

School of Biological Sciences

Biology Student Information Guide

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Letter from the Director

Dear Biological Sciences Major,

Welcome to Illinois State University and our School! You have chosen a challenging and rewarding major that will increase your understanding and appreciation of the living world. To do this, the major combines biology, chemistry, physics, and math to provide a strong and thorough scientific foundation. Our program is structured to provide you with a broad knowledge of many areas, while at the same time allowing you to take elective course work in a specific field of your choice. We have developed several focused areas of study for students who wish to pursue a particular sub-discipline (*Majors in Molecular & Cellular Biology and Biology Teacher Education; Sequences in Conservation Biology; Physiology, Neuroscience, & Behavior; Plant Biology; and Zoology*). For students interested in exploring the breadth of biology, we offer a *General Biology* sequence as well.

The School of Biological Sciences is proud of our expert faculty who are dedicated to helping you achieve success here at ISU and in your future careers. We currently have 23 faculty in our School, including three Distinguished Professors. The majority of the faculty run active research laboratories that have attained national and international recognition. This means that course materials taught by faculty are kept current and informed by ongoing research conducted at ISU and across the world. Additionally, it offers opportunities for undergraduate students, such as yourself, to gain valuable research experience. Faculty research interests are diverse, allowing you the opportunity to investigate questions in biochemistry, molecular biology, cell biology, physiology, neuroscience, behavior, ecology, evolution, and conservation biology. To learn more about our faculty and their research interests, or undergraduate research opportunities, please visit the School of Biological Sciences website (biology.illinoisstate.edu). We hope you will take the time to participate in a faculty led research project for at least one semester at ISU, as there is no better way to learn science than to do science.

We encourage you to get involved in School sponsored activities outside of regular courses, such as School seminars and the Biological Sciences Student Association. A list of such activities can be found on our website and announcements are made throughout the year. During your time at ISU, also consider participating in a study abroad experience, which are a great way to expand your intellectual horizons. We currently offer one study abroad course taught by faculty within the School, Rainforest Ecology, or you can learn about other study abroad opportunities by visiting the Office of International Studies.

Your decision to become a member of the School of Biological Sciences has given you the opportunity to explore a diverse and exciting range of coursework, to engage in rigorous and rewarding undergraduate research experiences, and to get to know other members of the School through course-related and extra-curricular experiences. We are glad that you are joining us, and we look forward to getting to know you as you begin your studies with us.

Sincerely,



Rachel M. Bowden
Distinguished Professor of Ecological Physiology
Director, School of Biological Sciences

SCHOOL OF BIOLOGICAL SCIENCES

DEGREE OPTIONS

We offer three Bachelor of Science undergraduate degree programs.

1) The major in *Biological Sciences* includes the choice of five possible sequences, allowing students to specialize in a particular area, or choose a general sequence. Any of these sequences could lead to graduate (MS, PhD) or professional school (e.g. medical, dental, or veterinary school).

BIOLOGICAL SCIENCES MAJOR

FIVE SEQUENCES

GENERAL BIOLOGY SEQUENCE

- Prepares students for a diverse array of careers in the biological sciences.
- Students can tailor the degree to match their interests and professional goals.

CONSERVATION BIOLOGY SEQUENCE

- Prepares students for careers related to the conservation and restoration of natural ecosystems and their organisms. Entry level positions in conservation, and/or graduate study.

PHYSIOLOGY, NEUROSCIENCE & BEHAVIOR SEQUENCE

- Prepares students for careers that involve basic scientific and applied aspects of behavior, physiology and neuroscience.

PLANT BIOLOGY SEQUENCE

- Prepares students for a career in industries, the government, and nonprofit organizations working with plants.

ZOOLOGY SEQUENCE

- Prepares students for careers that involve working with animals of any kind. Zoology will also prepare students for graduate study, or professional school (additional coursework required).

BASIC 4-YEAR PLAN FOR THE BIOLOGICAL SCIENCES MAJOR (ALL SEQUENCES)

1st year	#BSC 197 CHE 140 *MAT ENG 101 or COM 110	#BSC 196 CHE 141 *MAT ENG 101 or COM 110	Notes:* 1. Students can opt for one semester of general chemistry -- CHE 110/112. 2. If students choose to take CHE 110/112, they are only eligible to take CHE 220. *Pre-Health does not use this chemistry track
2nd year	BSC 204 Sequence Core Class	Sequence Core Class CHE 220 or 230/231	
3rd year	Sequence Core Class or Sequence Electives PHY 105 or 108	Sequence Core Class or Sequence Electives	
4th year	Sequence Electives	Sequence Electives	

MATH OPTIONS:

1. MAT 120 and 121
2. MAT 120 and PSY 138 or ECO 138
3. MAT 145 and PSY 138 or ECO 138
4. MAT 145 and 146

MAJOR/SEQUENCE REQUIREMENTS:

1. Completion of at least 37-40 hours of BSC coursework including BSC #196, #197, and 204; includes 16 hours of elective-2 must be BSC lab.

