B.S. Microbiology

The purpose of the BS in Microbiology is to serve students who seek to develop a strong background in microbiology and molecular biology, with applications for biotechnology, medical, and environmental biology. Majors gain experiences that prepare them to participate in the development of research plans and their implementation, and to be competent to carry out standard microbiological and molecular biology techniques in the laboratory. The BS in Microbiology prepares students to be competitive for positions in research, graduate schools, health professional schools, and in the biotechnology industry.

Core Requirements
Students pursuing a Bachelor of Science degree must satisfy the General Education Objectives (http://coursecat.isu.edu/undergraduate/academicinformation/generaleducation/) (a minimum of 36 credits). Students must also satisfy the core requirements listed below and at least 20 credits of elective courses in Microbiology. (Need 36 upper division course hours.) In order to make timely progress toward the degree, it is imperative that the student work closely with a major advisor.

Required Courses in Biological Sciences:

**Code** | **Title** | **Credits**
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BIOL 1101 & 1101L | Biology I and Biology I Lab | 4
BIOL 1102 & 1102L | Biology II and Biology II Lab | 4
BIOL 2235 & 2235L | General Microbiology and General Microbiology Lab | 4
BIOL 3358 | Genetics | 3
Choose either: 3-6
- BIOL 4432 | Biochemistry | 3
- OR
- BIOL/CHEM 4445 | Biochemistry I | 3
AND
- BIOL/CHEM 4447 | Biochemistry II | 3
- BIOL 4433 & 4433L | Microbial Physiology and Microbial Physiology Laboratory | 4
- BIOL 4444 & 4444L | Cell and Molecular Biology and Cell and Molecular Biology Lab | 4
- BIOL 4494 | Seminar in Microbiology | 1

Total Credits 27-30

Microbiology Electives (20 credits)

| Code | Title | Credits |
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BIOL 4423 | General Parasitology | 3 |
BIOL 4434 & 4434L | Microbial Diversity and Microbial Diversity Lab | 4 |
BIOL 4436 | Food Microbiology | 3 |
BIOL 4437/CHEM 4438 | Experimental Biochemistry | 1 |
BIOL 4451 & 4451L | Immunology and Immunology Laboratory | 4 |
BIOL 4454 | Advanced Immunology | 3 |
BIOL 4455 & 455L | Pathogenic Microbiology and Pathogenic Microbiology Laboratory | 5 |
BIOL 4461 | Microbial Genetics | 3 |
BIOL 4466 | Medical Mycology | 3 |
BIOL 4469 | Special Topics in Microbiology | 1-4 |
BIOL 4473 & 4473L | Applied and Environmental Microbiology and Applied Environmental Microbiology Lab | 4 |
BIOL 4475 | General Virology | 3 |
BIOL 4477 | Bacterial Virology Laboratory | 1 |
BIOL 4478 | Animal Virology Laboratory | 1 |
BIOL 4498 | Seminar in Biochemistry | 1 |

Additional Biological Sciences courses (must take at least 8 credits)

These courses are chosen to enhance student background in a particular area of interest. Suggested courses could include (but are not limited to):

| Code | Title | Credits |
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BIOL 2209 | General Ecology | 4 |
BIOL 2280 | Mentored Research Alliance | 2 |
or BIOL 4480 | Mentored Research Alliance | 2 |
BIOL 3301 & 3301L | Advanced Human Anatomy and Physiology I and Advanced Human Anatomy and Physiology I Lab | 4 |
BIOL 3302 & 3302L | Advanced Human Anatomy and Physiology II and Advanced Human Anatomy and Physiology II Lab | 4 |
BIOL 4417 | Organic Evolution | 3 |
BIOL 4481 | Independent Problems | 1-4 |
and/or
BIOL 4482 Independent Problems 1-4

BIOL 1100, BIOL 1100L, BIOL 2221 and BIOL 2221L may not be used as electives for the B.S. in Microbiology.

(Courses not used to fulfill the microbiology electives could be used to satisfy this requirement.)

Additional courses in Mathematics that are highly recommended for students planning to attend graduate school are MATH 1175 (prerequisite is MATH 1170), MATH 2240, MATH 2275, or MATH 3360.

ISU Degree Requirements (http://coursecat.isu.edu/undergraduate/degerequirements/)

Major Academic Plan (MAP) (https://www.isu.edu/advising/maps/)