



Course Syllabus – Fall 2026
BIOL 1114 – Life I: Molecular & Cellular Concepts
Lecture: Bolin Hall, Room 247
Lab: Bolin Hall, Room 203

Contact Information

Instructor: Joel G. Brant, PhD

Office: Bolin Hall 224A

Office hours:

- Mondays, Wednesdays, & Fridays: 9:00-10:00; 11:00-12:00
- Thursdays: 1:00-3:00

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Course Description

The first in a three-course sequence designed for students majoring in the natural sciences. An introduction to the principles and concepts that describe living systems at the molecular & cellular levels, including scientific methods of inquiry, features distinguishing viruses, prokaryotic & eukaryotic cells, membrane structure & transport, metabolic processes & pathways, and macromolecules within an evolutionary framework.

The lecture portion of this course will refer regularly to the Hillis et al. (2020) textbook. Reading assignments for each lecture topic are provided below to help you familiarize yourself with the material. I expect you to have read the assigned chapters before class and be prepared to discuss the topic during class. Exams will cover material from both lecture and the textbook.

Course Objectives

- Students will understand and be able to use the Scientific Method.
- Students will possess the ability to use common laboratory equipment, dissect an organism, & make biological measurements.
- Students will possess an introductory level understanding of the fundamental biological principles including the diversity of life, the nature of cells, the principles of heredity, & evolution.
- Students will possess the ability to critically assess the validity of current scientific articles and popular scientific issues.

Textbook & Instructional Materials

Hillis, D. M., C. H. Heller, S. D. Hacker, D. W. Hall, M. J. Laskowski, L. A. O'Connell, & D. E. Sadava. 2020. *Life: the Science of Biology*. 12th Edition. Sinauer Associates/Macmillan, Sunderland, MA. (ISBN13 = 978-1319498535)

Carroll, Sean B. 2019. *The Story of Life*. W.W. Norton Company, New York, NY. (ISBN13 = 978-80393631562)

Cook, W. B., & J. B. Scales. 2026. *Life I: Molecular & Cellular Concepts, BIOL 1114 Lab Manual*. 3rd Edition. (available via D2L)

Course Policies

Absences

Attendance of both lecture and lab are essential for successful completion of this course. Attendance will be taken regularly and failure to attend will have consequences. Absences due to participation in college-sponsored co-curricular events or college-recognized religious observances are considered excused absences provided appropriate procedures are followed. The student must notify the instructor at the earliest possible time before the absence and will be responsible for the work and material we cover in class. A student with excessive absences may be dropped from a course by the instructor.

Make-up Work

If a student misses an exam due to a university approved absence or due to an unforeseen health or family emergency, they may make arrangements with the instructor to take a make-up exam. You are responsible for providing evidence to substantiate the reason for any absence as soon as possible. Missed exams will be recorded as a score of zero unless written documentation is received and authenticated. Missed exams must be made-up within a week of the exam date. There will be no make-ups for missed quizzes.

Desire-to-Learn (D2L)

For this course D2L will generally be used as a document repository (lecture notes, lab notes, and recorded lectures), though some assignments will be administered via this website. You can log into D2L through the MSU Homepage (or <https://d2l.msutexas.edu/d2l/home>). If you experience difficulties, please use links to technical help found on the D2L site.

Grade Determination

The final grade for this course will be determined by considering both your lecture grade and your lab grade. The lecture grade will comprise 75% of the final grade for the course and will consist 100 points from weekly quizzes, 100 points from short written assignments, four 100-point lecture exams, and a 100-point final exam. The lecture exams will not be comprehensive and cover material from both the reading and lecture since the previous exam. The Final Exam will be comprehensive covering material from the entire course. All exams will consist of multiple-choice questions. A total of 11 10-point quizzes will be given during the semester and will cover material from the preceding week.

The lab grade will comprise 25% of the final grade for the course and consist of 13 15-point lab assignments and a 100-point lab final.

Table 1: Points allocated to each assignment

Assignments	Points
Quizzes (11 at 10 pts each)	100
Written Assignments (5 at 20 pts each)	100
Exams (4 at 100 pts each)	400
Final Exam	150
Lab	250
Total Points	1000

Table 2: Total points for final grade.

Grade	Points
A	≥ 900
B	800 to 899
C	700 to 799
D	600 to 699
F	< 600

Rules of Conduct

Students in this course will conduct themselves in a respectful and appropriate manner. Disorderly conduct, as defined in the student handbook, will not be tolerated. The instructor may dismiss students from lecture and lab sections due to instances of significant disorderly conduct (especially disruptive, discriminatory, or threatening behaviors). Return to class will be prohibited prior to meeting with the instructor and Biology Department Chair to discuss the incident. A second instance of dismissal will result in permanent removal from the course and an automatic assignment of an “F” grade for lecture and lab. In cases of severe disorderly conduct (usually involving campus security) the student will immediately be removed from the course and assigned an “F” grade, regardless of the number of previous instances.

Please turn off any cell phones or other electronic communication devices (i.e. pagers or instant messaging devices) unless prior permission has been obtained by the instructor. Laptop computers and voice recorders may be used as note taking aids, however individuals who surf the web or play games during class will lose this privilege. Any use of electronic devices during an exam will be taken as a form of cheating and dealt with accordingly (see below).

