INTEGRATIVE BIOLOGY: HONORS INTEGRATIVE BIOLOGY, BSLAS

for the degree of Bachelor of Science in Liberal Arts & Sciences in Integrative Biology, Honors Integrative Biology Concentration

Honors Integrative Biology is designed for students wishing to pursue an intensive program in integrative biology and, concurrently, to gain a strong background in the physical sciences and mathematics. Admission is by interview in spring of the freshman year prior to registration for fall. An overall 3.0 GPA is required to apply for admission. Honors Integrative Biology provides preparation suitable for graduate and professional training in biology, as well as for biology careers in the private and public sectors. Students earning the Honors Integrative Biology Concentration will also earn the Chemistry minor.

Students pursuing a degree in Honors Integrative Biology will be allowed to earn a second degree in the Specialized Curriculum in Biochemistry. Students pursuing a degree in Honors Integrative Biology will not be allowed to double major in Molecular and Cellular Biology.

Distinction for Excellence in Research:

Students are eligible for graduation at the following levels: Distinction, High Distinction, or Highest Distinction. Distinction will be determined by the SIB Distinction Committee and the level of Distinction will be based on the information below. To be eligible for graduation with Distinction for Excellence in Research a student must:

- Be enrolled as an Integrative Biology or Integrative Biology Honors Major
- Have a completed distinction evaluation form submitted by their Faculty Research Advisor.
- To be eligible for Distinction, students must maintain a minimum 3.0 GPA within the major at the end of the penultimate semester. Students must also give a poster presentation at the SIB Distinction Symposium or other approved venue.
- To be eligible for High or Highest Distinction, students must maintain a minimum 3.25 GPA within the major at the end of the penultimate semester. Students must also submit a written thesis and give an oral presentation at the SIB Distinction Symposium or other approved venue.
- Finally, all students regardless of Distinction level must either:

Complete two or more semesters of IB 390/IB 490 for 2-credit hours or more each semester. The student should enroll in IB 490 the semester they intend to graduate, which counts towards the two required semesters.

OR

Complete at least 180 hours of mentored research. The research experience must last a minimum of 20 weeks (the weeks need not be consecutive and summer research counts toward this total) and students should enroll in one semester of IB 490 for a minimum of 1-credit hour prior to or during the semester they intend to graduate. Example: a student could be eligible if they complete a 10-week summer research experience combined with enrolling in IB 490 the following spring semester, the same term they intend to graduate.

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Graduation Requirements

Minimum hours for graduation: 120 hours
Minimum required major and supporting course work: Normally equates to 80-88 hours.
No more than 8 hours of credit in 100-level courses in IB or MCB may be counted toward graduation.

Continuation in the Integrative Biology Honors Concentration requires a grade of B or better in each of IB 270, IB 271, and IB 372 and a 3.0 overall cumulative GPA.

Students should discuss alternate CHEM choices with the IB advising office. To earn the Chemistry minor students must choose 3 or 4 hour Chemistry courses, excluding research or independent study.

Introductory chemistry should be completed prior to enrolling in IB 270.

Independent study equivalent to IB 490 in non-IB programs must first be approved by Director of IBH Concentration.

Students may count toward graduation no more than a combined maximum of 10 hours of IB 390 and IB 490 credit offered for independent study.

University Requirements

Minimum of 40 hours of upper-division coursework, generally at the 300- or 400-level. These hours can be drawn from all elements of the degree. Students should consult their academic advisor for additional guidance in fulfilling this requirement.

The university and residency requirements can be found in the Student Code (https://studentcode.illinois.edu/article3/part8/3-801/) (§ 3-801) and in the Academic Catalog (http://catalog.illinois.edu/general-information/degree-general-education-requirements/).

General Education Requirements

Follows the campus General Education (Gen Ed) requirements (https://courses.illinois.edu/gened/DEFAULT/DEFAULT/). Some Gen Ed requirements may be met by courses required and/or electives in the program.