REQUIREMENT FOR GRADUATION (FOREIGN LANGUAGE):

Three years of high school foreign language credit or completion of LAN 112 with a C or better.

PROFESSIONAL SCHOOL:

Students interested in pursuing professional degrees (e.g., medicine, dentistry, physician assistant, optometry, pharmacy, occupational therapy, or physical therapy) should meet with the Pre-Health advisor.

2) The major in *Molecular and Cellular Biology* (MCB) is designed for students interested in the molecular sciences. Coursework for this degree differs from the Biological Sciences major because it is focused on macromolecules, cells, genetics, and the chemistry of living systems.

BASIC 4-YEAR PLAN FOR THE MOLECULAR & CELLULAR BIOLOGY MAJOR

1 st year	#BSC 197 CHE 140 MAT 145 ENG 101 or COM 110	#BSC 196 CHE 141 *MAT ENG 101 or COM 110
2 nd year	BSC 204 CHE 230/231 PHY 108	BSC 219 CHE 232/233 PHY 109
3 rd year	#BSC Lab Elective BSC Elective	#BSC 260 CHE 242 or 342 BSC Elective
4 th year	BSC 350 300-level MCB Elective	300-level MCB Elective #BSC Lab Elective

MATH OPTIONS:

1. MAT 146
2. PSY 138 or ECO 138

MAJOR REQUIREMENTS:

1. Completion of 37 hours of BSC coursework.
2. Completion of five BSC courses with laboratories (#).
3. 15 hours of MCB elective. Pass at least two 3-credit hour courses at the 300-level (excluding BSC 398).

REQUIREMENT FOR GRADUATION (FOREIGN LANGUAGE):

Three years of high school foreign language credit or completion of LAN 112 with a C or better.

PROFESSIONAL SCHOOL:

Students interested in pursuing professional degrees (e.g., medicine, dentistry, physician assistant, optometry, pharmacy, occupational therapy, or physical therapy) should meet with the Pre-Health advisor.

3) The major in *Biology Teacher Education* (BTE) prepares students for careers in secondary education. Student teaching in a secondary school is a requirement of this major.

RECOMMENDED 4-YEAR PLAN FOR THE BIOLOGY TEACHER EDUCATION MAJOR

1 st year	#BSC 197 CHE 140 MAT 120 or 145 ENG 101 or COM 110	#BSC 196 CHE 141 PSY 110 ENG 101 or COM 110
2 nd year	BSC 161 #BSC 201 BSC 204 PSY 215 *Statistics	BSC 203 **TCH 212 GEO 102 or 202 PHY 105 or 108 <i>Apply to Professional Studies</i>
3 rd year	BSC 219 PHY 208 ***TCH 216 <i>Apply for Student Teaching</i>	#BSC 220 #BSC 231 EAF 228 or 231 or 235 ***TCH 219
4 th year	BSC 305 BSC 307 BSC Elective SED 344 <i>Apply for Admission to Student Teaching</i>	BSC 302 Student Teaching

* Statistics: PSY 138, ECO 138, or MQM 100

** Student must have 2.5 GPA for admission to course

*** Student must be admitted to professional studies prior to course registration

SEQUENCE REQUIREMENTS:

1. Completion of 38 hours of BSC coursework.
2. Required core courses (# = laboratory courses): BSC 161, #196, #197, #201, 203, 204, 219, #220, #231, 302, 305 and 307.
3. Completion of 5 hours of electives
4. Completion of all science, math, and education courses with a C or better.
5. Students must pass the edTPA during student teaching.

REQUIREMENT FOR GRADUATION (FOREIGN LANGUAGE):

Three years of high school foreign language credit or completion of LAN 112 with a C or better.

ILLINOIS STATE UNIVERSITY AND COLLEGE OF ARTS AND SCIENCES GRADUATION REQUIREMENTS

- Complete 120 credits to graduate
- 42 of those credits are at the 200 or 300 (junior/senior) level
- Proficient in a foreign language through the second semester of the first year (unless you had three years in high school)
- Global Study- Amali designated course
- General Education Requirements
- Biology Majors are exempt from the SMT requirement
- 2.0 in Major and Overall GPA needed to graduate
- You can access an on-line catalog that contains the courses that you can take for your general education requirements and your global studies requirement

SCHOOL OF BIOLOGICAL SCIENCES

ADVISING

Students who have earned less than 24 credit hours will be advised in University College's Academic Advising Center, located in Fell Hall, Room 304. They can be reached at 309.438.7604. *You will have a University College Advisor assigned to you during Preview.*

Once you have earned 24 credit hours, you will meet with your Departmental Advisor.

