North Central State College

MASTER SYLLABUS	2025-2026

A. Academic Division: Health Sciences

B. Discipline: Bioscience Technology

C. Course Number and Title: BIOS1030 Environmental Science

D. Assistant Dean: Heidi Kreglow, PT

E. Credit Hours: 4
Lecture: 2 hours
Laboratory: 4 hours

F. Prerequisites: None
Co-requisite(s): CHEM 1210, BIOS1010

G. Last Course/Curriculum Revision Date: Fall 2023 Origin date: 3/7/2011

H. Textbook(s) Title:

Environment
- Author(s): Jay Withgott, Matthew Laposata
- Copyright Year: 2018
- Edition: 6th
- ISBN: 9780134204888

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

Handouts will be provided or posted on the Learning Management System.
Required Laboratory Notebook (i.e. Composition Book).

J. Course Description: This course is designed to give students an introduction to the scientific concepts and laboratory research techniques currently used in the field of environmental science and environmental biotechnology. Students develop laboratory skills, critical thinking, and communication skills currently used in the industry. Topics covered will include renewable energy, environmental pollution monitoring, sewage treatment including domestic, agricultural, and industrial waste, bioremediation, biofuels, sustainability, clean biotechnology techniques, laboratory work, and workplace experiences via off site tours.

K. College-Wide Learning Outcomes

College-Wide Learning Outcomes	Assessments - - How it is met & When it is met
Communication – Written	
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 ecosystem ecology and the Earth's physical systems.	Written homework assignment (Week 1), midterm (Week 6-7) and final examination
2. Describe environmental science and sustainability.	Quiz (Week 2), midterm examination (Week 6-7) and final examination
3. Demonstrate proper lab safety and identify safety procedures used in the lab.	Quiz (Week 2), midterm (Week 6-7) and final examination
4. Perform math computations and lab techniques with various environmental assessment, DOo, pH, conductivity, temperature, turbidity.	Written homework assignment, weekly lab assignments (Week 2-3), midterm (Week 6-7) and final examination and final examination
5. Illustrate the fundamentals of pollution control.	Written homework assignment, quiz (Week 4) and midterm examination (Week 6-7) and final examination
6. Identify factors influencing global climate change.	Quiz (Week 7-8), midterm and final examination
7. Describe fundamentals of alternative energy, bioremediation and bio-fuels.	Quiz (Week 10) and final examination
8. Classify the fundamentals of industrial waste management and bioremediation.	Quiz (Week 11-12) and final examination
9. Describe fundamentals of other biotechnical techniques and sustainable solutionss: plant, DNA, GMO's.	Quiz (Week 13-14) and final examination

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

MASTER SYLLABUS	2025-2026

A. Academic Division: Health Sciences

B. Discipline: Bioscience Technology

C. Course Number and Title: BIOS1010 Introduction to Bioscience Lab Techniques

D. Assistant Dean: Heidi Kreglow, PT

E. Credit Hours: 4
Lecture: 2 hours
Laboratory: 4 hours

F. Prerequisites: ENGL0040, MATH0084 & High School Chemistry or CHEM1010 (minimum grade of C- required for all) or qualifying placement test scores

G. Last Course/Curriculum Revision Date: Fall 2023 Origin date: 3/7/2011

H. Textbook(s) Title:

Introduction to Biotechnology
- Author(s): Thierman, W. and Palladino, Michael Pearson
- Copyright Year: 2019
- Edition: 4th
- ISBN: 9780134650197

Laboratory Manual for Biotechnology and Laboratory Science: The Basics
- Author(s): Seidman, Kraud, Brandner, Mowery.
- Copyright Year: 2011
- Edition: 1st
- ISBN #: 978-0321-64402-2

I. Workbook(s) and/or Lab Manual: None

J. Course Description: Introduction to Bioscience Lab Techniques is designed to give students an introduction to the scientific concepts and laboratory research techniques currently used in the field of biotechnology. Students develop basic laboratory skills by the examination of the various instruments and methods of analysis used in the laboratory today. It will begin with general safety procedures utilized in every lab and cover more specific issues relating to certain analytical protocol.

Critical thinking and communication skills currently used in the biotechnology industry will begin in this course and continue throughout the program. Through reading assignments, laboratory work, and workplace experiences, students will explore and evaluate career opportunities in the field of biotechnology.

K. College-Wide Learning Outcomes

College-Wide Learning Outcomes	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	Oral Presentation. (Week 14) Oral Communication VALUE Rubric
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	Research for oral presentation. (Week 14) Information Literacy VALUE Rubric
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. Define biotechnology and describe different types of biotechnology and their applications.	Lab Reports-Week 1,2 and 3; First interim exam-Week 6; Final exam
2. Evaluate the specific safety measure that need to be taken in a laboratory setting.	Lab Reports-Week 1,2 and 3; First interim exam-Week 6; Final exam
3. Demonstrate proper measuring techniques of various laboratory materials.	Lab Reports-Week 1,2 and 3; First interim exam-Week 6; Final exam
4. Synthesize the structure, replication and variation of DNA.	Lab Reports-Week 4, and 5; First interim exam-Week 6; Final exam
5. Demonstrate accurate biological solutions preparation.	Lab Reports-Week 4, and 5; First interim exam-Week 6; Final exam
6. Define recombinant DNA technology and explain how it is used to clone genes and manipulate DNA.	Lab Reports-Week 6 and 7; Second interim exam-Week 12; Final exam
7. Explain the use of some biotechnologically produced enzymes in industry.	Lab Reports-Week 8; Second interim exam-Week 12; Final exam
8. Describe features of bacteria that make then useful for applications in biotechnology.	Lab Reports-Week 9 and 10; Second interim exam-Week 12; Final exam
9. Define DNA fingerprinting and explain how it can be used in forensic science.	Lab Reports-Week 11 and 12; Second interim exam-Week 12; Final exam
10. Describe different molecular techniques for detecting chromosomal abnormalities and for genetic testing.	Lab Reports-Week 13; Final exam
11. Describe the role of important federal agencies in regulating biotechnology products.	Lab Reports-Week 14; Final exam
12. Define bioethics and explain how it relates to biotechnology.	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