INTEGRATIVE BIOLOGY, MS

for the degree of Master of Science in Integrative Biology

The Master of Science in Integrative Biology (MS in IB) provides students with a non-thesis, course-based degree program opportunity focused on interdisciplinary training for 21st-century scientific roles. Students explore how scales of life interact, from molecules through global cycles, to solve grand challenges such as addressing global change, improving human health, mitigating biodiversity loss, and contributing to ecosystem restoration and sustainable food and biofuel production. Students in the MS program have the ability to enhance their skill sets within IB upper-level courses through our world-class educational experiences, without having to invest in a required and timely research component for the degree. Students will thus be able to graduate in one year with a advanced degree making them more competitive for employment and future research opportunities.

This program primarily serves students who are in a gap year between undergraduate programs and either employment or future graduate-level programs. With the ability to hone skills in critical thinking, communication, laboratory practices, and scientific knowledge this program affords students the ability to make effective use out of such a year. The MS in IB program offers advanced coursework in fields such as organismal biology, behavioral ecology, anatomy and physiology, environmental science, bioinformatics, pathology, genomics, and mathematical modeling. These multi-disciplinary courses are grounded in active learning and highly transferable, higher-order processing skills such as application, interpretation, and evaluation. Students build laboratory skills spanning from tall grass prairie restoration to modern genome-editing techniques. Graduates are well-equipped for a broad range of careers in fields including healthcare, biotechnology, genetic counseling, wildlife management, and environmental sciences.

For additional details and requirements refer to the MS in IB (https://sib.illinois.edu/academics/graduate-programs/master-science-programs/master-science-integrative-biology/) program page and the Graduate College Handbook (https://grad.illinois.edu/handbooks-policies/).

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The MS in IB program degree requires a minimum of two full-time semesters. Students may take up to two years to complete their degree.

Code	Title	Hours
Required Course List		
IB 592	Career and Skill Development in Integrative Biology	2
Core Curriculum		**12**
Select from the following three Areas. At least one course must be a lab and the courses must be in at least two different Areas.		
Area I: Organismal and Evolutionary Biology		
IB 401	Introduction to Entomology (lab)	
IB 407	Plant Diversity and Evolution (lab)	
IB 461	Ornithology (lab)	
IB 462	Mammalogy (lab)	
IB 463	Ichthyology (lab)	
IB 464	Herpetology (lab)	
IB 468	Insect Classification and Evol (lab)	
IB 471	Fungal Diversity and Ecology (lab)	
Area II: Behavior, Ecology and the Environment		
IB 405	Evolution of Traits and Genomes	
IB 431	Behavioral Ecology	
IB 432	Genes and Behavior	
IB 439	Biogeography	
IB 440	Plants and Global Change	
IB 444	Insect Ecology (lab)	
IB 451	Conservation Biology (lab)	
IB 452	Ecosystem Ecology	
IB 453	Community Ecology	
IB 481	Vector-borne Diseases (lab)	
IB 482	Insect Pest Management (lab)	
IB 494	Theoretical Biology + Models (lab)	
Area III: Integrative anatomy, Physiology and Molecular Biology		
IB 411	Bioinspiration	
IB 420	Plant Physiology	
IB 421	Photosynthesis	
IB 426	Env and Evol Physl of Animals	
IB 433	Insect Physiology	
IB 435	Critical Evaluation of Herbal Remedies	
IB 438	How Organisms Move (lab)	
IB 460	Evol of Intelligent Systems (lab)	
IB 465	Methods in Molecular Genetics and Genomics	
Additional electives selected from the following list to meet the 32-hour minimum.		
Courses from the any of the Areas above that did not fulfill another requirement may also count toward elective credit.		
IB 416	Population Genetics	
IB 436	Evolutionary Neuroscience	
IB 442	Evolution of Infectious Disease	
IB 450	Stream Ecology	
IB 467	Principles of Systematics	
IB 476	Environmental Remote Sensing	
IB 478	Advanced Plant Genetics	
IB 479	Plant Growth and Development	
IB 480	Bioinspired Design	
IB 484	Paleoclimatology	
IB 491	Biological Modeling	
IB 496	Special Courses	
IB 497	Science Communication	
IB 499	Discussions in Integrative Biology	
IB 501	Programming for Genomics	
IB 502	Biological Networks	
IB 504	Genomic Analysis of Insects	
IB 505	Bioinformatics & Systems Biol	
IB 506	Applied Bioinformatics	
IB 512	Plant Metabolomics	

IB 513	Plant Science Seminar
IB 516	Ecosystem Biogeochemistry
IB 517	Analysis of Biological Data in R
IB 524	Plant Biochemistry
IB 526	Seminar in Entomology
IB 531	Emerging Infectious Diseases
IB 532	Sustainability & Global Change
IB 533	Human Genome & Bioinformatics
IB 534	Evolution and Medicine
IB 535	Biology and Tech Innovation
IB 536	Evolutionary Biology
IB 542	Environmental Plant Physiology
IB 546	Topics in Ecology & Evolution
IB 590	Individual Topics
Total Hours Required	**32**

Other Requirements:

Requirement	Description
Minimum GPA	3.0
Maximum hours of IB 590 allowed to count toward the MS in IB degree	6
Minimum hours at the 500-level within the unit	12

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1. Synthesize and apply core knowledge in interdisciplinary biological fields including anatomy, biochemistry, development, ecology, evolution, genetics, molecular biology, physiology, and/or systematics.
2. Apply predictive models to biological phenomena and engage with the process of scientific inquiry.
3. Critically evaluate and communicate complex, dynamic scientific information.
4. Employ curiosity, inquiry, quantitative reasoning, and critical thinking in problem solving.
5. Show leadership in using interdisciplinary strategies to solve global and local biological challenges.
6. Develop professional skills including ethics, proficiency in scientific writing and speaking, collaboration, and effective communication.

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School of Integrative Biology

Director of the School: Carla Cáceres
Director of Graduate Studies: Allison O'Dwyer
Director of Admissions Committee: Allison O'Dwyer
Program website (https://sib.illinois.edu/graduate/msib/)
School of Integrative Biology website (http://sib.illinois.edu/)
School of Integrative Biology faculty (https://sib.illinois.edu/)
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College of Liberal Arts & Sciences

College of Liberal Arts & Sciences website (https://las.illinois.edu/)

Admissions

Graduate College Admissions & Requirements (https://grad.illinois.edu/admissions/apply/)