Code	Title	Hours
Composition I		4-6
Advanced Composition		3
	fulfilled by IB 271	
Humanities & the Arts (6 hours)		6
Natural Sciences & Technology (6 hours)		6
	fulfilled by CHEM 102 and CHEM 104, or CHEM 202 and CHEM 204; PHYS 101 and PHYS 102, or PHYS 211 and PHYS 212; IB 150, MCB 150	
Social & Behavioral Sciences (6 hours)		6
Cultural Studies: Non-Western Cultures (1 course)		3
Cultural Studies: US Minority Cultures (1 course)		3

Cultural Studies: Western/Comparative Cultures (1 course)		3
Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I)		6-10
fulfilled by MATH 220 or MATH 221; PHYS 101 and PHYS 102, or PHYS 211 and PHYS 212		
Language Requirement (Completion of the fourth semester or equivalent of a language other than English is required)		0-20

Code	Title	Hours
Orientation and Professional Development		
LAS 101	Design Your First Year Experience	1
OR		
LAS 100 & LAS 101	Success in LAS for International Students and Design Your First Year Experience	3
OR		
LAS 102	Transfer Advantage	1
Total Hours		**1 or 3**

Code	Title	Hours
Integrative Biology Major Requirements		
IB 150	Organismal & Evolutionary Biol	4
MCB 150	Molecular & Cellular Basis of Life	4
MATH 220	Calculus (Biocalculus section)	4-5
or MATH 221	Calculus I	
Select one group of courses:		8-10
CHEM 202	Accelerated Chemistry I	
CHEM 203	Accelerated Chemistry Lab I	
CHEM 204	Accelerated Chemistry II	
CHEM 205	Accelerated Chemistry Lab II	
OR		
CHEM 102	General Chemistry I	
CHEM 103	General Chemistry Lab I	
CHEM 104	General Chemistry II	
CHEM 105	General Chemistry Lab II	
Select one group of courses:		5-6
CHEM 236 & CHEM 237	Fundamental Organic Chem I and Structure and Synthesis	
CHEM 232 & CHEM 233	Elementary Organic Chemistry I and Elementary Organic Chem Lab I	
Select one group of courses:		8-10
PHYS 211 & PHYS 212	University Physics: Mechanics and University Physics: Elec & Mag	
PHYS 101 & PHYS 102	College Physics: Mech & Heat and College Physics: E&M & Modern	
Integrative Biology Major, Honors Concentration Additional Requirements		
IB 270	Evolution of Molecules & Cells	5
IB 271	Organismal Biology	5
IB 372	Ecology and Evolution	5
MATH 231	Calculus II	3-4
or IB 494	Theoretical Biology + Models	
At least six hours of advanced courses in Chemistry. Select from these courses:		6-8
CHEM 312	Inorganic Chemistry	
CHEM 332	Elementary Organic Chem II	
CHEM 360	Chemistry of the Environment	
CHEM 437	Organic Chemistry Lab	
CHEM 440	Physical Chemistry Principles	
MCB 450	Introductory Biochemistry	3
An approved 300- or 400- level course in statistics. Select one of these courses:		3
STAT 440	Statistical Data Management	
NRES 421	Quantitative Methods in NRES	
NRES 445	Statistical Methods	
CPSC 440	Applied Statistical Methods I	
IB 490	Independent Study	6
Advanced Biological Science Electives. Select from the following:		10
IB 303	Anatomy	
IB 329	Animal Behavior	
IB 348	Fish and Wildlife Ecology	
IB 360	Evolution and Human Health	
IB 361	Ecology and Human Health	
IB 362	Marine Biology	
IB 364	Genomics and Human Health	
IB 368	Vertebrate Natural History	
IB 392	Translating Your IB Degree Into Career Success	
IB 401	Introduction to Entomology	
IB 405	Evolution of Traits and Genomes	
IB 407	Plant Diversity and Evolution	
IB 411	Bioinspiration	
IB 416	Population Genetics	
IB 420	Plant Physiology	
IB 421	Photosynthesis	
IB 426	Env and Evol Physl of Animals	
IB 430	Animal Behavior Lab	
IB 431	Behavioral Ecology	
IB 432	Genes and Behavior	
IB 433	Insect Physiology	
IB 435	Critical Evaluation of Herbal Remedies	
IB 438	How Organisms Move	
IB 439	Biogeography	
IB 440	Plants and Global Change	
IB 444	Insect Ecology	
IB 451	Conservation Biology	
IB 452	Ecosystem Ecology	
IB 453	Community Ecology	
IB 454	Science Writing & Presentation	
IB 455	Ecotoxicology and Human Health	
IB 460	Evol of Intelligent Systems	
IB 461	Ornithology	
IB 462	Mammalogy	
IB 463	Ichthyology	
IB 464	Herpetology	
IB 465	Methods in Molecular Genetics and Genomics	
IB 467	Principles of Systematics	

