
	13	FLC: working memory	
	15	FLC: damage to frontal lobes	
	17	Language and the Brain (LB)	8
	20	LB: theories of language	
	22	LB: Wernicke-Geschwind model	
	24	LB: functional imaging and language	
	27	LB: neurophysiological correlates of language	
	29	Cerebral Lateralization and Specialization (CLS)	9
May	1	CLS: anatomical correlates of specialization	
	4	CLS: study of commissurotomy patients	
	6	CLS: mediation of visuospatial tasks	
	8	Examination II	6-9, 11
	11	Consciousness ©	14
	13	C: definitions/ unconscious processing	
	18	Final Examination: 1100-1300	Comprehensive