North Central State College

MASTER SYLLABUS	2025-2026

A. Academic Division: Health Sciences

B. Discipline: Bioscience Technology

C. Course Number and Title: BIOS2440 Introduction to Agriculture Science

D. Assistant Dean: Heidi Kreglow, PT

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

F. Prerequisites: BIOL1230, BIOS1010
Co-requisite(s): BIOL1231 (c)

G. Last Course/Curriculum Revision Date: Fall 2023 Origin date: 01/13/2016

H. Textbook(s) Title:

Plants, Genes & Agriculture: Sustainability through Biotechnology
- Authors: Maarten J. Chrispeels and Paul Gepts
- Copyright Year: 2018
- Edition: 1st
- ISBN: 9781605356846

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
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. 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:**	Bioscience
Course Coordinator:	Tony Miller		
Course Number:	BIOS 2440 01	**Course Title:**	Intro to Agricultural Science
Semester / Session:	Spring 2026	**Start / End Date:**	1/12/2026-5/8/2026

Instructor Information

Name:	Jason Kougher	**Credentials:**	Master of Science in Biology
Phone Number:	814-591-6535 (use email)	**E-Mail Address:**	jkougher@ncstatecollege.edu
Office Location:	Adjunct office	**Office Hours:**	Posted in Canvas

I. Topical Timeline (Subject to Change):

Weeks	Lecture Topic	Lab Topic	Week of: (Tuesday Date)
1	A Changing Global Food System (CH. 2)	Lab Documentation (**1/20/25**)	1/13/25
2	Plants in Human Health, Nutrition, Diet, & Health (CH. 3)	Soil Analyses; Project Intro (**1/27/25**)	1/20/25
3	Genes, Genomics, & Molecular Biology (CH. 4)	Seed Germination (**2/3/25**)	1/27/25
4	Converting Solar Energy Into Crop Production (CH. 6)	African Violet Plant Culture Week I	2/3/25 *Project Proposal Due 2/3
5	Plant Growth & Development (CH. 5)	**EXAM 1 (Weeks 1-4)**	2/10/25
6	Domestication of Food Crops (CH. 7)	African Violet Plant Culture Week II (**2/24/25**) Setup Project	2/17/25
7	From Classical Plant Breeding to Molecular Crop Improvement (CH. 8)	Detecting Genetically Modified Foods by PCR I	2/24/25
8	Plant Propagation by Seeds & Vegetative Processes (CH. 9)	Detecting Genetically Modified Foods by PCR II (**3/17/25**)	**3/3/25**
Spring Break (no classes)			**3/10/25**
9	Soil Ecosystems, Plant Nutrition, & Nutrient Cycling (CH. 11)	**EXAM 2 (Weeks 5-8**	3/17/25
10	Biotic Challenges: Weeds (CH. 12)	Food Additives; Weed ID (Weather Permitting) (**3/31/25**)	3/24/25
11	Plant Diseases & Control Strategies (CH. 13)	Plant Transformation I	3/31/25
12	Biotic Challenges: Pests (CH. 14)	Plant Transformation II; Pests & Diseases (**4/14/25**)	**4/7/25**
13	Abiotic Stresses (CH. 15)	**EXAM 3 (Weeks 9-12)**	**4/14/25**
14	Introduced Traits that Benefit Farmers, Industry, Consumers (CHs. 16, 17)	Tree Identification (**4/28/25**)	4/21/25
15	Food Safety (CH. 18)	No Lab- Final Exam Review	4/28/25 *Project Summary Due 4/28
16	**FINAL EXAM on May 5**	**FINAL EXAM**	5/5/25

II. Course Assignments:

1. Exams
2. Post-Lab Assignments
3. Semester Growing Project

III. Grading and Testing Guidelines:

Please refer to the Master Syllabus for the NCSC grading scale.

IV. Examination Policy:

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 contacting the instructor as soon as possible to reschedule the exam.
3. No makeup opportunity will be given for absences where there is not prior communication with the instructor, except in cases of emergency.

V. Class Attendance and Homework Make-Up Policy:

1. Class attendance is necessary to acquire the knowledge required to be successful in the bioscience and biotechnology fields. Absences will be excused with prior communication with the instructor, except in cases of emergencies where the student cannot communicate.
2. Students are responsible for contacting the instructor as soon as possible upon learning they will be absent from class.

VI. Classroom Expectations:

1. Be respectful at all times.
2. Plagiarism and cheating will not be tolerated.
   a. If you are found to be plagiarizing or cheating, you will automatically receive a zero for that assignment.
   b. The instructor reserves the right to escalate offenses of cheating or plagiarism to the dean or appropriate administrator.
      - Offenses could result in dismissal from the college. Be mindful and ask for help if you are unsure if you are plagiarizing or cheating.
3. Communicate regularly with your instructor.
   a. Your instructor is a resource to you. Attend office hours, email your instructor with questions, and participate in class.
   b. Your success in this course will be determined by your level of participation. Life happens. If things are getting in the way of your participation, please inform your instructor so appropriate accommodations can be made.