

The Indiana Academy for Science, Mathematics, and Humanities
Advanced Placement Biology SCI 04301
Fall Semester 2025 (Dual Credit for BIO-111)

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Office Hours: MWF 8:30 – 10:30 a.m., Tuesday 10:00 a.m. – 12:00 p.m.,
Thursday 12:00 – 2:00, or by appointment

Class Schedule: Lecture: MWF 1:00 – 1:50 (S1) or 2:00 – 2:50 (S2) in B-211
Lab: Thurs. 8:00 – 9:50 (S1) or 10:00 – 11:50 (S2) in B-211

Course description (from the Catalog):

Prerequisite *Fall*: Successful completion of two semesters (or equivalent) of General Biology and General Chemistry or permission of instructor

Prerequisite *Spring*: –Successful completion of first semester AP Biology or permission of the Science Division Chair.

Co-requisite: AP Biology Lab (SCI4301L/4302L)

Credit: 1.5 credits per semester

Offered: Fall/Spring Sequence

This Advanced Placement course provides an accelerated, comprehensive, and thorough overview of the field of biology in preparation for the AP Biology exam. The course covers biological chemistry, cell biology, Mendelian genetics, evolutionary theory and principles, and an overview of the diversity, structure and ecology of organisms. Laboratory activities follow the required AP Biology lab exercises and other lab activities. Students will prepare for and are encouraged to take the AP Biology exam in May.

Course student learning outcomes:

At the end of the course, students will understand:

1. How the process of evolution drives the diversity and unity of life.
2. How biological systems use energy and molecular building blocks to grow, reproduce, and maintain dynamic homeostasis.
3. How living systems store, retrieve, transmit, and respond to information essential to life processes.
4. How biological systems interact to exhibit complex properties.

5. How to critically evaluate a scientific problem, design a hypothesis to address the problem, design and execute an experiment to test the hypothesis, and compose a laboratory report to communicate data obtained from the investigation.

Course materials:

Urry, Cain, Wasserman, Minorsky, and Orr. 2020. *Campbell Biology in Focus*, 3rd ed., Pearson Education Inc.

All students will need a personal computer to complete assignments. Students may access helpful software applications (Microsoft Office, Adobe, etc.) at the following link: [BSU Digital Tools](#)

Please note that some aspects of this course may need to be changed during the semester, so this syllabus is subject to revision. If the syllabus is revised during the semester, the updated syllabus will be posted on Canvas. Please refer to Canvas for updated information.

Assignments:

The assignments for the course are shown in the table below.

Category	Percentage
Multiple choice exams	35%
Constructed response (essay) exams	35%
Homework and Projects	15%
Laboratory exercises	15%
Total	100%

Grading scale:

A = 94 – 100%	B = 83 – 86%	C = 74 – 76%
A- = 90 – 93%	B- = 80 – 82%	C- = 70 – 73%
B+ = 87 – 89%	C+ = 79 – 77%	D* < 69.9%

Grades will be posted on Powerschool. If I am late posting grades, you can estimate your current grade in the course by adding all the points you have earned or anticipate earning from all assignments. There are 1000 points available in the course, so each point is worth 0.1%. **Please make an appointment to talk with me if you are concerned about your grade or uncertain about your standing in the course.**

Attendance

Attendance is mandatory. Students may receive excused absences at the professional discretion of the school nurse, the associate director of mental health services, the associate director of college counseling and student engagement, the director of academic affairs, and the executive director of the Indiana Academy. Unexcused absences occur when students miss class without prior approval from the aforementioned designated school officials. Continued absences (both excused and unexcused) from Academy classes increase the likelihood of unsuccessful completion. Alongside steady attendance, students are expected to maintain consistent healthy habits of decorum, respect, and kindness towards their classmates, instructors, and teaching assistants. When students fail to meet these classroom behavioral standards and academic habits, it is the expectation faculty engage appropriately to bring quick and immediate resolution. When students consistently fail to meet these behavioral standards and academic habits in the classroom, an administrative consequence ladder will be adopted, and recorded, in attempt to administratively address, engage, and rectify ongoing challenges.

The Academy and not the instructor determines whether an absence is excused or unexcused. You are expected to attend every class, but you are allowed one unexcused absence without penalty. For additional information on absences and late work, please see the sections below.

Absence Policy

It is the policy of the Indiana Academy that any absence from class is unexcused, except for illness, death in the family, college or school-related activities, and extenuating circumstances. When a student is absent from a class, the instructor reports the student absence to the Faculty Attendance Coordinator in the Office of Academic Affairs. Unless the absence is excused by a school official, it is considered unexcused. The decision as to whether an absence is excused is not determined by the instructor. Four or more unexcused absences in any particular class a student takes will lead to academic and residential consequences to be determined by the Office of Academic Affairs and the Office of Residential Life that may include detention, residential groundings, parent/principal conference, among others.

