

## CONCENTRATION PLAN for NEUROSCIENCE

[Eff. 9/2007 – updated 8/09; 9/09]

Name \_\_\_\_\_ Uniqname \_\_\_\_\_

UMID \_\_\_\_\_ Exp. Date of Graduation \_\_\_\_\_

### **PREREQUISITES**

*NOTE: To complete the introductory series, students must take BIO 171 and 172 (Track #1); or AP BIO 195 (Track #2); or already have taken BIO 162 (no longer offered) (Track #3).*

	TERM AND YEAR	COMPLETED
<b><u>Track #1</u></b>		
Biology 171	_____	_____
Biology 172	_____	_____
<b><u>Track #2</u></b>		
Biology 195 (AP)	_____	_____
<b><u>Track #3</u></b>		
Biology 162 (or AP credit for Bio 162)	_____	_____
Chemistry 210 and 211	_____	_____
Chemistry 215 and 216	_____	_____

### **CORE COURSES**

	CREDITS	
Biology 222, Neurobiology	_____	_____
Biology 305, Genetics	_____	_____
Psychology 230, Biopsychology	_____	_____
Biology/MCDB 310, Biolchem. 415, or Chem 351	_____	_____

**ELECTIVES**—Elect six from Group A, B1, B2, and C, as directed below, for a minimum 18 credits. Refer to the attached course lists.

**LECTURE COURSE(S)** (Group A: Elect at least one, and up to two courses.)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

**ADVANCED NEUROSCIENCE COURSES** (Groups B1 and B2: Elect at least three, and up to five courses. One must be from B1 and one must be from B2. One advanced course from Group C may be elected toward this requirement.

B1 course:	_____	_____	_____	_____
B2 course:	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

**LABORATORY REQUIREMENT** (Groups D1 and D2: Elect at least two courses; one must be from D1. A minimum 5 credits must be earned.)

D1 course: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**QUANTITATIVE COGNATE REQUIREMENT** (Group E: Elect two courses.)

\_\_\_\_\_  
\_\_\_\_\_

A minimum of 36 credits is required:

Core Courses (13–15 cr.) + A, B1, B2, C (min. 18 cr.) + D1, D2 (min. 5 cr.)

**TOTAL CONCENTRATION HOURS** \_\_\_\_\_

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### CURRENT COURSES ACCEPTABLE as ELECTIVES

- Elect six courses from Groups A, B1, B2, and C as specified below for a minimum of 18 credits.
- *NOTE: No course may be used to satisfy two requirements.*

**GROUP A—LECTURE COURSES at the 200 to 300 LEVEL** (Elect at least one course and up to two courses.)

BIO 225 (3) Principles of Animal Physiology: Lecture (F/W)  
MCDB 307 (3) Developmental Biology  
PSYCH 240 (4) Introduction to Cognitive Psychology  
PSYCH 345 (4) Introduction to Human Neuropsychology

**GROUP B—ADVANCED NEUROSCIENCE LECTURE/DISCUSSION COURSES at the 300 to 400 LEVEL**

- Elect at least three courses, and up to five courses.
- At least one course must be from Group B1 and one from Group B2.
- One advanced course from Group C may be used toward this requirement.

#### GROUP B1: CELL and MOLECULAR NEUROSCIENCE

MCDB 401 (3) Advanced Topics (applicable sections only)  
MCDB 402 (3) Molecular Biology of Pain and Sensation  
MCDB 403 (3) Molecular and Cell Biology of the Synapse (W)  
MCDB 418 (3) Endocrinology (F)  
MCDB 422 (3) Cellular and Molecular Neurobiology (F)  
MCDB 426 (3) Molecular Endocrinology (W)  
MCDB 450 (3) Genetics and Molecular Biology of Complex Behavior

#### GROUP B2: BEHAVIORAL NEUROSCIENCE

PSYCH 346 (3) Learning and Memory  
PSYCH 347 (3) Perception  
PSYCH 402 (2-4) Special Problems in Psychology  
PSYCH 433 (3) Biopsychology of Motivation  
PSYCH 434 (3) Biopsychology of Learning and Memory  
PSYCH 435 (3) Biological Rhythms and Behavior  
PSYCH 436 (3) Drugs of Abuse, Brain, and Behavior  
PSYCH 437 (3) Current Topics in Biopsychology  
PSYCH 438 (3) Hormones and Behavior  
PSYCH 532/BIO 541 (4) Mammalian Reproductive Endocrinology (W)  
PSYCH 531 (3) Advanced Topics in Biopsychology (F/W/Sp)  
PSYCH 533/NEUROSCI 520 (3) Sleep, Neurobiology, Medicine, and Society

(Additional advanced neuroscience courses may be approved by the concentration advisory panel.)