IB 468	Insect Classification and Evol
IB 471	Fungal Diversity and Ecology
IB 476	Environmental Remote Sensing
IB 478	Advanced Plant Genetics
IB 479	Plant Growth and Development
IB 481	Vector-borne Diseases
IB 482	Insect Pest Management
IB 484	Paleoclimatology
IB 494	Theoretical Biology + Models
IB 496	Special Courses
IB 497	Science Communication
ACE 310	Natural Resource Economics
ANSC 363	Behavior of Domestic Animals
ANSC 406	Zoo Animal Conservation Sci
ANSC 431	Advanced Reproductive Biology
ANSC 454	Neuroimmunology
ANSC 464	Physiology of Animal Stress & Disease
ANSC 467	Applied Animal Ecology
ANTH 346	Forensic Anthropology
ANTH 347	Human Osteology
ANTH 379	Medical Anthropology
ANTH 407	Evolutionary Immunology
ANTH 408	Human Evolutionary Anatomy
ANTH 437	Primate Behav Endocrinology
ANTH 438	Primate Life History Evolution
ANTH 440	Human Paleontology
ANTH 441	Human Genetics
ANTH 443	Primate Form and Behavior
ANTH 444	Methods in Bioanthropology
ANTH 445	Research in Bioanthropology
ANTH 447	Advanced Skeletal Biology
ATMS 421	Earth Systems Modeling
BIOC 446	Physical Biochemistry
BIOC 455	Technqs Biochem & Biotech
BIOP 401	Introduction to Biophysics
CPSC 407	Diseases of Field Crops
CPSC 408	Integrated Pest Management
CPSC 412	Principles of Crop Production
CPSC 415	Bioenergy Crops
CPSC 416	Native Plants, Pollinators, & Food Ecosystems
CPSC 418	Crop Growth and Management
CPSC 426	Weed Mgt in Agronomic Crops
CPSC 437	Principles of Agroecology
CPSC 440	Applied Statistical Methods I
CPSC 444	Introduction to Spatial Analytics
CPSC 454	Plant Breeding Methods
CPSC 466	Genomics for Plant Improvement
CPSC 480	Cannabis Classification and Management
CPSC 481	Principles and Practices of Cannabis Flower Production
CPSC 485	Cannabis Phytochemistry: Analysis, Applications and Beyond
FSHN 480	Basic Toxicology
GGIS 379	Introduction to Geographic Information Systems
GGIS 380	Geographic Information Systems II
GGIS 477	Introduction to Remote Sensing
GGIS 478	Techniques of Remote Sensing
HK 342	Health Behaviors and Cognition
HK 352	Bioenergetics of Movement
HK 353	Biomechanics of Human Movement
HK 441	Physical Activity and Chronic Diseases
HK 448	Skeletal Muscle Physiology
HK 450	Integrative Biology of Exercise
HK 452	Clin & Applied Ex Physiology
HK 455	Exercise Endocrinology
HK 457	Motor Learning & Control
LA 370	Environmental Sustainability
MCB 300	Microbiology
MCB 301	Experimental Microbiology
MCB 314	Introduction to Neurobiology
MCB 316	Genetics and Disease
MCB 317	Genetics and Genomics
MCB 320	Mechanisms of Human Disease
MCB 354	Biochem & Phys Basis of Life
MCB 364	Eukaryotic Cell Biology Laboratory
MCB 400	Cancer Cell Biology
MCB 401	Cellular Physiology
MCB 402	Sys & Integrative Physiology
MCB 406	Gene Expression & Regulation
MCB 408	Immunology
MCB 410	Developmental Biology, Stem Cells and Regenerative Medicine
MCB 413	Endocrinology
MCB 419	Brain, Behavior & Info Process
MCB 421	Microbial Genetics
MCB 424	Microbial Biochemistry
MCB 426	Bacterial Pathogenesis
MCB 428	Microbial Pathogens Laboratory
MCB 430	Molecular Microbiology
MCB 431	Microbial Physiology
MCB 432	Computing in Molecular Biology
MCB 433	Virology & Viral Pathogenesis
MCB 434	Food & Industrial Microbiology
MCB 435	Evolution of Infectious Disease
MCB 436	Global Biosecurity
MCB 442	Comparative Immunobiology
MCB 446	Physical Biochemistry
MCB 460	Neuroanatomy Laboratory
MCB 462	Integrative Neuroscience
MCB 465	Human Metabolic Disease
MCB 466	Neuro & Molecular Pharmacology
MCB 471	Cell Structure and Dynamics
MCB 480	Eukaryotic Cell Signaling