Late work

If an absence is excused, the instructor will make every reasonable effort to ensure the student has the opportunity to make up any assignments associated with the absence. A student who has an excused absence on the day an assignment is due must communicate with the instructor regarding an appropriate due date for missed work. Each student may submit 1 homework assignment late (beyond a 24-h grace period) for an unexcused reason without penalty if the student tells the instructor on or before the

due date that that it will be late. Any other unexcused late work may be graded, but a penalty of 10% per day late may be deducted from the score at the instructor's discretion. Unexcused late work for a given unit cannot be submitted after the unit exam is completed.

Laboratory assignments must be submitted within 24 h of the due date, or 10% per day late may be deducted at the instructor's discretion. If a student misses a lab session because of an excused absence, additional time may be granted to allow the student to make up the lab activity or a substitute activity. It is the student's responsibility to contact the instructor as soon as possible to set up a time to make up the missed lab.

If an exam is missed, it is the student's responsibility to contact the instructor as soon as possible to set up a time to make it up. If the exam is missed due to an unexcused absence, the student will be permitted to make up the exam, but a penalty of 10% may be deducted from the exam score at the instructor's discretion. All makeup exams must be completed within one week of the student returning to class.

Safety

Please familiarize yourself with lab safety protocols and perform procedures with care. Because we hold class in a science lab, no food, gum, or drinks can be brought into the classroom. Your work area should always be free of clutter and only have the necessary materials (pens/pencils, notebook, etc.). If there are glassware breakages or equipment problems, please notify the instructor immediately to ensure proper safety and equipment protocols are followed.

Academic conduct

You will prepare for each class meeting by completing the reading and any assignments that are due. Most assignments will be submitted on Canvas, though some assignments may be submitted in class.

Although some activities such as labs may be completed in pairs or groups of students, each student is individually responsible for submitting assignments with original writing (not copied from your lab mate or any other source). You are encouraged to discuss answers to lab activities with other class members, but the wording should not be the same. Do not share word processing files with each other, but make sure each student has access to the raw data for analysis.

You are expected to conduct yourself according to the Indiana Academy Student Handbook (<https://academy.bsu.edu/handbook/>), especially the Code of Conduct and the section on Academic Integrity. On writing assignments, please be sure to use your own wording and cite all sources of information, whether from the Internet or otherwise. If you are not sure how to cite something, ask the instructor. Note that language copied

verbatim from a book, website, another student's paper, or any other source is considered plagiarism unless it is in quotation marks and cited. Plagiarism is a form of academic dishonesty. Please do not plagiarize or cheat in any other way. An infraction may result in a 0 for the assignment. For violations of academic honesty, please refer to the "Academic Dishonesty" portion of your student handbook. In particular, please read the "Academic Integrity Board". Remember that you always have the right to refute any accusation (or ramification dictated by your instructor) of academic dishonesty by having your case brought before the AIB. Note that if the AIB is used, its decisions are final.

Classroom conduct

Please do not engage in conversations that are not relevant to the class. Please be respectful of other classmates. Keep any devices not used for classroom activities silenced or off. Your phone should be put away if it's not being used for class. Phones, tablets, and laptops can be used in class for class activities, but repeated use for non-class activities may result in a loss of that privilege. Please treat each other with respect and refrain from disruptive behavior. Do not interrupt another student or the instructor. If you are having difficulty asking questions or contributing to discussions, you can raise your hand. Examples of improper conduct include having extended conversations, working on assignments for other courses, sleeping, etc. Serious and/or chronic problems may be cause for dismissal from the course. A calculator (but not a phone) may be used for exams.

Indiana Academy Wireless Device Policy

Pursuant to Indiana Code 20-26-5-40.7, The Indiana Academy for Science, Mathematics and Humanities prohibits student use of wireless communication devices for non-instructional purposes in the classroom. As such, any and all portable wireless devices, that have the capability to provide voice, messaging, or other data communication between two or more parties, must only be used for academic purposes directly tied to the classroom activity or related educational task. Exceptions to this wireless device policy are eligible through academic accommodations, individualized education programs, or with instructor approval permitting the use of a wireless device for justification related to health, safety, and/or well-being.

The improper use of a wireless device in an active classroom setting is subject to disciplinary action including but not limited to; a verbal warning, temporary seizure of said device by a school official, an unexcused absence for the class in question, written communication to parent/guardian, among other elevated consequences for repeated improper use.

