North Central State College

MASTER SYLLABUS	2025-2026

A. Academic Division: Health Sciences

B. Discipline: Biology

C. Course Number and Title: BIOL1230 Biology I

D. Assistant Dean: Heidi Kreglow, PT

E. Credit Hours: 4
Lecture: 3 hours
Lab: 3 hours

F. Prerequisites: ENGL0040 & MATH0084 (minimum grade of C- required for all) or qualifying placement test scores

G. Last Course/Curriculum Revision Date: SPRING 2025 Origin date: 7/25/2012

H. Textbook(s) Title:

Campbell Biology
- Author(s): Reece, Urry, et al.
- Copyright Year: 2020
- Edition: 12th
- ISBN: 9780135188743

I. Workbook(s) and/or Lab Manual:

Investigating Biology Laboratory Manual
- Author(s): Morgan and Carter
- Copyright Year: 2017
- Edition: 9th
- ISBN: 9780134473468

J. Course Description: This course is an introduction to biology for bioscience majors and students planning to transfer to four year institutions. The course will introduce fundamental concepts of biology including the scientific method, structure and chemical properties of cells. The course will introduce students to biochemical pathways, bioenergetics, and basic concepts of genetics, heredity and homeostasis. Historical contributions and application of biological principles to biotechnology will be discussed. Students will meet three lecture hours and three lab hours per week

K. College-Wide Learning Outcomes

College-Wide Learning Outcomes	Assessments - - How it is met & When it is met
Communication – Written	Written – VALUE rubric – final paper at end of term.
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Describe the scientific method; characterize its strengths and limitations. Illustrate the scientific method in the analysis of major biological discoveries	Quizzes throughout term Mid-term and final exam
2. Describe basic structure of the atom, and the bonds formed by atoms and the proportion of elements found in living things. Describe the properties of carbon and the basic ways organic molecules are constructed	Homework assignments, Quizzes throughout term Mid-term and final exam
3. Describe the basic chemical and physical properties of water that make it essential for life	Quizzes throughout term Mid-term and final exam
4. Be able to name and describe the principle properties of lipids, proteins, carbohydrates, and nucleic acids and the importance in biological systems.	Quizzes throughout term Mid-term and final exam
5. Discuss the relationship of chemical processes to cellular processes of living things	Quizzes throughout term Mid-term and final exam
6. Discuss energy harvesting reactions for production of organic molecules in photosynthesis, including membrane organization of energy harvesting complexes.	Quizzes throughout term Mid-term and final exam
7. Demonstrate how living things harvest energy by enzymatic breakage of chemical bonds of organic molecules, and the main biochemical pathways in cellular respiration and fermentation.	Quizzes throughout term Mid-term and final exam
8. Describe the process of energy transfer through biological systems	Quizzes throughout term Mid-term and final exam
9. Describe the general structure, function and reproduction of eukaryotic cells, prokaryotic cells and viruses	Quizzes throughout term Mid-term and final exam
10. Describe the steps of the cell cycle and stages of mitosis and meiosis and the significance of meiosis in sexual reproduction	Quizzes throughout term Mid-term and final exam
11. Illustrate the role of DNA in heredity how DNA is organized and expressed in cells, and basic concepts in genetics including phenotypic expression, and the role of gene regulation and mutation on gene products and on phenotype	Quizzes throughout term Mid-term and final exam
12. Describe the basic principles of development	Quizzes throughout term Mid-term and final exam
13. Relate how cells have evolved mechanisms for communicating, coordinating, and regulating activities. Compare mechanisms within and across species, Apply knowledge of regulatory mechanisms to explain aberrant cell behavior and diseases	Quizzes throughout term Mid-term and final exam
14. Discuss the historical development in biology including contribution of significant figures, and evolution of theories in biology	Quizzes throughout term Mid-term and final exam

Outcomes	Assessments – How it is met & When it is met
15. Document the solution to scientific problems through the collection, organization, analysis and interpretation of qualitative and quantitative data. Incorporate findings into broader context of biological knowledge	Lab reports, Quizzes throughout term Mid-term and final exam
16. Apply current research literature, information related to biological issues in the mass media	Lab reports, Quizzes throughout term Mid-term and final exam
17. Integrate and relate knowledge to real life situations	Quizzes throughout term Mid-term and final exam
18. Illustrate use of Recombinant DNA technologies and genomics	Quizzes throughout term Mid-term and final exam

M. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00-59	F	0.00	Failure

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences. Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at

https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf

North Central State College

SYLLABUS ADDENDUM

Academic Division:	Health Sciences	**Discipline:**	Biology
Course Coordinator:	Justin Tickhill, M.S.		
Course Number:	BIOL 1230-912	**Course Title:**	Biology I
Semester / Session:	Fall 2025	**Start / End Date:**	08/11/2025 thru 12/12/2025

Instructor Information

Name:	Tony Miller	**Credentials:**	PhD, Ecology & Evolutionary Biology
Phone Number:	419-755-4548	**E-Mail Address:**	jmiller2@ncstatecollege.edu
Office Location:	HS-330	**Office Hours:**	M: 8-9AM, 2:50-3:50PM; TH: 8-11AM

