



North Central State College
MASTER SYLLABUS
2020-2021

- A. Academic Division: Health Sciences
- B. Discipline: Bioscience Technology
- C. Course Number and Title: BIOS2440 Introduction to Agriculture Science
- 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.](#)
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- E. Credit Hours: 4
Lecture: 2 hours
Laboratory: 4 hours
- F. Prerequisites: BIOL1230, BIOS1010
Co-requisite(s): BIOL 1231 (c)
- G. Syllabus Effective Date: Fall, 2020
- H. Textbook(s) Title:

Introduction to Food Biotechnology

- Author(s): Perry Johnson-Green.
- Copyright Year: 2002
- Edition: First
- ISBN #: 084-9311-527

Molecular Biology of the Gene

- Author(s): Watson, et al
- Copyright Year: 2018
- Edition: Seventh
- ISBN #: 9780321896704

- I. Workbook(s) and/or Lab Manual: None
- J. Course Description: This course is required for all students in the Bioscience Program. The course will provide an overview of methods and applications of modern agricultural biotechnology. Molecular techniques specific to genetic-engineering and their analysis will be discussed in this course. It is based on lectures, research and lab. This course contains five parts: the basic science of gene and gene manipulation; valuable genes for agricultural biology, applications of molecular technologies to plant, animal and nutritional scientific research. We will address the ethical, legal and social implications of advances in

biotechnology. We will discuss governmental regulation of food, drugs, and biotechnology itself. Biotechnology has been used in food production for thousands of years (e.g. brewing, yogurt, pickling, etc.). The new biotechnology has a high potential in food production and processing. This course will cover the applications of new biotechnology in food production or processing.

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. Identify principles in plant tissue culture.	Weekly lab notebook entries and homework assignments; First interim exam-Week 6; Final exam
2. Select applications in agriculture and plant bioscience that are appropriate for the process.	Weekly lab notebook entries and homework assignments; First interim exam-Week 6; Final exam
3. Identify and describe genetic sources, variations, conservation & analysis.	Weekly lab notebook entries and homework assignments; First interim exam-Week 6; Final exam
4. Identify principles of genetic utilization in improving plants through breeding.	Weekly lab notebook entries and homework assignments; First interim exam-Week 6; Final exam
5. Describe methodology used for plant transformation.	Weekly lab notebook entries and homework assignments; First interim exam-Week 6; Final exam
6. Describe methods for the use of trans-genetic plants in crop improvement.	Weekly lab notebook entries and homework assignments; First interim exam-Week 6; Final exam
7. Develop an understanding to genes and genome.	Weekly lab notebook entries and homework assignments; Second interim exam-Week 13; Final exam
8. Develop an understanding of current techniques used in biotechnology and their applications to plants, animals, and agriculture.	Weekly lab notebook entries and homework assignments; Second interim exam-Week 13; Final exam
9. Develop an understanding to the vaccine development and gene therapy.	Weekly lab notebook entries and homework assignments; Second interim exam-Week 13; Final exam
10. Identify and describe uses and tools for food biotechnology.	Weekly lab notebook entries and homework assignments; Second interim exam-Week 13; Final exam
11. Describe the production of recombinant proteins.	Weekly lab notebook entries and homework assignments; Second interim exam-Week 13; Final exam

Outcomes	Assessments – How it is met & When it is met
12. Describe how additives used in food technology.	Weekly lab notebook entries and homework assignments; Second interim exam-Week 13; Final exam
13. Explain the purpose of transgenic foods.	Weekly lab notebook entries and homework assignments; Second interim exam-Week 13; Final exam
14. Describe the purpose of diagnostic system used in the food industry.	Weekly lab notebook entries and homework assignments; Second interim exam-Week 13; Final exam
15. Understand and discuss the social and ethical issues associated with biotechnology.	Weekly lab notebook entries and homework assignments; Final exam
16. Describe the ethics and safety processes in food biotechnology.	Weekly lab notebook entries and homework assignments; Final exam

M. Topical Timeline (Subject to Change):

Week	Topical Timeline
1	<ul style="list-style-type: none"> Principles in plant tissue culture. Selected applications in agriculture and plant bioscience.
2 and 3	<ul style="list-style-type: none"> Genetic variations. Genetic sources. Genetic conservation. Genetic Analysis. Principles of genetic utilization in improving plants through breeding.
4 and 5	<ul style="list-style-type: none"> Methodology used for plant transformation. Methods for the use of trans-genetic plants in crop improvement
6, 7 and 8	<ul style="list-style-type: none"> Develop an understanding to genes and genome. Develop an understanding of current techniques used in biotechnology and their applications to plants, animals, and agriculture. Develop an understanding to the vaccine development.
9-13	<ul style="list-style-type: none"> Uses of food biotechnology Tools used in food biotechnology Production of recombinant proteins Additives used in food technology Transgenic foods Diagnostic system used in the food industry
14 and 15	<ul style="list-style-type: none"> Understand and discuss the social and ethical issues associated with biotechnology. Ethics in food biotechnology Safety in food biotechnology

N. Course Assignments:

- Weekly homework assignments

2. Research project (Week 11)
3. Weekly lab Notebook Entries
4. Group presentation (Week 13)
5. Interim exams (Week 6 and 13)
6. Final Exam (Week 16)

O. 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

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>