Dual credit

You can enroll to receive dual credit for this course through Ball State University (for Biology 111: Principles of Biology, 4 credit hours). Accordingly, this course emulates the content and rigor of the Ball State course, which is designed for majors in biology, allied health, and other sciences. The content provides a strong foundation in introductory college-level biology. Topics include the physical and chemical organization of life, prokaryotic and eukaryotic cell structure and function, bioenergetics, cell division, genetics, gene expression, protein synthesis, and evolution.

Library research

Through your association with Ball State University, you have access to an academic research library with many useful materials. This includes online access to many peer-reviewed biological journals through bibliographic databases to which Ball State subscribes. To access these databases, go to <https://www.bsu.edu/academics/libraries>, and scroll down to "Databases". The databases are listed in alphabetical order by the first letter. Two good ones to try are JSTOR under "J" and NCBI under "N". When you click on one of these databases, you will be prompted to log into your Ball State account. You can search for articles on topics of interest and access the full text of many articles from the journal publishers' websites.

Special circumstances

If you need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case of a building evacuation, please make an appointment with me as soon as possible.

If you are struggling with study habits, stress, and/or personal issues, I encourage you to discuss the situation with your SLC and/or contact the Guidance Office for help in dealing with these issues so that you can thrive at the Academy. Many resources are available for students, and important contact information is listed below:

For tutoring: To find a tutor through Ball State: iaguidance@bsu.edu
phone: 765-285-2889; office: WA 160-D

Mental health: Dr. Mindy Wallpe (mcwallpe@bsu.edu)
phone: 765-285-5483; office: WA 160-C

Student Accommodation Policy

Students possessing an educational 504 or IEP should contact the instructor as soon as possible to arrange for any accommodations that may be needed. Likewise, if you feel

that you could benefit from an educational 504 or IEP, feel free to contact the instructor to this regard.

Ball State University Beneficence Pledge

Ball State University aspires to be a university that attracts and retains outstanding faculty, staff, and students. Ball State is committed to ensuring that all members of the campus community are welcome through our practice of valuing the varied experiences and worldviews of the people whom we serve. We promote a culture of respect and civil discourse as evident in our Beneficence Pledge. As a reflection of Ball State's commitment to respect, civil discourse, and the Beneficence Pledge, inclusiveness at the Indiana Academy emerges as one of the priorities of our living and learning community. We strive to exist together respectfully and compassionately, creating an environment where every member can thrive.

Artificial Intelligence Policy

For information regarding use of artificial intelligence (AI) for this course, please consult the AI Policy document available on the AP Biology Canvas page.

Tentative Lecture Schedule (subject to revision as needed)

Fall Semester 2024		
Week	Topic	Chapters
1 (8/11)	Introduction to biology, water and hydrogen bonding, carbon and macromolecular structure	1 – 3.2
2 (8/18)	Structure and function of biomolecules	3.3 – 3.7
3 (8/25)	Unit 1 Exam (Chemistry of life) , Cell structure and function, endosymbiosis	4
4 (9/1)	Membrane structure and permeability, passive transport and facilitated diffusion	5.1 – 5.3
5 (9/8)	Tonicity and osmoregulation, mechanisms of transport, cell compartmentalization	5.4 – 5.5, 32.4
6 (9/15)	Unit 2 Exam (Cell Structure and Membrane Transport) , Introduction to metabolism	6.1 – 6.2
7 (9/22)	Cellular energetics, enzyme structure and catalysis, environmental impacts on enzyme function	6.3 – 6.4
8 (9/29)	Cellular energy and metabolism, introduction to photosynthesis (10/4: parent-teacher conferences in afternoon)	6.5, 8.1
9 (10/6)	Cellular Respiration	7
10 (10/13)	Photosynthesis, metabolism and fitness	8.2 – 8.4
11 (10/20)	Unit 3 Exam (Cellular energetics) , Intro to cell communication	
12 (10/27)	Signal transduction pathways and feedback	5.6, 32.2 – 32.3
13 (11/3)	Cell cycle regulation	9
14 (11/10)	Unit 4 Exam (Cell communication and the cell cycle) , Meiosis and genetic diversity	10
15 (11/17)	Mendelian genetics, patterns of inheritance, and environmental effects on phenotype	11
16 (12/1)	Non-mendelian genetics and chromosomal inheritance	12
17 (12/8)	Unit 5 Exam (Heredity) , Review for Final Exam	
18 (12/15)	Final Exam	

Mr. Crowder reserves the right to change the schedule on an “as needed” basis. Students will be notified of these changes through e-mail and/or Canvas announcements.