



Master of Science in Integrative Biology

PROGRAM DESCRIPTION

This is a course-based Master of Science degree program in Integrative Biology (MS in IB). This degree program will include both face-to-face and online course options and is directed toward students who want advanced preparation for professional school or future careers in industry, government or academia. Students fulfilling a gap year by obtaining a non-thesis master's degree would be more competitive for placement. The purpose of this degree program is to provide an educational option for advanced study in the field of integrative biology without requiring a thesis component.

ADMISSION REQUIREMENTS

Students entering the MS in IB program will be expected to have a completed bachelor's degree from an accredited 4-year college or university with undergraduate coursework in biology, chemistry, physics, calculus and English composition. Applicants must have completed the last 60 hours of coursework with grades of B (3.0 on a scale of 1 to 4) or better. Deficiencies in these areas will require additional coursework, as necessary, for successful completion of the degree. Courses, or their equivalents, taken prior to admission to this program may not be counted toward the requirements for this program.

ACADEMIC CATALOG ENTRY

The MS in IB program is a course-based master's degree requiring a minimum of two full-time semesters, although students may take up to four semesters to complete the degree.

Core Curriculum Hours Required	12-14
At least one course from two of the following three IB disciplinary areas and one additional course with a laboratory and/or field component. Two hours must come from IB 492, Career and Skill Development in IB	
Area 1: Organismal and Evolutionary Biology	
Area 2: Behavior, Ecology and the Environment	
Area 3: Integrative anatomy, Physiology and Molecular Biology	
Elective Hours Required	6-8
Courses to be chosen from the MS in IB Approved List of Courses	
Minimum 500-level Hours Required	12
Courses to be chosen from the MS in IB Approved List of Courses	
Total Hours Required	32

Other Requirements:

- Minimum Hours Required Within the Unit: 8 hours
- Minimum GPA: 3.0
- A maximum of 6 hours of IB 590 are allowed to count toward the MS in IB degree.
- For additional details and requirements, refer to the MS in IB program website (<https://sib.illinois.edu/graduate/msib>) and the Graduate College Handbook.

Master of Science Degree in Integrative Biology (Course-based MS Program)

MS in IB Approved List of Courses*

*Other courses may be available, and course availability (or terms offered) is subject to change. See MS in IB website for a list of approved courses for the current academic year. A link to the approved course listing will also appear in the academic catalog entry.

Core Curriculum Hours Required: 12-14

Course selection must include at least 12 hours from two of the following three disciplinary areas of Integrative Biology. Elective Hours Required (6-8) may also be filled from this list as well as from the Additional Advanced Courses list below. Two hours must come from IB 492, Career and Skill Development in IB.

Area 1: Organismal and Evolutionary Biology

IB 401: Introduction to Entomology (3 or 4 hr, the latter with insect collection)
IB 461: Ornithology (4 hr)
IB 462: Mammalogy (4 hr)
IB 463: Ichthyology (4 hr)
IB 471: General Mycology (4 hr)

Area 2: Behavior, Ecology and the Environment

IB 405: Ecological Genetics (3 hr)
IB 431: Behavioral Ecology (3 hr)
IB 432: Genes and Behavior (3 hr)
IB 439: Biogeography (3 hr)
IB 440: Plants and Global Change (3 hr)
IB 443: Evolutionary Ecology (3 hr)
IB 444: Insect Ecology (3 or 4 hr, the latter with laboratory)
IB 451: Conservation Biology (4 hr)
IB 452: Ecosystem Ecology (3 hr)
IB 453: Community Ecology (3 hr)
IB 481: Vector-borne Diseases (4 hr)
IB 482: Insect Pest Management (3 hr)
IB 485: Environmental Toxicology and Health (3 hr)
IB 486: Pesticide Toxicology (3 or 4 hr, the latter with project)
IB 494: Theoretical Biology and Models (4 hr)

Area 3: Integrative Anatomy, Physiology and Molecular Biology

IB 420: Plant Physiology (3 hr)
IB 421: Photosynthesis (3 hr)
IB 426: Environmental and Evolutionary Physiology of Animals (3 hr)
IB 427: Insect Physiology (4 hr)
IB 472: Plant Molecular Biology (1 hr)
IB 473: Plant Genomics (1 hr)

Additional Advanced Courses: Required Elective Hours (6-8) can be filled from this list or from the three areas listed above.

IB 411 ONL: Bioinspiration (3 hr)
IB 416: Population Genetics (3 or 4 hr, the latter with project)
IB 436: Evolutionary Neuroscience (3 hr)
IB 442: Evolution of Infectious Diseases (3 hr)
IB 447: Field Ecology (1 hr)

IB 450: Stream Ecology (3 or 4 hr, the latter with project)
IB 464: Herpetology (4 hr)
IB 467: Principles of Systematics (4 hr)
IB 468: Insect Classification and Evolution (4 hr)
IB 476: Applied GIS to Environmental Studies (3 hr)
IB 478: Advanced Plant Genetics (3 hr)
IB 479: Plant Growth and Development (3 hr)
IB 480: Bioinspired Design (3-4 hrs)
IB 483 ONL: Insect Pathology (3 hr)
IB 484: Paleoclimatology (4 hr)
IB 487: Math Modeling in Life Sciences (3 or 4 hr, the latter with project)
IB 491: Biological Modeling (3 or 4 hr, the latter with project)
IB 496: Special Courses (1-5 hr)
IB 499: Discussions in Integrative Biology (1hr)

500-level Courses: A minimum of 12 hours at the 500-level is required.

IB 501: Programming for Genomics (4 hr)
IB 502: Biological Networks (2 hr)
IB 504: Genomic Analysis of Insects (3 hr)
IB 505: Bioinformatics and Systems Biology (4 hr)
IB 506: Applied Bioinformatics (4 hr)
IB 512: Plant Metabolomics (2 hr)
IB 513: Discussions in Plant Physiology (1 hr)
IB 516: Ecosystem Biogeochemistry (4 hr)
IB 524: Plant Biochemistry (4 hr)
IB 526: Seminar in Entomology (1 hr)
IB 542: Environmental Plant Physiology (4 hr)
IB 546: Topics in Ecology and Evolution (1 hr)
IB 590: Individual Topics (2-6 hr)

Online Master of Science Teaching of Biology Program Courses†

IB 531 ONL: Emerging Infectious Diseases (4 hr)
IB 532 ONL: Sustainability and Global Change (4 hr)
IB 533 ONL: Human Genome and Bioinformatics (4 hr)
IB 534 ONL: Evolution and Medicine (4 hr)
IB 535 ONL: Biology and Tech Innovation (4 hr)
IB 536 ONL: Evolutionary Biology (4 hr)

† OMST of Biology courses are designed explicitly for biology teachers and will be redeveloped to be more suitable for IB graduate students. Currently, offered various terms and one course per summer.