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| **Catalog Year 2019-2020**B.S., Microbiology | ***(For internal use only)***[ ]  *No change*[ ]  *UCC proposal* |

A Major Academic Plan (MAP) is one way to complete a degree in a set number of semesters. The *example* below is an efficient strategy only. Actual plans for individual students will vary based on advisor recommendations and academic needs. Official Program Requirements including Major, General Education, Elective, and university requirements (see pg.2) are based on Catalog Year.

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| **Course Subject and Title** | **Cr.**  | **Min.** **Grade** | **\*GE,** **UU or UM** | **\*\*Sem. Offered** | **Prerequisite** | **Co Requisite** |
| Semester One |
| GE Objective 1: ENGL 1101 Writing and Rhetoric I | 3 | C- | GE | F, S, Su | Appropriate placement score |  |
| GE Objective 5: BIOL 1101, 1101L Biology I | 4 |  | GE | F,S, Su | MATH 1108 | MATH 1108 |
| GE Objective 3: Either MATH 1160 or Math 1170  | 3-4 |  | GE | F,S, Su | MATH 1143 or MATH 1147 |  |
| GE Objective 5 CHEM 1111, 1111L General Chemistry I | 5 |  | GE | F,S, Su | MATH 1143 or MATH 1147 | CHEM 1111L |
| Free Electives | 0-1 |  |  |  |  |  |
|  Total | 16 |  |  |  |  |  |
| Semester Two |
| GE Objective 1: ENGL 1102 Writing and Rhetoric II | 3 | C- | GE | F, S, Su | ENGL 1101 or equivalent |  |
| BIOL 1102, 1102L Biology II | 4 |  |  | F,S | BIOL 1101 |  BIOL 1102L |
| CHEM 1112,1112L General Chemistry II | 4 |  |  | F,S, Su | CHEM 1111, 1111L,MATH 1143 or 1147 | CHEM 1112L |
| GE Objective 6: | 3 |  | GE | F,S, Su |  |  |
|  Total | 14 |  |  |  |  |  |
| Semester Three |
| BIOL 2235, 2235L General Microbiology | 4 |  |  | F,S | BIOL 1101,1102, CHEM 1112 | BIOL 2235L |
| PHYS 1111, 1113 General Physics | 4 |  |  | F,S | MATH 1143 or MATH 1147 |  |
| CHEM 3301, 3303 Organic Chem I and Lab | 4 |  | UM | F | CHEM 1112, CHEM 1112L |  |
| GE Objective 2: COMM 1101 Principles of Speech | 3 |  | GE | F,S, Su |  |  |
|  Total | 15 |  |  |  |  |  |
| Semester Four |  |  |  |  |  |  |
| CHEM 2232, 2234 Quantitative Analysis | 4 |  |  | S | CHEM 1112, 1112L, MATH 1160 or 1170 |  |
| PHYS 1112,1114 General Physics II | 4 |  |  | F,S | PHYS 1111,MATH 1143 or 1147 |  |
| CHEM 3302, 3304 Org Chem II and Lab | 4 |  | UM | S | CHEM 3301 |  |
| GE Objective 4: | 3 |  | GE | F,S, Su |  |  |
|  Total | 15 |  |  |  |  |  |
| Semester Five |  |  |  |  |  |  |
| BIOL 3358 Genetics | 3 |  | UM | F,S | BIOL 2206 or BIOL 2235 |  |
| Microbiology Electives (Upper Division) | 3 |  | UM |  |  |  |
| BIOL 4432 Biochemistry  | 3 |  | UM | F,S | BIOL 1101, CHEM 3301 |  |
|  OR BIOL 4445 Biochemistry I |  | BIOL 1101, CHEM 3302 |  |
| GE Objective 9: | 3 |  | GE | F,S, Su |  |  |
| GE Objective 4: | 3 |  | GE | F,S, Su |  |  |
|  Total | 15 |  |  |  |  |  |
| Semester Six |  |  |  |  |  |  |
| Microbiology Electives (Upper Division) | 4 |  | UM |  |  |  |
| Microbiology Electives (Upper Division) | 5 |  | UM |  |  |  |
| Biology Electives | 4 |  |  |  |  |  |
| BIOL 4447 Biochemistry II | 3 |  | UM |  |  |  |
| OR Free Electives |  |  |  |  |  |
|  Total | 16 |  |  |  |  |  |
| Semester Seven |  |  |  |  |  |  |
| BIOL 4444, 4444L Cell and Molecular Biology | 4 |  | UM | F | BIOL 3358, CHEM 3302  |  |
| BIOL 4433,4433L Microbial Physiology | 4 |  | UM | S | BIOL 2235,BIOL 2235L, BIOL 4434L |  |
| BIOL 4494 Seminar in Microbiology | 1 |  | UM | F,S, Su |  |  |
| Microbiology Electives (Upper Division) | 4 |  | UM |  |  |  |
| GE Objective 6: | 3 |  | GE | F,S, Su |  |  |
|  Total | 16 |  |  |  |  |  |
| Semester Eight |  |  |  |  |  |  |
| Microbiology Electives (Upper Division) | 4 |  | UM |  |  |  |
| GE Objective 7 or 8: | 3 |  | GE | F,S, Su |  |  |
| Biology Electives | 4 |  |  |  |  |  |
| Free Electives | 2 |  |  |  |  |  |
|  Total | 13 |  |  |  |  |  |
| \*GE=General Education Objective, UU=Upper Division University, UM= Upper Division Major\*\*See Course Schedule section of Course Policies page in the e-catalog (or input F, S, Su, etc.)  |

