

M.S. in Microbiology and Immunology

The M.S. (Plan "A") program in Microbiology and Immunology is designed to prepare students for professional/technical careers in industry, academia, or government and for further studies at the doctoral level. In addition, a M.S. degree, combined with appropriate courses in education, can be utilized for a community college teaching credential. This degree requires appropriate coursework and a thesis based on original scientific research. Research activities of the faculty span a broad spectrum of disciplines in microbiology and immunology and utilize cellular, biochemical, and molecular approaches to study current problems in environmental and biomedical microbiology. Students participate in a departmental seminar program and journal clubs.

The M.S. (Plan "B") program in Microbiology and Immunology is designed for students who will benefit from a thorough understanding of existing knowledge in microbiology and immunology. Students will then apply this existing knowledge to prepare a comprehensive research paper on a topic selected in consultation with their graduate committee. This degree does not require a thesis.

Course credits

- Two-thirds of the minimum 30 credits must be at the 5XX-level. (Undergraduate courses at the 4XX-level are allowed but not 3XX-level).
- Course work more than 6 years old cannot be applied toward the program - see The Graduate School policy on transfer and age of credits (<http://www.montana.edu/gradschool/policy/>).
- Transfer credits – see The Graduate School policy at Transferring Credits.
- **PLAN A:**
 - A minimum of 30 credits is required for graduation, of which 20 must be for course work and not thesis credit.
 - At least half of these 20 credits must be in the major subject area (MB).
 - A minimum of 10 thesis credits must be successfully completed.
 - Credit in Seminar (MB 594), Independent Study (MB 592) and Internship (MB 598) courses in seminar (500), individual problem (570) and internship (576) courses may not exceed 1/3 of credits required.

PLAN B:

- A minimum of 30 credits is required for graduation.
 - At least half of these 30 credits must be in the major subject area (MB).
 - Credit in Seminar (MB 594), Modeling infectious disease dynamics (MB 592) and Internship (MB 598) courses may not exceed 1/3 of credits required.
 - Credit for a Professional Paper (MB 575) may not exceed 6 credits.

Pass-fail

No more than 3 credits taken on Pass/Fail basis may be applied to a M.S. program (aside from thesis credits). For more information on Pass/Fail courses, see The Graduate School policy on Pass/Fail.

Core Curriculum

All M.S. Plan A students are required to take two courses: MB520 - Microbial Physiology (fall semester) and BIOB524 - Ethical Practice of Science (spring semester).

All M.S. Plan B students are required to take BIOB524 - Ethical Practice of Science (spring semester).

All M.S. students are required to take at least one course in **three** of the six areas of the core curriculum. The six areas of the core curriculum and the courses which can be used to satisfy the requirement are:

Bioinformatics

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| MB 544 | Advanced Bioinformatics (Spring even yrs) | 4 |
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Biochemistry

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| BCH 543 | Proteins (Fall odd yrs) | 3 |
| BCH 544 | Molecular Biology (Spring odd yrs) | 3 |
| MB 527 | Toxicology (Spring) | 3 |

Immunology

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| MB 525 | Advanced Immunology (Spring even yrs) | 3 |
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Microbial evolution & ecology

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| MB 560 | Infectious Disease Ecology & Spillover (Fall) | 3 |
| MB 591 | Precambrian Biosphere (Precambrian Biosphere) | 3 |
| ERTH 505 | Geomicrobiology (Spring even yrs) | 3 |

Microbial genetics & physiology

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| MB 528 | Advanced Genetics (Spring odd yrs) | 3 |
| IMID 505 | Gene Regulation in Human Development, Disease, and Immunity (Spring odd yrs) | 3 |
| EBIO 566 | Fundamentals of Biofilm Engr (Fall) | 3 |

Microbial pathogenesis & epidemiology

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| MB 505 | Host-Associated Microbiomes (Fall) | 4 |
| MB 530 | Virology (Fall) | 3 |

Scientific Writing

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| MB591 | Scientific Writing | 3 |
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Courses required to fill each area of the core are likely to change as new courses are developed and approved by the Graduate Program Committee. Current course descriptions are available in the MSU On-Line Catalog. Current course availability is found in the MSU On-Line Schedule of Classes.

• MB 594 seminars

- All students are required to attend and participate in the Departmental Seminar (MB 594 section 01) each semester in residence. [Students who are also members of the Center for Biofilm Engineering will have the option of attending either the Departmental Seminar or the CBE Seminar during their first two years, but must attend at least two semesters of each during this time.]
- Students are encouraged to register for these each semester, if possible, although there are limits to the number of MB 594 credits allowed in a Graduate Program (3 for M.S.)
- Have the office staff register you online – there are conflicts when taking multiple MB 594 sections.

• PLAN A Thesis

- A thesis approved by the Graduate Committee, Department Head, and the Dean of The Graduate School is required.
- A hardbound copy of Thesis must be provided to the Microbiology Department for inclusion in the Cotner-Morris library.