If you are a **Biological Sciences** major, or a **Molecular & Cellular Biology** major, and you are not Pre-Health, your Advisor is **Raz Steward**. To set up an appointment with Raz Steward, you can visit the following website to view Raz's appointment calendar:

<https://appointments.illinoisstate.edu/ramonline/BookAppt?AG=305>

If you are pursuing a **Pre Health professions pathway** (e.g., medicine, dentistry, physician assistant, optometry, pharmacy, occupational therapy, or physical therapy) your advisor is **Jeff B. Helms**. <https://appointments.illinoisstate.edu/ramonline/BookAppt?AG=1135>

If you are participating in the **Biology Teacher Education** sequence, your Advisor is **Margaret Parker**. To set up a registration check/advising appointment, you can visit the following website to view Margaret's appointment calendar:

<https://appointments.illinoisstate.edu/ramonline/BookAppt?AG=338>

ADVISOR RESPONSIBILITIES

As Advisors, we are able to do the following:

1. Clarify and explain degree requirements.
2. Create plans of study based on your educational and professional goals.
3. Assist you with changes in study plans.
4. Explore scheduling or other problems and make suggestions or referrals when necessary.

STUDENT RESPONSIBILITIES

1. As majors, we expect you to **be prepared** for advising appointments by having reviewed your plan of study and making a list of important questions.
2. As Advisors, we have many responsibilities so we are better at advising when we plan on a student's arrival rather than having students drop-in. Schedule an appointment.

SCHOOL OF BIOLOGICAL SCIENCES

STUDENT ORGANIZATIONS

BIOLOGICAL SCIENCES STUDENT ORGANIZATION (BSSA)

The goal of BSSA is to provide an intellectual and social network for undergraduate students interested in the many fields of Biological Sciences. We provide information about resources at ISU such as internships and research opportunities for students, to help students with career decisions by sponsoring activities such as field trips and panel presentations and to recognize biology-related achievements of Biological Sciences majors. BSSA also organizes laboratory tours and sponsors an annual research symposium. We also work with the campus and local community to increase public awareness of Biological Sciences.

PHI SIGMA BIOLOGICAL HONOR SOCIETY

Phi Sigma is a national society that was founded in March 1915 at Ohio State University to promote academic achievement and research in the biological sciences. Phi Sigma is the only nationally recognized honor society for both undergraduates and graduates in Biological Sciences. On the campus of Illinois State University the Phi Sigma Biological Science Honors Society is represented by the Beta Lambda Chapter (a registered student organization), which was founded in 1966. Phi Sigma is devoted to the promotion of scholarship and research in the Biological Sciences. To this end, the Beta Lambda Chapter of Phi Sigma works closely with the School of Biological Science and is a sponsor of the weekly school seminar series, and the annual research symposium. The Beta Lambda Chapter of Phi Sigma also holds an annual grant competition to provide research funds to both graduate and undergraduate students.

SIGMA XI

Undergraduate students can be nominated to Sigma Xi, the Scientific Research Society. This is a national, non-profit organization with more than 70,000 members. Sigma Xi sponsors a variety of programs supporting honor in science and engineering, science education, science policy and the public understanding of science.

For more information on student organizations visit:

<https://biology.illinoisstate.edu/#>

SCHOOL OF BIOLOGICAL SCIENCES

RESEARCH OPPORTUNITIES & STUDY ABROAD

RESEARCH OPPORTUNITIES

As a student in the School of Biological Sciences at Illinois State University, you have a number of opportunities to further your education outside of the classroom! One of those ways is by participating in a research project and we encourage you to participate for at least one semester during your time at ISU.

- Research can help you decide about a future career, particularly if you aren't sure what area of biology you are interested in. You can try working in several different laboratories to see what you like best!
- Working on a research project is a valuable experience for your resume or applications to professional/graduate schools. It shows that you put extra effort into your education beyond what was required to graduate. It also gives you hands-on experience!
- A research project puts you in contact with professors, graduate students, and other undergraduate students. Most faculty members mentor a small number of students in their laboratory, so you can get to know your professors while gaining valuable skills.
- For more information on undergraduate research opportunities visit:

<https://biology.illinoisstate.edu/research-and-facilities/overview/#>

STUDY ABROAD PROGRAM

While students in the Biological Sciences are welcome to pursue study abroad in many different locations, the following colleges and universities offer many preapproved Biology electives:

Griffith University
Brisbane, Australia

Edgehill University
Ormskirk, England

Veritas University
San Jose, Costa Rica

University of Leicester
Leicester, England

For more information about **Study Abroad** Programs you can contact:

