

**Recommended Academic Plan
Biochemistry and Molecular Biology with Biochemistry Option
(B M B with BIOCH option at UP)
Effective Summer 2016 or later**

Semester 1	Credits	Semester 2	Credits
PSU 016 First-Year Seminar	1	% MICRB 201 Introductory Microbiology	3
~ CHEM 110 (GN) Chemical Principles	3	MICRB 202 Introductory Microbiology Laboratory	2
~ CHEM 111 (GN) Experimental Chemistry I	1	~ CHEM 112 (GN) Chemical Principles II	1
~ MATH 140 (GQ) Calculus with Analytic Geometry I	4	CHEM 113(GN) Experimental Chemistry II	1
^ ENGL 15 (GWS) Rhetoric and Composition or ENGL 030 (GWS) Honors Freshman Composition	3	MATH 141(GQ) Calculus with Analytic Geometry II	4
Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)	3	^ CAS 100 A, B, or C (GWS) Effective Speech	3
Total Credits:	15	Total Credits:	16
Semester 3	Credits	Semester 4	Credits
% BMB 251 Molecular & Cell Biology I	3	% BMB 252 Molecular & Cell Biology II	3
CHEM 210 Organic Chemistry I	3	CHEM 212 Organic Chemistry II	3
PHYS 211 (GN) General Physics: Mechanics	4	CHEM 213 Laboratory in Organic Chemistry - W	2
± LIST C FREE ELECTIVES	3	PHYS 212 (GN) General Physics: Electricity And Magnetism	4
Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)	3	BIOL 322 Genetic Analysis	3
Total Credits:	16	Total Credits:	15
Semester 5	Credits	Semester 6	Credits
BMB 400 Molecular Biology of the Gene	2	BMB 402 General Biochemistry	3
BMB 401 General Biochemistry	3	BMB 443 Laboratory in Protein Purification & Enzymology - W or α BMB 445 Laboratory in Molecular Genetics - W	2-3
BMB 442 Lab in Proteins, Nucleic Acids, and Molecular Cloning	3	CHEM 452 Physical Chemistry – Quantum Chemistry	3
CHEM 450 Physical Chemistry - Thermodynamics	3	Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)	6
PHYS 213 (GN) General Physics: Fluids and Thermal Physics	2	Health & Physical Activity (GHA)	1.5
PHYS 214 (GN) General Physics: Wave Motion & Quantum Physics	2		
Total Credits:	15	Total Credits:	15.5–16.5
Semester 7	Credits	Semester 8	Credits
BMB 443 Laboratory in Protein Purification & Enzymology – W or α BMB 445 Laboratory in Molecular Genetics I – W or α BMB 448 Model Systems and Approaches in Cell Biology Inquiry	2-3	BMB 474 Analytical Biochemistry	3
# BMB, CHEM or MICRB 400-Level Selections	4-6	# BMB, CHEM or MICRB 400-Level Selections	2-6
* LIST B MATH SELECTION	2-4	ENGL 202C (GWS) Effective Writing: Technical Writing	3
Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)	3	± LIST C FREE ELECTIVES	1-7
Health and Physical Activity (GHA)	1.5	Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)	3
Total Credits:	12.5-17.5	Total Credits:	12-17

- **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.
- ~ indicates courses required to enter into this major.
- ^ indicates honor students should schedule ENGL/CAS 137H in the fall and ENGL/CAS 138T in the spring. The sequence should be completed in the first year.
- % indicates all 3 courses are required to graduate; a quality grade of C or better is required in 2 of the 3 courses.
- ± Department LIST C FREE ELECTIVES. See below for exclusions.
- W indicates courses that satisfy University Writing Across the Curriculum requirements.
- α take 2 credits of B M B 400-level labs: choice of B M B 445 or B M B 448. B M B 448 is only offered Fall semester.
- # any 400 level Biochemistry & Molecular Biology (BMB), Microbiology (MICRB) or Chemistry (CHEM) course with a total maximum of 4-credits in B M B 488 and/or 496.
- * indicates LIST B MATH SELECTIONS: CMPSC 101 (3 credits), 102 (3 credits), 121 (3 credits), 200 (3 credits), 201 (3 credits); Math 220 (2 credits), 230 (4 credits), 231 (2 credits), 250 (3 credits), 251 (4 credits); Stat 200 (3 credits), 240 (3 credits), 250 (3 credits), 301 (3 credits), 401 (3 credits).
- To graduate, all students must earn C or higher in 9 credits of any 400-level BMB/ MICRB courses except BMB 442, 443, 445, 448, 488, 496; MICRB 421, 422, and 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.

Students MAY NOT fulfill this requirement with lower level or general education courses in math and science (including but not limited to examples such as: any BI SC course, any B M B course below the 100 level, MATH 110 and 111, and the like).

Students MAY NOT fulfill this requirement with courses that significantly repeat material from courses required for the major, (including but not limited to examples such as: CHEM 202 or 203 after taking CHEM 210 or 212, or vice-versa; PHYS 250 or 251 after taking PHYS 211, 212, 213, and 214, or vice-versa; and so forth).

Students MAY NOT fulfill this requirement with remedial courses (including but not limited to examples such as: LL ED 005 and 010; ENGL 004, 005, and 006; CHEM courses below CHEM 110; MATH courses below MATH 110; STAT 100; PHYS courses below PHYS 211; and the like).

Scheduling patterns for required courses not taught each semester

Fall - only required courses: BMB 400, 401H (Honors section fall only), 428, 430, 448.

Spring - only required courses: BMB 252H (Honors section spring only), 402H (Honors section spring only), 474; BIOL 322.

Check with department for complete list of elective courses taught each semester.