

**Recommended Academic Plan
Biotechnology General Option (BIOTC GEN at UP)
Effective Summer 2017 or later**

Semester 1		Credits	Semester 2		Credits
PSU 016 First-Year Seminar		1	% MICRB 201 Introductory Microbiology		3
~ CHEM 110(GN) Chemical Principles I		3	MICRB 202 or 203 Introductory Microbiology Laboratory		2
~ CHEM 111 (GN) Experimental Chemistry I		1	~ CHEM 112(GN) Chemical Principles II		3
~ MATH 140 (GQ) Calculus with Analytic Geometry I		1	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 202 Fundamentals of Organic Chemistry I (Must be taken in sequence with CHEM 203.)		3	& CHEM 203 Fundamentals of Organic Chemistry II (Must be taken in sequence with CHEM 202.)		3
PHYS 250 (GN) Introduction Physics I		4	PHYS 251 (GN) Introductory Physics II		4
± LIST C FREE ELECTIVES		3	Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)		6
Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)		3			
Total Credits:		16	Total Credits:		16
Semester 5		Credits	Semester 6		Credits
BIOTC 489 Animal Cell Culture Methods		3	BIOTC 459 Plant Tissue Culture and Biotechnology		3
BMB 211 Elementary Biochemistry		3	BMB 221 Applied Biochemistry		2
MICRB 421 Laboratory of General & Applied Microbiology – W		3	BMB 442 Lab in Proteins, Nucleic Acids, and Molecular Cloning		3
± LIST C FREE ELECTIVES		3	BIOL 322 Genetic Analysis		3
Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)		3	ENGL 202C (GWS) Effective Writing: Technical Writing		3
Health and Physical Activity (GHA)		1.5	Health and Physical Activity (GHA)		1.5
Total Credits:		16.5	Total Credits:		15.5
Semester 7		Credits	Semester 8		Credits
BIOTC 416 Microbial Biotechnology		2	MICRB 410 Principles of Immunology		3
BIOTC 479 Methods in Biofermentations		3	# 400-LEVEL LECTURE SELECTIONS		3
# 400-LEVEL LECTURE SELECTIONS		3	STAT 250 (GQ) Introduction to Biostatistics		3
± LIST C FREE ELECTIVES		3	± LIST C FREE ELECTIVES		5-7
Arts (GA) or Humanities (GH) or Social & Behavioral Sciences (GS)		3			
Total Credits:		14	Total Credits:		14-16

- **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.
- & indicates in place of CHEM 202 and 203, you may elect to take CHEM 210 (3) 3rd semester; and CHEM 212 (3) and CHEM 213 (2) 4th semester.
- ± indicates Department LIST C FREE ELECTIVES. See reverse side for exclusions.
- **W** indicates courses that satisfy University Writing Across the Curriculum requirements.
- # select 6 credits from FD SC 408 or 400-Level Biochemistry & Molecular Biology (B M B), Biotechnology (BIOTC), or Microbiology (MICRB) lecture courses.
- To graduate, all students must earn a C or higher in 9 credits of any 400-level BMB/ MICRB/BIOTC 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: MICRB 421; MICRB/BIOTC 416; BIOTC 489.

Spring - only required courses: BMB 221, 252H (Honors section spring only); BIOL 322.

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