Office of International Studies and Programs


Illinois State University
102 Williams Hall Campus Box 6120
Normal, IL 61790-6120

Telephone: (309) 438-5276

<https://studyabroad.illinoisstate.edu/>

HONORS PROGRAM

HONORS IN THE MAJOR: BIOLOGICAL SCIENCES

General Biology; Conservation Biology; Physiology, Neuroscience and Behavior;  Plant Biology; Zoology; Biology Teacher Education; Molecular and Cellular Biology

Students in the Honors Program can choose to pursue various designations to earn upon graduation, including *Honors in the Major*. By completing *Honors in the Major*, students will:

- engage in an enriched and extended learning experience;
- develop as scholars and gain an edge over their peers by choosing a rigorous preparation in their field of study;
- be recognized in the Commencement Book, transcript, and on the diploma.

Students earn this designation at graduation; requirements, including being in good standing with the Honors Program, are reviewed at the end of the final semester:

1. Students are encouraged to attend an Honors Designations Workshop.
2. 3.3 cumulative GPA
3. 3.5 major GPA
4. Fulfill Honors Program participation requirements: 1 Honors Learning Experience per semester in the program, including the final semester (students are not required to complete an Honors Learning Experience when they are off-campus)
5. Complete 3 Honors Learning Experiences in BSC, specifically:
 - Honors Contracts in two BSC courses at the 200 or 300 level
 - 3 hours of BSC 299: Honors Independent Study
6. Complete an Honors Capstone Experience, specifically:
 - BSC 303: Senior Thesis (Honors Section)

For more information about honors in the major go to:

<https://honors.illinoisstate.edu/downloads/academic/designations/HonorsBiologicalSciences.pdf>

TO BE SUCCESSFUL IN BSC 197 AND BSC 196

(OR ANY BIOLOGY COURSES)

- It is strongly recommended that you have completed MAT 119 (College Algebra) or its equivalent.
- **Come to every class!** The instructors provide additional information and explanations that may not be covered in the text.
- **Study a little bit each day to keep up with the material.** Even though your professor may not assign homework, spending time with the material each day will allow you to keep up. This will also help you when it comes time to study for the tests.
- **Read the assigned or related portions of your textbook.** Skim through your textbook before the lecture. After the lecture, read your textbook again in more detail, concentrating on the terms and concepts from lecture while reviewing class notes.
- **Form your own study group.** Teaching the material to a classmate (or roommate) is a great way to make sure you really understand the material. This will help you identify gaps in your knowledge.
- **Remember that there is a difference between sight recognition/memorization and true understanding.** Be self-reflective about your study habits and adjust them as needed.
- **If you have questions or need help, ask your professor!** Attend their office hours or make an appointment to meet with him/her; your professor is here to help you at any time throughout the semester!
- **Contact your professor as soon as you realize you are having trouble!** Do not wait until the end of the semester to ask for help!
- **For additional help, try tutoring!** The Julia N. Visor Center has free group tutoring specifically for BSC 196 and 197 who can help you with course material as well as general study skills. Additionally, a list of tutors for hire is kept in the Biological Sciences Office in 210 Julian Hall.

THINGS EVERY NEW BIOLOGY STUDENT SHOULD KNOW...

- **Check your e-mail frequently.** Your advisors and professors will send you important information through your Illinois State e-mail account. You can easily have your Illinois State e-mail forwarded to another account of your choosing.
- **Check the School website frequently.** The website is updated weekly with seminar announcements, job postings, etc.
- **School seminars bring experts to ISU.** Each week the School hosts speakers from around the country (and from ISU) that present exciting research findings from across the breadth of biology. You are encouraged to attend these seminars!
- **Get involved.** There are many opportunities to participate in the School outside of class. Take advantage of student organizations to meet other students interested in biology.
- **Do research, start early.** Hands-on research experiences are available to you! Contact individual faculty to find out about opportunities in their labs (a list of faculty research interests is available on the School website), but spaces are limited.
- **Study abroad.** ISU has several study abroad opportunities for students. In biology we offer an annual Costa Rican Rainforest Ecology course (BSC 311) that takes students to the Rainforest for a research experience. Check for fliers in the spring!

SOME IMPORTANT WEBSITES

Financial Aid

<http://financialaid.illinoisstate.edu/>

Julia N. Visor Academic Center

<https://universitycollege.illinoisstate.edu/help/>

University College Advising

<https://universitycollege.illinoisstate.edu/advising/>

Student Accounts

<https://studentaccounts.illinoisstate.edu/>

Registered Student Organizations

<https://deanofstudents.illinoisstate.edu/involvement/organizations/>

Student Counseling Center

<http://counseling.illinoisstate.edu/>

Career Services

<https://careerservices.illinoisstate.edu/>