

**Recommended Academic Plan  
Microbiology (MICRB at UP)  
Effective Summer 2016 or 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 Principals</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	% <b>MICRB 201 Introductory Microbiology</b>	3
Arts (GA), Humanities (GH) or Social Behavioral Sciences (GS)	3	MICRB 202 Introductory Microbiology Laboratory	2
^ ENGL 15 (30) Rhetoric and Composition (GWS)	3	^ CAS 100 A, B, or C (GWS) Effective Speech	3
Total Credits:	15	Total Credits:	16
Semester 3	Credits	Semester 4	Credits
CHEM 210 Organic Chemistry	3	CHEM 212 Organic Chemistry	3
% <b>MICRB 251 Molecular &amp; Cell Biology I</b>	3	CHEM 213 Laboratory in Organic Chemistry - <i>W</i>	2
<i>PHYS 250 (GN) Introduction Physics I</i>	4	<i>PHYS 251 (GN) Introductory Physics II</i>	4
± LIST C FREE ELECTIVE	3	% <b>MICRB 252 Molecular &amp; Cell Biology II</b>	3
Arts (GA), 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 442 Laboratory in Proteins, Nucleic Acids, & Molecular Cloning	3
* MICRB ELECT	3	* MICRB ELECT	3
MICRB 421 Laboratory of General & Applied Microbiology - <i>W</i>	3	# MICRB ELECT	2
Arts (GA), Humanities (GH) or Social Behavioral Sciences (GS)	3	Arts (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	Total Credits:	15.5
Semester 7	Credits	Semester 8	Credits
* MICRB ELECT	3	@ MICRB ELECT	2-3
# MICRB ELECT	1	* MICRB ELECT	2-3
@ MICRB ELECT	3-4	ENGL 202C (GWS) Technical Writing	3
BMB 428 Physical Chemistry with Biological Applications	3	Arts (GA), Humanities (GH) or Social Behavioral Sciences (GS)	3
± LIST C FREE ELECTIVES	3	± LIST C FREE ELECTIVES	2-3
Arts (GA), Humanities (GH) or Social Behavioral Sciences (GS)	3		
Total Credits:	16-17	Total Credits:	12-15

- **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 Department LIST C FREE ELECTIVES. See reverse side for exclusions.
- *W* indicates courses that satisfy University Writing Across the Curriculum requirements.
- \* indicates select 4 courses from: MICRB 401 (3), 410 (3), 412 (3), 415 (3), 450 (2)
- # indicates select 3 credits from: MICRB 422 (2), 447 (1), 445W (2), 448 (2)
- @ indicates select 6-7 credits from: FD SC 408 (2), B M B 488, B M B 496 or any MICRB 400-level course, with a total maximum of 4-credits in BMB 488 and/or 496.
- To graduate, all students must earn a 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; BMB/MICRB 435, 450; MICRB 401, 421; MICRB/BIOTC 416.

Spring - only required courses: BMB 252H (Honors section spring only), 402H (Honors section spring only); MICRB 412, 415, 422, 447; BIOL 322.

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