### GROUP C—ADDITIONAL ADVANCED COURSES

- One course may be elected to fulfill the advanced Neuroscience course requirement.
  - **NOTE:** *STATS 405 cannot be combined with STATS 350 or 400 to fulfill this requirement.*
- MCDB 411 (3) Protein Structure and Function (F)  
MCDB 427 (4) Molecular Biology (F/W)  
MCDB 428 (4) Cell Biology (F/W)  
MCDB 435 (3) Intracellular Trafficking (F)  
MCDB 469 (3) Signal Transduction  
EEB 492 (4) Behavioral Ecology (F) (*Su-BIOSTATION: 5 credits*)  
PSYCH 420 (1-6) Faculty-Directed Advanced Tutorial Reading for Psychology as a Natural Science  
PSYCH 447 (3) Current Topics in Cognition and Perception  
STATS 350 **OR** 400\* (4) Introduction to Statistics and Data Analysis **or** Applied Statistical Methods  
STATS 401 **OR** 405\* (4) Applied Statistical methods II **or** Introduction to Statistics  
(Additional advanced courses may be approved as cognates by the concentration advisory panel.)

### GROUP D—LABORATORY REQUIREMENT

Elect at least two different courses, with at least one being a method-based laboratory, for a minimum of 5 credits total from D1 and D2.

#### GROUP D1: METHOD-BASED LABORATORY COURSES (Elect at least one course.)

- BIO 226 (2) Animal Physiology Laboratory (F/W)  
MCDB 306 (3) Introductory Genetics Laboratory (F/W)  
MCDB 308 (3) Developmental Biology Laboratory (W)  
MCDB 419 (3) Endocrinology Laboratory (F)  
MCDB 423 (3) Cellular and Molecular Neurobiology Laboratory (F)  
MCDB 429 (3) Cellular and Molecular Biology Laboratory (W)  
PSYCH 231/UC 261 (4) Brain, Learning, and Memory

#### GROUP D2: RESEARCH-BASED LABORATORY COURSES

- **Only 3 credits of independent research may count toward the concentration program.**
- A course must be taken for a minimum of **2 credits** each and be completed in a single academic term.

- MCDB 300/400 (2-3) Undergraduate Research/Advanced Undergraduate Research (F/W/Sp-Su)  
PSYCH 326 (1-4) Faculty-Directed Early Research for Psychology as a Natural Science  
PSYCH 331 & 332 (1 & 3) Laboratories in Biopsychology (a maximum of 3 credits may be counted)  
PSYCH 422 (3) Faculty-Directed Advanced Research for Psychology as a Natural Science

### GROUP E—QUANTITATIVE COGNATE REQUIREMENT

- Elect two courses.
  - 100-level courses may be used to fulfill this requirement, but the credits may not be used toward the minimum number of credits for the concentration.
  - **NOTE:** *STATS 405 cannot be combined with STATS 350 or 400 to fulfill this requirement.*
- STATS 350 **OR** 400\* (4) Intro. to Statistics and Data Analysis **or** Applied Statistical Methods  
STATS 401 **OR** 405\* (4) Applied Statistical methods II **or** Introduction to Statistics  
PSYCH 448 (3) Mathematical Psychology  
MATH 115 (OR 185) (–) Calculus I (or Honors)  
MATH 116 (OR 186) (–) Calculus II (or Honors)  
PHYSICS 125, 140, 160, or 135 (–) General Physics I (or Honors)  
PHYSICS 126, 240, 260, or 235 (–) General Physics II (or Honors)

**\* If STATS 350 or 400, or 401 or 405, is counted in Group C, it cannot be double-counted in Group E, and vice versa.**