

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.

**Catalog Year 2018-2019**

B.S., Microbiology

|  |  |  |  |  |  |  |
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| **Course Subject and Title** | **Cr.**  | **Min.** **Grade** | **GE or** **UU, UM** | **\*\*Sem. Offered** | **Prerequisite** | **Co Requisite** |
| Semester One |
| 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 or 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 |
| GE Objective 1: ENGL 1101 English Composition | 3 | C- | GE | F,S, Su | Appropriate Placement Score |  |
| Free Electives | 0 or 1 |  |  |  |  |  |
|  Total | 16 |  |  |  |  |  |
| Semester Two |
| BIOL 1102, 1102L Biology II | 4 |  |  | F,S | BIOL 1101 |  BIOL 1102L |
| GE Objective 1: ENGL 1102 Critical Reading and Writing | 3 | C- | GE | F,S, Su | ENGL 1101 or Equivalent |  |
| CHEM 1112,1112L General Chemistry II | 4 |  |  | F,S, Su | CHEM 1111, 1111L,MATH 1143 o 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 |  |  |  |
| Either 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 |  |  |  |  |  |
| Either 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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| **2018-2019 Major Requirements** | **CR** | **GENERAL EDUCATION OBJECTIVES****Satisfy Objectives 1,2,3,4,5,6 (7 or 8) and 9** | **36 cr. min** |
| MAJOR REQUIREMENTS TOTAL | 75 - 78 | 1. Written English (6 cr. min) ENGL 1101 | 3 |
| **CORE REQUIREMENTS**  | **47-50** |  ENGL 1102 | 3 |
| BIOL 1101, 1101L Biology I, Lab (4 credits counted in Objective 5) | 2. Spoken English (3 cr. min) COMM 1101 | 3 |
| BIOL 1102, 1102L Biology II | 4 | 3. Mathematics (3 cr. min) MATH 1160 or 1170 | 3 or 4 |
| BIOL 2235, 2235L General Microbiology | 4 | 4. Humanities, Fine Arts, Foreign Lang. **(2 courses; 2 categories; 6 cr. min)** |
| BIOL 3358 Genetics | 3 |  |  |
| BIOL 4432 or BIOL 4445 and 4447 Biochemistry | 3 or 6 |  |  |
| BIOL 4433,4433L Microbial Physiology | 4 | 5. Natural Sciences **(2 lectures-different course prefixes, 1 lab; 7 cr. min)** |
| BIOL 4444, 4444L Cell and Molecular Biology | 4 | CHEM 1111, 1111L General Chemistry I, Lab | 5 |
| BIOL 4494 Seminar in Microbiology | 1 | BIOL 1101, 1101L Biology I, Lab | 4 |
| CHEM 1111,1111L General Chemistry I, Lab (5 credits counted in Objective 5) |  |  |
| CHEM 1112,1112L General Chemistry II |  4 | 6. Behavioral and Social Science **(2 courses-different prefixes; 6 cr. min)** |
| CHEM 2232,2234 Quantitative Analysis, Lab | 4 |  |  |
| CHEM 3301, 3303 Organic Chemistry I, Lab | 4 |  |  |
| CHEM 3302,3304 Organic Chemistry II, Lab | 4 | One Course from EITHER Objective 7 OR 8 **(1course; 3 cr. min)** |
| Either MATH 1160 Applied Calculus | 7. Critical Thinking |  |
| Or MATH 1170 Calculus I (3 or 4 credits counted in Objective 3) | 8. Information Literacy  |
| PHYS 1111,1113 General Physics I, Lab | 4 | 9. Cultural Diversity **(1 course; 3 cr. min)** |
| PHYS 1112, 1114 General Physics II, Lab | 4 |  |  |
| **BIOLOGY ELECTIVE REQUIREMENTS (excludes BIOL 1100, 2221)** | **8** | General Education Elective to reach 36 cr. min. **(if necessary)** |
| Any biology courses not already counted towards the degree |   |  |
| **MICROBIOLOGY UPPER DIVISION ELECTIVE REQUIREMENTS** | **20** |  Total GE | 39 or 40 |
| BIOL 4434, 4434L Microbial Diversity | 4 | Undergraduate Catalog and GE Objectives by [Catalog Year](https://www.isu.edu/advising/academic-support/general-education/)  |
| BIOL 4437 /CHEM 4438 Experimental Biochemistry | 1 |
| BIOL 4451, 4451L Immunology | 4 |  |  |
| BIOL 4454 Advanced Immunology | 3 | **MAP Credit Summary** | **CR** |
| BIOL 4455, 4455L Pathogenic Microbiology | 5 | Major  | 75 - 78 |
| BIOL 4461 Advanced Genetics | 3 | General Education  | 39 - 40 |
| BIOL 4466 Medical Mycology | 3 | Free Electives to reach 120 credits | 2 - 6 |
| BIOL 4469 Special Topics in Microbiology | 1-4 |  TOTAL | 120 |
| BIOL 4473 and 4473L, Applied and Environmental Microbiology/Lab | 4 |  |
| BIOL 4475 General Virology  | 3 |
| BIOL 4477 or BIOL 4478 Bacterial or Animal Virology Lab | 1 | **Graduation Requirement Minimum Credit Checklist** | **Confirmed** |
| BIOL 4498 Seminar in Biochemistry | 1 | Minimum 36 cr. General Education Objectives (15 cr. AAS) |  Yes |
|  |  | Minimum 16 cr. Upper Division in Major (0 cr. Associate) |  | Yes |
|  |  | Minimum 36 cr. Upper Division Overall (0 cr. Associate) |  | Yes |
|  |  | Minimum of 120 cr. Total (60 cr. Associate) |  | Yes |
|  |  |  |  |
| **Advising Notes** | ***MAP Completion Status (for internal use only)*** |
| In order to make timely progress toward the degree, it is Imperative that the student work closely with a majoradvisor. |  | *Date* |
| *Department:*  |  |
| *CAA or COT:* | 3.28.2018 SF jh |
|  | *Registrar:*  |  |
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 Form Revised 1.24.2018