MCB 493	Special Topics Mol Cell Biol
NRES 302	Dendrology
NRES 325	Natural Resource Policy Mgmt
NRES 340	Environ Social Sci Res Meth
NRES 351	Introduction to Environmental Chemistry
NRES 362	Ecology of Invasive Species
NRES 407	Wildlife Population Ecology
NRES 409	Fishery Ecol and Conservation
NRES 415	Native Plant ID and Floristics
NRES 416	Forest Biology
NRES 418	Wetland Ecology & Management
NRES 419	Env and Plant Ecosystems
NRES 420	Restoration Ecology
NRES 421	Quantitative Methods in NRES
NRES 427	Modeling Natural Resources
NRES 429	Aquatic Ecosystem Conservation
NRES 438	Soil Nutrient Cycling
NRES 454	GIS in Natural Resource Mgmt
NRES 455	Advanced GIS for Environmental Management
NRES 465	Landscape Ecology
NRES 471	Pedology
NRES 475	Environmental Microbiology
NRES 482	Aquatic Biogeochemistry
NRES 487	Soil Chemistry
NRES 488	Soil Fertility and Fertilizers
PLPA 403	Advanced Plant Pathology
PLPA 405	Plant Disease Diagnosis & Mgmt
PSYC 302	Applied Neuroscience
PSYC 313	Drugs, Brain and Behavior
PSYC 403	Memory and Amnesia
PSYC 404	Cognitive Neuroscience
PSYC 413	Advanced Neuropsychopharmacology
PSYC 414	Brain, Learning, and Memory
PSYC 417	Neuroscience of Eating & Drinking
PSYC 421	Principles of Psychophysiology
PSYC 450	Cognitive Psychophysiology
PSYC 451	Neurobio of Aging
PSYC 453	Cog Neuroscience of Vision
UP 406	Urban Ecology

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Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. See the corresponding section on the Degree and General Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours
LAS 101	1
IB 150	4
CHEM 102 or 202	3
CHEM 103 or 203	1
Language Other Than English (3rd level)	4
Composition I or General Education course	4
	17

Total Hours 17

First Year

Second Semester	Hours
MCB 150	4
CHEM 104 or 204	3
CHEM 105 or 205	1
General Education course or Composition I	3
Language Other Than English (4th level)	4
	15

Total Hours 15

Second Year

First Semester	Hours
IB 270	5
CHEM 232 or 236	4
MATH 220 or 221	4
Free Elective course	3
	16

Total Hours 16

Second Year

Second Semester	Hours
IB 271	5
CHEM 233 or 237	2
MATH 231 or IB 494	4
Advanced Biological Science Elective course from list	3
	14

Total Hours 14

Third Year

First Semester	Hours
IB 372	5
PHYS 101 or 211	4
General Education course	3

General Education course	3
Free Elective course	1
	16

Total Hours 16

Third Year

Second Semester	**Hours**
Advanced Chemistry course from list	3
PHYS 102 or 212	4
MCB 450	3
IB 490	2
General Education course	3
	15

Total Hours 15

Fourth Year

First Semester	**Hours**
IB 490	2
Advanced Biological Science Elective course from list	4
300-400 level Statistics course from list	3
General Education course	3
General Education course	3
	15

Total Hours 15

Fourth Year

Second Semester	**Hours**
IB 490	2
Advanced Biological Science Elective course from list	3
Advanced Chemistry course from list	4
General Education course	3
	12

Total Hours 12

Total Hours: 120

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By the time they graduate, an Integrative Biology Honors major should be able to:

1. Synthesize and apply significant knowledge in Integrative Biology, including anatomy, 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. Create solutions for global and local biological challenges using interdisciplinary strategies.
6. Develop professional skills including ethics, proficiency in oral and written scientific communication, data analysis and interpretation, collaboration, and the ability to critically evaluate science-related news and information.

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School of Integrative Biology

School of Integrative Biology website (http://sib.illinois.edu/)
School of Integrative Biology faculty (https://sib.illinois.edu/directory/faculty/)

Advising

SIB Advising website (https://sib.illinois.edu/academics/undergraduate-programs/advising-resources/)
advising@sib.illinois.edu

College of Liberal Arts and Sciences

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

Admissions

University of Illinois Urbana-Champaign Undergrad Admissions (https://www.admissions.illinois.edu/)