I. Topical Timeline / Course Calendar (Subject to Change):

Weeks	Lecture Topics	Lecture Assignments (Due Date)	Lab Topics (Due Date Dependent on Lab Day)
1	Evolution, Themes of Biology, and Scientific Inquiry (Chapter 1)	Week 1 Reading Quiz (8/15)	Scientific Investigation (Post-Lab due 8/18-8/20)
2	The Chemical Context of Life; Water & Life (Chapters 2, 3)	Week 2 Reading Quiz (8/22)	Microscopes & Cells (Post-Lab due 8/25-8/27)
3	Carbon & Molecular Diversity of Life (Chapters 4, 5)	Week 3 Reading Quiz (8/29) Unit 1 Quiz (8/29)	Diffusion & Osmosis (Post-Lab due 9/8-9/10)
4	A Tour of the Cell (Chapter 6)	Week 4 Reading Quiz (9/5)	**LABOR DAY** **NO LAB ALL WEEK**
5	Membrane Structure & Function (Chapter 7)	Week 5 Reading Quiz (9/12)	**Lecture Exam 1** CHAPTERS 1-5
6	An Introduction to Metabolism (Chapter 8)	Week 6 Reading Quiz (9/19)	Enzymes (Post-Lab due 9/22-9/24)
7	Cellular Respiration & Fermentation (Chapter 9)	Week 7 Reading Quiz (9/26)	Cellular Respiration (SimUBio due 10/13-10/15)
8	Photosynthesis (Chapter 10)	Week 8 Reading Quiz (10/3) Unit 2 Quiz (10/3)	Photosynthesis (Post-Lab due 10/13-10/15)
FALL BREAK (10/6-10/10): NO CLASSES			
9	Cell Communication (Chapter 11)	Week 9 Reading Quiz (10/17)	**Lecture Exam 2** CHAPTERS 6-10
10	The Cell Cycle; Meiosis & Sexual Life Cycles (Chapters 12, 13)	Week 10 Reading Quiz (10/24)	Mitosis & Meiosis (Post-Lab due 10/27-10/29)
11	Mendel and the Gene Idea (Chapter 14)	Week 11 Reading Quiz (10/31) Unit 3 Quiz (10/31)	Mendelian Pigs (SimUBio due 11/3-11/5)
12	The Chromosomal & Molecular Basis of Inheritance (Chapters 15, 16)	Week 12 Reading Quiz (11/7)	**Lecture Exam 3** CHAPTERS 11-14
13	**VETERAN'S DAY** **(NO LECTURE)**	NO LECTURE	**VETERAN'S DAY** **NO LAB ALL WEEK**
14	From Gene to Protein; Regulation of Gene Expression (Chapters 17, 18)	Week 13 Reading Quiz (11/21)	Genes in a Tube & Lit. Review (Post-Lab due 12/1-12/3)
15	DNA Tools & Biotechnology (Chapter 20)	Lit. Rev. Check-In (11/29) Week 15 Reading Quiz (11/29)	**THANKSGIVING** **NO LAB ALL WEEK**
16	Final Exam Review	Week 16 Review Quiz (12/5) Unit 4 Quiz (12/5) Lit Rev (12/5)	Biotechnology Handouts (Post-Lab due 12/8-12/10)
17	**NO LECTURE MEETING**	**Lecture Final Exam during lab hours: CUMULATIVE**	

II. Grading and Testing Guidelines (Subject to Change**):

Final Grade Calculation

Activity	Qty	Points	Percentage
Lecture Attendance (7 pts per session) (One Absence Allowed)	14	98	~10%
Lab Attendance (7 pts per lab)	10	70	~7%
Weekly Reading Quizzes (5 pts each)	15	75	~7%
Unit Quizzes (20 pts each)	4	80	~8%
Lecture Exams (100 pts each)	3	300	~31%
Literature Review (10 pts for check-in) (50 pts for final)	1	60	~6%
Final Exam	1	150	~15%
Post-Lab (OR SIMUBIO) Assignments (15 pts each)	10	150	~15%

1. **Attendance**
    a. 10 Labs (And 4 In-person exams during lab time)
    b. 15 Lectures
2. **Quizzes**
    a. Weekly Reading Quizzes
    b. Section (Weeks 3, 8, 11, 16)
3. **Tests (in-person during Lab Hours)**
    a. Weeks 5, 9, and 12
    b. Cumulative final exam (Week 17)
4. **Weekly lab assignments**
5. **Literature review**

**Extra credit may also be assigned (amounting to no more than 20 points in the semester)

III. Examination Policy:

Exams will be conducted during lab hours and will consist of multiple choice and essay questions. On exam day, students should bring a pencil. There will be NO NOTES used during the exams.

1. The reasons for which a student will be excused from taking an examination
    a. Hospitalization (with documented verification)
    b. Death in the immediate family (with documented verification)
    c. Personal illness or illness in immediate family - (doctor's excuse required).
2. A student who misses an examination for any reason is responsible for making up the exam within a week of returning from class (Exceptions can be made under extraordinary circumstances).
3. No makeup opportunity will be given for absences related to quizzes.
    a. Since quizzes are conducted on Canvas, they can be taken from anywhere with access to Canvas.
    b. Makeups are NOT permitted. Be sure to take the quiz within the quiz window.

IV. Class Attendance and Homework Make-Up Policy:

The instructor needs to be notified as soon as possible if a student needs to miss class/lab or will be unable to turn in an assignment on time. Due to the nature of some of the planned experiments, make-up labs may be impossible to accomplish. Exceptions (such as illness, family emergency, etc.) can be made on a case-by-case basis. *It is the responsibility of the student to get with the instructor to make-up homework and laboratory assignments*. It is at the instructor's discretion if late assignments without a valid excuse will be graded.

One absence is allowed for the online lecture without losing any lecture attendance points. Due to the nature of lab, as described above, there is no allowance for missed lab attendance points.

V. Classroom Expectations:

Students are expected to stay current with the online lecture material and come prepared to discuss the lab and lecture material. In addition, they are to be respectful of each other and treat one another fairly, both inside and outside of scheduled meeting times. During lab meetings, cell phones are to be on silent and put away due to common laboratory safety practices. Failure to do so may result in the student being asked to leave and will not be counted as present for that day.