



North Central State College  
MASTER SYLLABUS  
2020-2021

- A. Academic Division: Health Sciences
- B. Discipline: Bioscience Technology
- C. Course Number and Title: BIOS1010 Introduction to Bioscience Lab Techniques
- D. Course Coordinator: Jason Tucker, M.S.  
Assistant Dean: Melinda Roepke, MSN, RN

Instructor Information:

- Name: Click here to enter text.
- Office Location: Click here to enter text.
- Office Hours: Click here to enter text.
- Phone Number: Click here to enter text.
- E-Mail Address: Click here to enter text.

- 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. Syllabus Effective Date: Fall, 2020
- 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: 1<sup>st</sup>
- 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	
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
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
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
Demonstrate proper measuring techniques of various laboratory materials.	Lab Reports-Week 1,2 and 3; First interim exam-Week 6; Final exam
Synthesize the structure, replication and variation of DNA.	Lab Reports-Week 4, and 5; First interim exam-Week 6; Final exam
Demonstrate accurate biological solutions preparation.	Lab Reports-Week 4, and 5; First interim exam-Week 6; Final exam
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
Explain the use of some biotechnologically produced enzymes in industry.	Lab Reports-Week 8; Second interim exam-Week 12; Final exam
Describe features of bacteria that make them useful for applications in biotechnology.	Lab Reports-Week 9 and 10; Second interim exam-Week 12; Final exam
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
Describe different molecular techniques for detecting chromosomal abnormalities and for genetic testing.	Lab Reports-Week 13; Final exam
Describe the role of important federal agencies in regulating biotechnology products.	Lab Reports-Week 14; Final exam
Define bioethics and explain how it relates to biotechnology.	Final exam

M. Topical Timeline (Subject to Change):

<b>Week</b>	<b>Topical Timeline</b>
1, 2 and 3	<ul style="list-style-type: none"> <li>• Biotechnology and its workforce</li> <li>• Safety in the laboratory</li> <li>• Working safely with Chemicals and Biological Hazards</li> <li>• Documentation in the Laboratory</li> <li>• Meterology in the Laboratory</li> </ul>
4 and 5	<ul style="list-style-type: none"> <li>• An Introduction to Genes and genomes</li> <li>• Biological Solutions</li> </ul>
6 and 7	<ul style="list-style-type: none"> <li>• Recombinant DNA Technology and Genomics</li> <li>• Spectrophotometry and the Measure of light</li> </ul>
8	<ul style="list-style-type: none"> <li>• Proteins as Products</li> <li>• The Bradford Protein Assay</li> </ul>
9 and 10	<ul style="list-style-type: none"> <li>• Microbial Biotechnology</li> <li>• Growing Bacterial and Mammalian Cells</li> </ul>
11 and 12	<ul style="list-style-type: none"> <li>• Forensic Analysis</li> <li>• DNA Fingerprinting</li> <li>• Polymerase Chain Reaction</li> </ul>
13	<ul style="list-style-type: none"> <li>• Medical Biotechnology</li> <li>• Biological Separation Methods</li> </ul>
14	<ul style="list-style-type: none"> <li>• Biotechnology Regulations</li> </ul>
15	<ul style="list-style-type: none"> <li>• Ethics and Biotechnology</li> </ul>

N. Course Assignments:

1. Oral presentations (Week 5 and 14)
2. Lab Reports (Weekly)
3. Laboratory Exams (Week 8 and 15)
4. Interim exams (Week 6 and 12)
5. Final Exam (Week 16)

O. Recommended Grading Scale:

<b>NUMERIC</b>	<b>GRADE</b>	<b>POINTS</b>	<b>DEFINITION</b>
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

P. Grading and Testing Guidelines:

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Q. Examination Policy:

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R. Class Attendance and Homework Make-Up Policy:

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S. Classroom Expectations:

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T. College Procedures/Policies:

**Important information regarding College Procedures and Policies can be found on the [syllabus supplement](#) located at**

**<http://catalog.ncstatecollege.edu/mime/download.pdf?catoid=5&ftype=2&foid=3>**