

Recommended Academic Plan
Biochemistry and Molecular Biology with Molecular & Cell Biology Option
(B M B with MCB option at UP)
Effective (For students entering Summer 2010 and later)

Semester 1	Credits	Semester 2	Credits
~ <i>MATH 140 (GQ) Calculus with Analytic Geometry I</i>	4	<i>MATH 141(GQ)Calculus with Analytic Geometry II</i>	4
~ <i>CHEM 110 (GN) Chemical Principles</i>	3	~ <i>CHEM 112 (GN) Chemical Principles</i>	3
~ <i>CHEM 111 (GN) Experimental Chemistry</i>	1	<i>CHEM 113(GN) Experimental Chemistry</i>	1
<i>PSU 016 First-Year Seminar</i>	1	<i>ENGL 15 OR 30 (GWS) Composition/Honors Composition</i>	3
Art (GA), Humanities (GH), or Social Behavioral Sciences (GS)	6	<i>PHYS 211 (GN) General Physics Mechanics</i> (must be taken in sequence with <i>PHYS 212, 213 ,214</i>) <u>or</u> Art (GA), Humanities (GH), or Social Behavioral Sciences (GS)	4 3-6
Total Credits:	15	Total Credits:	14-17
Semester 3	Credits	Semester 4	Credits
<i>CHEM 210 Organic Chemistry</i>	3	<i>CHEM 212 Organic Chemistry</i>	3
% BMB 251 Molecular & Cell Biology I	3	<i>CHEM 213 Laboratory in Organic Chemistry</i>	2
<i>PHYS 212 (GN) General Physics Electricity and Magnetism</i> (must be taken in sequence with <i>PHYS 211, 213 ,214</i>) <u>or</u> <i>PHYS 250 Introductory Physics I</i> (must be taken in sequence with <i>PHYS 251</i>)	4	<i>PHYS 213 (GN) General Physics Fluids & Thermal Physics & PHYS 214 (GN) General Physics: Wave Motion & Quantum Physics</i> (must be taken in sequence with <i>PHYS 211, 212</i>) <u>or</u> <i>PHYS 251 Introductory Physics II</i> (must be taken in sequence with <i>PHYS 250</i>)	4
% MICRB 201 Introductory Microbiology	3	% BMB 252 Molecular & Cell Biology II	3
<i>MICRB 202 Introductory Microbiology Laboratory</i>	2	<i>BIOL 322 Genetic Analysis</i>	3
Total Credits:	15	Total Credits:	15
Semester 5	Credits	Semester 6	Credits
<i>BMB 400 Molecular Biology of the Gene</i>	2	<i>BMB 402 General Biochemistry</i>	3
<i>BMB 401 General Biochemistry</i>	3	<i>BMB 445W Laboratory in Molecular Genetics</i>	2
<i>BMB 442 Lab in Proteins, Nucleic Acids, & Molecular Cloning</i>	3	<i>BMB 460 Cell Growth and Differentiation</i>	3
<i>MICRB 410 Principal of Immunology</i>	3	<i>CAS 100 A, B, or C (GWS) Effective Speech</i>	3
*LIST B ELECTIVE	2-3	Art (GA), Humanities (GH), or Social Behavioral Sciences (GS)	3
Health & Physical Activity (GHA)	1.5	Health & Physical Activity (GHA)	1.5
Total Credits:	15.5-16.5	Total Credits:	15.5
Semester 7	Credits	Semester 8	Credits
<i>CHEM 450 Physical Chemistry – Thermodynamics</i> (must be taken in sequence with <i>CHEM 452</i>) <u>or</u> <i>BMB 428 Physical Chemistry with Biological Applications</i>	3	<i>CHEM 452 Physical Chemistry - Quantum Chemistry</i> (must be taken in sequence with <i>CHEM 451</i>)	3
<i>BMB 430 Developmental Biology</i>	3	<i>ENGL 202C (GWS) Technical Writing</i>	3
<i>BMB 443W Laboratory in Protein Purification & Enzymology</i>	3	Art (GA), Humanities (GH), or Social Behavioral Sciences (GS)	0-6
#BMB or MICRB 400 Level Course	2-3	#BMB or MICRB 400 Level Course	2-3
Art (GA), Humanities (GH), or Social Behavioral Sciences (GS)	3	± LIST C FREE ELECTIVES	5-6
± LIST C FREE ELECTIVES	3		
Total Credits:	16-17	Total Credits:	16-19

- **Bold** type indicates courses requiring a quality grade of C or better.
- *Italic type* indicates courses that satisfy both major and General Education requirements.
- **Italic Bold** type indicates courses requiring a quality grade of C or better and that satisfy both major and General Education requirements.
- GWS, GHA, GQ, GN, GA, GH, and GS are codes used to identify General Education requirements.
- US, IL, and US;IL are codes used to designate courses that satisfy University United States/International Cultures requirement.
- W is the code used to designate courses that satisfy University Writing Across the Curriculum requirements.
- ~ indicates courses required to enter into this major.
- % indicates all 3 courses are required to graduate; a quality grade of C or better is required in 2 of the 3 courses.
- # any 400 level Biochemistry & Molecular Biology (BMB) or Microbiology (MICRB) course with a maximum of 4-credits in 496.
- * indicates List B Electives: CMPSC 101 (3), 201 (3), Math 220 (2), 231 (2), 250 (3), Stat 250 (3) 301 (3), 401 (3)
- ± indicates see the Department List C for exclusions
- To graduate, all students must earn C or higher in 9 credits of any 400-level BMB/ MICRB courses except BMB 443W, 444, 445W, 446, BMB/MICRB 442, 496, MICRB 421W, 422, 447

Scheduling patterns for courses not taught each semester

Fall - only taught courses: BMB 251H, 400, 401H, 428, 430, 443W, 446, 464 BMB/MICRB 435, 450 MICRB 401, 413, 421W and MICRB/BIOTC 416

Spring - only taught courses: BMB 221, 252H, 402H, 433, 437, 444, 445W, 474 BMB/MICRB 432, 460, 480 MICRB 201H, 412, 415, 422, 447

± **LIST C FREE ELECTIVES** - With the EXCEPTION of the courses listed below, ALL courses appearing in the University Bulletin are acceptable as elective courses: 6 credits of ROTC may be applied toward graduation requirements.

BI SC 001	BI SC 002	MATH 001	MATH 003	MATH 004	MATH 111	MATH 017
MATH 018	MATH 021	MATH 022	MATH 026	MATH 030	MATH 035	MATH 036
MATH 040	MATH 041	MATH 081	MATH 082	MATH 083	MATH 110	CHEM 001
CHEM 003	CHEM 108	CHEM 101	ENGL 004	ENGL 005	PH SC 007	PHYS 001
PHYS 150	PHYS 151	LL ED 005	LL ED 010	LL ED 123	STAT 100	