Use of Artificial Intelligence

Generative artificial intelligence can be an effective aid for studying and the writing process. However, graded assignments are intended to assess the output of the student, not the AI. Students submitting written assignments, data, or other inputs synthesized from artificial intelligence software (ex. ChatGPT, Jasper, Google Bard, etc.) will be given a “0” on assignments and may be failed from the course in accordance with MSU’s policies on academic dishonesty and plagiarism.

Recording Classes

***Recording classes is generally prohibited without the professor’s explicit permission.** Such recordings, when permitted, are for personal use only and may not be uploaded to the internet or otherwise shared, transmitted, or published without the professor’s prior consent. Some faculty may not permit recordings of their classes. When it is feasible and appropriate, students may record classes to accommodate disabilities under the Americans With Disabilities Act, with prior approval of Disability Support Services. Such recordings may not be uploaded to the internet or otherwise shared, transmitted, or published.

University Policies*Moffett Library*

Moffett Library provides resources and services to support student’s studies and assignments, including books, peer-reviewed journals, databases, and multimedia materials accessible both on campus and remotely. The library offers media equipment checkout, reservable study rooms, and research assistance from librarians to help students effectively find, evaluate, and use information. Get started on this [Moffett Library webpage](#) to explore these resources and learn how to best utilize the library.

Campus Carry Rules/Policies

Effective August 1, 2016, the Campus Carry law (TX Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit [Campus Carry](#).

Active Shooter Information

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during demanding situations. For more information, visit [Safety / Emergency Procedures](#). Students are encouraged to watch the video entitled “Run. Hide.

Fight.” which may be electronically accessed via the University police department’s webpage: ["Run. Hide. Fight."](#)

Smoking/Tobacco Policy

University policy prohibits the use of tobacco products in any building owned or operated by Midwestern State University. Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State University are informed that strictly enforced policies are in place which prohibit the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state, and federal law for any offenses involving illicit drugs on university property or at university-sponsored activities.

Academic Dishonesty

Dishonesty within the academic community is a profoundly serious matter because dishonesty destroys the basic trust necessary for a healthy educational environment. Academic dishonesty is any treatment or representation of work as if one were fully responsible for it when it is in fact the work of another person. Academic dishonesty includes cheating, plagiarism, theft, or improper manipulation of laboratory or research data or theft of services. A substantiated case of academic dishonesty may result in disciplinary action, including a failing grade on the project, a failing grade in the course, removal from the course, and/or expulsion from Midwestern State University. The [Academic Honesty Checklist](#) describes the timeline for appealing from the instructor to the next in line (chair of department) and who must be notified of academic honesty infractions.

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Student Wellness Center, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](#).

Emergency Aid Resources for Basic Needs

Unexpected life circumstances can affect anyone. If you are experiencing challenges meeting basic needs—such as housing, utilities, food, transportation, healthcare, technology, textbooks or other life necessities, resources may be available to help. Visit the [Student Emergency Support and Resources webpage](#) to learn more, and explore emergency support opportunities through MSU and how to access them. For additional information, please contact the Office of Student Affairs: Clark Student Center #108, (940) 397-7500, student.affairs@mstuexas.edu.

Grade Appeal Process

To appeal a grade, consult the Midwestern State University 2026-2027 Student Handbook and visit the [Grade Appeal Checklist](#) which provides the timeline for appealing from the instructor to the next in line (dean of the college).

Tentative Lecture Schedule

Week	Date	Topic	Chapter
1	8/25 – 8/27	Introduction, Characteristics of Life, Scientific Method	1
2	9/1 – 9/3	Chemistry of Life	2
3	9/8 – 9/10	Biological Macromolecules	3, 4
4	9/15	EXAM #1	--
4	9/17	Cell Structure	5
5	9/22 – 9/24	Cell Structure, Cell Communication	6, 7
6	9/29 – 10/1	Energy & Metabolism	8
7	10/6 – 10/8	Cellular Respiration	9
8	10/13	EXAM #2	--
8	10/15	Photosynthesis	10
9	10/20 – 10/22	Photosynthesis, Cell Division	10, 11
10	10/27 – 10/29	Meiosis, Mendelian Genetics	11, 12
11	11/3	Mendelian Genetics	12
11	11/5	EXAM #3	--
12	11/10 – 11/12	DNA	13
13	11/17 – 11/19	Genes & Proteins	14, 16
14	11/24	Viruses & Disease	15
15	12/1	Viruses & Disease	15
15	12/3	EXAM #4	--
16	12/10	FINAL EXAM (@ 8:00 am)	--

Tentative Lab Schedule

Week	Date	Topic	Lab Manual
1	8/25	No Lab	--
2	9/2 – 9/3	How to Succeed as a Biology Major	5-8
3	9/9 – 9/10	Quantitative Laboratory Skills	9-16
4	9/16 – 9/17	Measuring Bacterial Growth	17-24
5	9/23 – 9/24	Reporting Scientific Data	25-30
6	9/30 – 10/1	Care & Use of Microscopes	31-42
7	10/7 – 10/8	Measuring Enzyme Activity	43-48
8	10/14 – 10/15	Cell Division I & II	49-54, 55-58
9	10/21 – 10/22	Restriction Endonucleases & Gel Electrophoresis	59-64
10	10/28 – 10/29	Polymerase Chain Reaction	65-68
11	11/4 – 11/5	Bacterial Transformation	77-82
12	11/11 – 11/12	Growth & Screening of Transformed Bacteria	83-88
13	11/18 – 11/19	Analysis of PCR Products & Plasmid ID	89-90
14	11/25 – 11/26	THANKSGIVING BREAK	--
15	12/2 – 12/3	Biology Topics Presentations	--