MOLECULAR & CELLULAR BIOLOGY, BSLAS

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Molecular & Cellular Biology

The Molecular and Cellular Biology major provides students with a solid preparation in molecular biology, molecular genetics, microbiology, cellular biology, biochemistry, physiology, and structural biology. Students will also acquire a strong background in chemistry, math and physical sciences. After completion of the core curriculum in MCB, students may complete the required advanced course work by taking a variety of MCB courses or by selecting a more focused group of courses in any of the following areas: biochemistry, cells and tissues, developmental biology, infection and immunity, microbiology, genetics, neurobiology and physiology. The MCB Advising Program (MAP) staff is available to help students plan their combination of advanced courses.

For students interested in adding licensure to the BSLAS in Molecular & Cellular Biology, please visit the Biology Teaching page: http://mcb.illinois.edu/undergrad/advising/teaching/

Undergraduate degree programs in Molecular & Cellular Biology

Biochemistry, BS (http://catalog.illinois.edu/undergraduate/las/biochemistry-bs/)

Molecular & Cellular Biology, BSLAS (p. 1)

Molecular & Cellular Biology Honors Concentration, BSLAS (http://catalog.illinois.edu/undergraduate/las/molecular-cellular-biology-bslas/honors/)

Neuroscience, BSLAS (http://catalog.illinois.edu/undergraduate/las/neuroscience-bslas/)

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Certain advanced courses may be taken prior to completion of the MCB 250-MCB 253, MCB 354 sequence with permission of an academic advisor. A minimum of 15 hours of 300- or 400-level courses in MCB from the approved list is required.

In addition, undergraduate research (MCB 290, or departmental equivalent) is strongly recommended for students planning to go to graduate school. No more than 10 hours of MCB 290, or departmental equivalent credit may be counted towards the 120 hours required for a degree in MCB.

Students earning a degree in Molecular and Cellular Biology may not also earn a second degree in the Specialized Curriculum in Biochemistry.

Students earning a degree in Molecular and Cellular Biology may not double major in Integrative Biology.

Distinction

Students in MCB can qualify for Distinction via one of the following:

Distinction for Excellence in Research:

To be eligible for graduation with Distinction a student must:

Complete 3 semesters of MCB 290 for 2 credit hours or more each semester. Maintain a minimum cumulative GPA of 3.25 at the end of penultimate semester. Give at least one poster presentation at the Undergraduate Research symposium or other approved venue. Obtain a letter of support from their Principal Investigator.

To be eligible for graduation with High Distinction a student must:

Complete 2 semesters of MCB 290 for 2 credit hours or more each semester. Complete 1 semester of MCB 492 for 3 credit hours or more. Maintain a minimum cumulative GPA of 3.25 at the end of penultimate semester. Give at least one poster presentation at the Undergraduate Research symposium or other approved venue. Obtain a letter of support from their Principal Investigator. Submit a written thesis that is approved by the Distinction Committee.

To be eligible for graduation with Highest Distinction a student must:

Complete 2 semesters of MCB 290 for 2 credit hours or more each semester. Complete 1 semester MCB 492 for 3 credit hours or more. Maintain a minimum cumulative GPA of 3.90 at the end of penultimate semester. Give at least one poster presentation at the Undergraduate Research symposium or other approved venue. Obtain a letter of support from their Principal Investigator. Submit a written thesis that is approved by the Distinction Committee. Distinction for Excellence in Academics:

To be eligible for graduation with Academic Distinction a student must:

Maintain a major GPA of 3.90 or higher in the MCB major (biology, chemistry, physics and math courses for the MCB major) at the end of their penultimate semester.

General education: Students must complete the Campus General Education (https://courses.illinois.edu/gened/DEFAULT/DEFAULT/) **requirements including the campus general education language requirement.**
Minimum required major and supporting course work: 67-71 hours, including 21 hours of 300- or 400-level courses; 12 hours of 300- and 400-level courses in the major must be taken on this campus.
Minimum hours required for graduation: 120 hours.

Code	Title	Hours
MATH 220	Calculus	4-5
or MATH 221	Calculus I	
MATH 231	Calculus II	3
or STAT 212	Biostatistics	
Select one group of courses:		8-10
CHEM 102 & CHEM 103 & CHEM 104 & CHEM 105	General Chemistry I and General Chemistry Lab I and General Chemistry II and General Chemistry Lab II	
CHEM 202 & CHEM 203 & CHEM 204 & CHEM 205	Accelerated Chemistry I and Accelerated Chemistry Lab I and Accelerated Chemistry II and Accelerated Chemistry Lab II	
CHEM 232	Elementary Organic Chemistry I	4
CHEM 233	Elementary Organic Chem Lab I	2
Select one group of courses:		10-12
PHYS 101 & PHYS 102	College Physics: Mech & Heat and College Physics: E&M & Modern	
PHYS 211 & PHYS 212 & PHYS 213 & PHYS 214	University Physics: Mechanics and University Physics: Elec & Mag and Univ Physics: Thermal Physics and Univ Physics: Quantum Physics	
IB 150	Organismal & Evolutionary Biol	4
MCB 150	Molec & Cellular Basis of Life	4
MCB 250	Molecular Genetics	3
MCB 251	Exp Techniqs in Molecular Biol	2
MCB 252	Cells, Tissues & Development	3
MCB 253	Exp Techniqs in Cellular Biol	2
MCB 354	Biochem & Phys Basis of Life	3
At least four additional courses at the 300- to 400-level from the Approved List of Advanced Courses for MCB Majors are also required, including one lab course. (http://mcb.illinois.edu/undergrad/courses/advanced/)		15-16

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Upon successful completion of the Molecular & Cellular Biology undergraduate curriculum, students will be able to:

1. understand and appreciate the diversity of life as it evolved over time by processes of mutation, selection and genetic change.
2. illustrate that fundamental structural units define the function of all living things.
3. explain that the growth, development, and behavior of organisms are activated through the expression of genetic information in context.
4. summarize that biological systems grow and change by processes based upon chemical transformation pathways and are governed by the laws of physics.
5. illustrate that living systems are interconnected and interacting across scales of space and time.
6. design a scientific process and employ the scientific method, demonstrating that biology is evidence based and grounded in the formal practices of observation, experimentation, and hypothesis testing.
7. execute quantitative analysis to interpret biological data.
8. construct and utilize predictive models to study and describe complex biological systems.
9. apply concepts from other sciences in order to interpret biological phenomena.

10. communicate biological concepts and understanding to members of a diverse scientific community as well as to the general public.
11. identify social and historical dimensions of biological investigation.

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school website: https://mcb.illinois.edu/undergrad/
school faculty: School Faculty (https://mcb.illinois.edu/people/)
advising: MCB advising (https://mcb.illinois.edu/undergrad/advising/)
overview of college admissions & requirements: Liberal Arts & Sciences (http://catalog.illinois.edu/schools/las/academic-units/)
college website: https://las.illinois.edu/
email: advising (advising@mcb.illinois.edu)@mcb.illinois.edu (undergrad@mcb.illinois.edu)