

**CONCENTRATION PLAN for
CELLULAR and MOLECULAR BIOLOGY**

[Eff. 9/2007 – updated 8/09]

Name _____ Uniqname _____

UMID _____ Exp. Date of Graduation _____

PREREQUISITES

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>); OR 135 or 140 or 160 and 141 (<i>lab</i>)	_____	_____
Physics 126 and 128 (<i>lab</i>); OR 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/MCDB 310 or 311, OR Biolchem. 415, OR 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 402 Molecular Biology of Pain and Sensation (W)
- 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 417 Chromosome Structure
- 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 436 Introductory Immunology (F)
- MCDB 444 Bacterial Cell Biology
- MCDB 450 Genetics and Molecular Biology of Complex Behavior
- 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

1. 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.
2. One cognate course in Chemistry.
 - (a) 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).
 - (b) Any Chemistry course that has CHEM 260 as a prerequisite.
3. 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.