

**CONCENTRATION PLAN for  
CELLULAR and MOLECULAR BIOLOGY**

(Eff. 9/2007 – updated 1/18/08)

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

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

**PREREQUISITES** *(It is not necessary to complete every prerequisite before declaring a concentration.)*

**NOTE:** *To complete the introductory series, students must take BIO 171, 172, and 173 (Track #1); or AP BIO 195 and BIO 173 (Track #2); or already have taken BIO 162 (no longer offered) (Track #3).*

	TERM AND YEAR	COMPLETED
<u>Track #1</u> – Biology 171	_____	_____
Biology 172	_____	_____
Biology 173 ( <i>lab</i> )	_____	_____
<u>Track #2</u> – Biology 195 (AP)	_____	_____
Biology 173 ( <i>lab</i> )	_____	_____
<u>Track #3</u> – Biology 162 (or AP credit for BIO 162)	_____	_____
Chemistry 210 and 211	_____	_____
Chemistry 215 and 216	_____	_____
Physics 125 and 127 ( <i>lab</i> ); <b>OR</b> 135 or 140 or 160 and 141 ( <i>lab</i> )	_____	_____
Physics 126 and 128 ( <i>lab</i> ); <b>OR</b> 235 or 240 or 260 and 241 ( <i>lab</i> )	_____	_____
Mathematics 115 or 120 or 185	_____	_____
Mathematics 116 or 121 or 186	_____	_____

**CONCENTRATION COURSES**

Biology 305, Genetics	_____	_____
Biology 310 or 311, <b>OR</b> Biol. Chem. 415, <b>OR</b> Chem. 451 and 452 ( <i>452 fulfills the Bio/Chem elective</i> )	_____	_____
MCDB 427, Molecular Biology	_____	_____
MCDB 428, Cell Biology	_____	_____

**ONE BIOLOGY/CHEMISTRY ELECTIVE** (Group A – see attached list):

\_\_\_\_\_

**TWO ADVANCED CMB LABORATORY COURSES** (Group B – see attached list):

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

**TWO ADVANCED CMB COURSES** (Group C – see attached list):

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

**ONE GENERAL ELECTIVE** (Group D – see attached list):

\_\_\_\_\_

## **CURRENT COURSES ACCEPTABLE as ADVANCED CMB COURSES and ELECTIVES**

*NOTE: No course may be used to satisfy two requirements.*

### **GROUP A—BIOLOGY AND CHEMISTRY ELECTIVES**

BIO 207	(4)	Introductory Microbiology (F/W)
BIO 222	(3)	From Message to Mind: An Introduction to Neurobiology (W)
BIO 225	(3)	Principles of Animal Physiology (F/W/Sp)
MCDB 307	(3)	Developmental Biology (F)
MCDB 308	(3)	Developmental Biology Laboratory (W)
MCDB 321	(3)	Introductory Plant Physiology (W)
CHEM 230	(3)	Physical Chemistry Principles and Applications (F/W/Sp)
CHEM 260	(3)	Chemical Principles
CHEM 241/242	(4)	Introduction to Chemical Analysis Lecture and Laboratory
CHEM 452	(4)	(for students who elect to take CHEM 451 and 452)

*NOTE: An advanced CMB laboratory course (Group B) may be used to meet this requirement.*

### **GROUP B—ADVANCED CMB LABORATORY COURSES** (All are 3 credits.)

MCDB 306	Genetics Laboratory (F/W)
MCDB 400	Advanced Independent Research (F/W/Sp/Su)
MCDB 413	Plant Molecular Biology Laboratory (W)
MCDB 419	Endocrinology Laboratory (F)
MCDB 423	Research in Cellular and Molecular Neurology Laboratory (F/W)
MCDB 429	Laboratory in Cellular and Molecular Biology (F/W)

### **GROUP C—ADVANCED CMB COURSES** (All are 3 credits.)

MCDB 401	Advanced Topics
MCDB 403	Molecular and Cell Biology of the Synapse (W)
MCDB 404	Genetics, Development, and Evolution
MCDB 405	Molecular Basis of Development
MCDB 408	Genomic Biology (W)
MCDB 411	Protein Structure and Function (F)
MCDB 415	Microbial Genetics (formerly MCDB 513) (W)
MCDB 418	Endocrinology (F)
MCDB 422	Cellular and Molecular Neurobiology (F)
MCDB 425	Biotechnology: From Concepts to Technologies
MCDB 426	Molecular Endocrinology (W)
MCDB 430	Plant Molecular Biology (W)
MCDB 432	Biochemistry and Physiology of Prokaryotes (formerly MCDB 521/522) (F)
MCDB 435	Intracellular Trafficking (F)
MCDB 469	Signal Transduction (W)
MCDB 589	Microbial Evolution (W)

*NOTE: Advanced CMB laboratory courses (Group B) may be used to meet this requirement.*

### **GROUP D—GENERAL ELECTIVES**

- Any BIOLOGY, EEB, or MCDB course at the 200-, 300-, or 400-level (except BIOLOGY 200, 201, 202, 215, 262, or EEB 300, 302, or MCDB 300, 302, 320, or 412). A third advanced CMB course is permitted to meet this requirement.
- One cognate course in Chemistry.
  - CHEM 230, 260, or 241/242; or CHEM 452 for students who elect to take CHEM 451 and 452.

*NOTE: Students will not receive credit for both CHEM 230 and CHEM 260 if either one of these courses has been elected to satisfy the Biology/Chemistry elective (Group A).*
  - Any Chemistry course that has CHEM 260 as a prerequisite.
- One cognate course in Mathematics or Statistics (as approved by the concentration advisor): MATH courses that have a MATH 116 prerequisite, or STATS 400 or BIostat 503.