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| B.S., Microbiology |
| **2019-2020 Major Requirements** | **CR** | **2018-2019 GENERAL EDUCATION OBJECTIVES****Satisfy Objectives 1,2,3,4,5,6 (7 or 8) and 9** | **36 cr. min** |
| **MAJOR REQUIREMENTS** |  | 1. Written English (6 cr. min) ENGL 1101 | 3 |
| MAJOR REQUIREMENTS TOTAL | 75-78 |  ENGL 1102 | 3 |
| **CORE REQUIREMENTS**  | **47-50** | 2. Oral Communication (3 cr. min) COMM 1101 | 3 |
| BIOL 1101, 1101L Biology I, Lab (Counted in Objective 5) | 3. Mathematics (3 cr. min) MATH 1160 or MATH 1170 | 3-4 |
| BIOL 1102, 1102L Biology II | 4 | 4. Humanities, Fine Arts, Foreign Lang. **(2 courses; 2 categories; 6 cr. min)** |
| BIOL 2235, 2235L General Microbiology | 4 |  |  |
| BIOL 3358 Genetics | 3 |  |  |
| BIOL 4432 or BIOL 4445 and 4447 Biochemistry | 3-6 | 5. Natural Sciences **(2 lectures-different course prefixes, 1 lab; 7 cr. min)** |
| BIOL 4433,4433L Microbial Physiology | 4 | CHEM 1111, 1111L General Chemistry I, Lab | 5 |
| BIOL 4444, 4444L Cell and Molecular Biology | 4 | BIOL 1101, 1101L Biology I, Lab | 4 |
| BIOL 4494 Seminar in Microbiology | 1 |  |  |
| CHEM 1111,1111L General Chemistry I, Lab (Counted in Objective 5) | 6. Behavioral and Social Science **(2 courses-different prefixes; 6 cr. min)** |
| CHEM 1112,1112L General Chemistry II | 4 |  |  |
| CHEM 2232,2234 Quantitative Analysis, Lab | 4 |  |  |
| CHEM 3301, 3303 Organic Chemistry I, Lab | 4 | One Course from EITHER Objective 7 OR 8 **(1course; 3 cr. min)** |
| CHEM 3302,3304 Organic Chemistry II, Lab | 4 | 7. Critical Thinking |  |  |
| MATH 1160 Survey of Calculus or  |  | 8. Information Literacy  |
|  OR MATH 1170 Calculus I (Counted in Objective 3) | 9. Cultural Diversity **(1 course; 3 cr. min)** |
| PHYS 1111,1113 General Physics I, Lab | 4 |  |  |
| PHYS 1112, 1114 General Physics II, Lab | 4 | General Education Elective to reach 36 cr. min. **(if necessary)** |
| **MICROBIOLOGY UPPER DIVISION ELECTIVE REQUIREMENTS** | **20** |   |  |
| BIOL 4434, 4434L Microbial Diversity | 4 |  |  |
| BIOL 4437 /CHEM 4438 Experimental Biochemistry | 1 |  Total GE | 39-40 |
| BIOL 4451, 4451L Immunology | 4 | Undergraduate Catalog and GE Objectives by [Catalog Year](https://www.isu.edu/advising/academic-support/general-education/)  *http://coursecat.isu.edu/undergraduate/programs/* |
| BIOL 4454 Advanced Immunology | 3 |
| BIOL 4455, 4455L Pathogenic Microbiology | 5 |  |  |
| BIOL 4461 Advanced Genetics | 3 | **MAP Credit Summary** | **CR** |
| BIOL 4466 Medical Mycology | 3 | Major  | 75-78 |
| BIOL 4469 Special Topics in Microbiology | 1-4 | General Education  | 39-40 |
| BIOL 4473 and 4473L, Applied and Environmental Microbiology/Lab | 4 | Upper Division Free Electives to reach 36 credits | 0 |
| BIOL 4475 General Virology  | 3 | Free Electives to reach 120 credits | 2-6 |
| BIOL 4477 or BIOL 4478 Bacterial or Animal Virology Lab | 1 |  TOTAL | 120 |
| BIOL 4498 Seminar in Biochemistry | 1 |  |
| **BIOLOGY ELECTIVE REQUIREMENTS (excludes BIOL 1100, 2221)** | **8** | **Graduation Requirement Minimum Credit Checklist** | **Confirmed** |
| BIOL 2209 General Ecology | 4 | Minimum 36 cr. General Education Objectives (15 cr. AAS) | x |
| BIOL 2280 or BIOL 4480 Mentored Research Alliance | 2 | Minimum 15 cr. Upper Division in Major (0 cr. Associate) | x |
| BIOL 3301 and BIOL 3301L Advanced Human A&P I W/Lab | 4 | Minimum 36 cr. Upper Division Overall (0 cr. Associate) |  | x |
| BIOL 3302 and BIOL 3302L Advanced Human A&P II W/Lab | 4 | Minimum of 120 cr. Total (60 cr. Associate) |  | x |
| BIOL 4417 Organic Evolution | 3 |  |
| BIOL 4481 and/or BIOL 4482 Independent Problems | 1-4 | ***MAP Completion Status (for internal use only)*** |
| **Advising Notes** |  | *Date* |
| In order to make timely progress toward the degree, it is  | *Department:*  |  |
| imperative that the student work closely with a major | *CAA or COT:* |  |
| advisor. | *Registrar:*  |  |
|  | **Complete College American Momentum Year****Math and English course in first year-Specific GE MATH course identified****9 credits in the Major area in first year****15 credits each semester (or 30 in academic year)****Milestone courses** |
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 Form Revised 9.10.2019