

## Middlesex Community College

**Course: Bio 109 Principles of Biotechnology, CRN: 3065, Fall 2017**

Instructor: Dr. Frank Stellabotte, Ph.D., pronounced /stella-bó-té/

Office: 209 Wheaton Hall Phone: (860) 343-5747

Office Hours: Monday and Tuesday 1:30PM – 4:30 PM, it is best to schedule an appointment using the following link: <https://frankstellabotte.youcanbook.me/>

Email Address: [fstellabotte@mxcc.edu](mailto:fstellabotte@mxcc.edu) **Do Not Send Blackboard Messages**

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### Course Learning Goals:

Upon successful completion of this course the student will be able to:

- Give examples of the diverse career options and levels within the field of biotechnology and the training that is necessary to achieve them
- Explain the basic molecular biology concepts employed in biotechnology research.
- Identify the fundamental techniques employed in various sectors of the biotechnology industry.
- Articulate the goals and contributions of each sector in biotechnology.
- Recognize what local biotechnology industry companies produce, what techniques they use, and their role in our community.
- List the major regulatory agencies that impact the biotechnology industry.
- Discuss the past, current, and future ethical issues that arise in biotechnology.

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### Course Outline (this is subject to change)

Week	Date	Module	Assignments	Due Date
1	8/30	<u>Introductions</u>	1. Assignment 1: Write your Intro.	Monday, September 4 <sup>th</sup>
	9/6	<u>What is Biotechnology?</u>	2. Assignment 2 Discover Biotech Companies in your Neighborhood	Monday, September 11 <sup>th</sup>
2	9/13	<u>Genes, Genomes, and Gene Editing</u>	3. Assignment 3 Multiple Choice Homework Assignment	Monday, September 18 <sup>th</sup>
3	9/20	<u>Recombinant DNA Technology</u>	4. Assignment 4 Multiple Choice Homework Assignment	Monday, September 25 <sup>th</sup>
4	9/27	<u>Proteins</u>	5. Assignment 5 Invest in a Biotech. Company & Select a Protein to Research	Monday, October 2 <sup>nd</sup>
5	10/4	<u>Project 1</u>	<b>Complete Protein Project</b>	<b>Monday, October 9<sup>th</sup></b>
6	10/11	<u>Microbial Biotechnology</u>	6. Assignment 6 Vaccination Discussion & Revise Protein Paper	Monday, October 16 <sup>th</sup>

			<b>Protein Project Final Draft Due</b>	<b>Friday, October 20<sup>th</sup></b>
7	10/18	<u>Plant Biotechnology</u>	7. Assignment 7 Genetically Modified Organism Discussion	Monday, October 23 <sup>rd</sup>
8	10/25	<u>Animal Biotechnology</u>	8. Assignment 8 Cloning Discussion	Monday, October 30 <sup>th</sup>
9	10/26	<u>DNA Fingerprinting and Forensic Analysis</u>	9. Assignment 9 Forensic Investigation into King Richard III	Monday, November 6 <sup>th</sup>
10	11/1	<u>Bioremediation</u>	10. Assignment 10 Environmental Disasters	Monday, November 13 <sup>th</sup>
11	11/8	<u>Aquatic Biotechnology</u>	11. Assignment 11 Aquaculture Assignment	Monday, November 20 <sup>th</sup>
12	11/15	<u>Medical Biotechnology &amp; Jobs in Biotechnology</u>	12. Assignment 12 Biotech. Investment Profits and Group Project Assignment	Monday, November 27 <sup>th</sup>
	<b>11/22</b>	<b>Thanksgiving Break, Work on Your résumé and cover letter Due December 8<sup>th</sup>.</b>		
13	11/29	<u>Biotechnology Regulations</u>	13. Assignment 13 Multiple Choice Homework Assignment	Monday, December 4 <sup>th</sup>
14	<b>12/6</b>	<u>Group Projects</u>	Submit Your résumé and cover letter	Friday, December 8 <sup>th</sup> .
			<b>Submit Group Critiques</b>	<b>Monday, December 11<sup>th</sup>.</b>
<b>Group Projects Final Versions Due: Wednesday, December 15<sup>th</sup></b>				

### Required Course Materials:

There is no required textbook for this course. However you are required to have access to an internet connected computer, which will allow you to complete course assignments. There is no specific software requirement as the projects may be submitted in either Microsoft Word or PDF formats.

### Course Description and Prerequisites:

#### BIO 109, Principles of Biotechnology (3 credits)

This course provides a basic introduction to the field of biotechnology. Students will gain a broad understanding of the goals, products, practices, regulations, ethics, and career paths in the biotechnology industry. Students will acquire the fundamental knowledge of the biotechnology industry through the introduction of molecular biology, contemporary techniques, and applications. In addition, students will learn about current topics from lectures, as well as guest speakers from industry partners. This course is intended for students in the biotechnology program as well as the student who is interested in pursuing careers science, but wants to know more about the field.

Prerequisite: Eligible for ENG\*101.

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## COURSE REQUIREMENTS

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A common misconception about on-line courses is that they are “self-paced” - that you can do the work any time during the semester. **Keep in mind that this is NOT a self-paced course.** This course is designed in one-week units, with various deadlines approximately every week to keep everyone working on the same material and better able to participate in discussions.

In an on-ground 3-credit course, we meet in the classroom for 3 hours per week. It is generally expected that you will study 2 to 3 hours for every hour in the classroom, for a total of 6 to 9 hours per week in addition to class time. The same math applies to online courses. For an online 3-credit course, you should expect to spend a total of 9 – 12 hours per week studying and completing assessment activities for that week. Last minute glitches can occur with computer equipment, and the instructor will allow one extension (no later than 24 hours past deadline) per student for assignments **ONLY** with no penalty upon request. However, ongoing computer problems will not be an acceptable excuse for incomplete work; you are expected to have a backup plan that allows you to complete work on time throughout the semester.

Due to the nature of the course, discussion of sensitive or controversial topics may arise. The right of every student to learn in a safe, respectful environment is of primary importance and hence disruptive, threatening, or profane language or behavior will not be tolerated in this course. Please be aware of your writing and responses to your classmates.

### WEEKLY MODULES

This course is broken up into weekly modules. As the course progresses students should become familiar with the topics in each module through reading, watching videos, and other activities. Each module includes important concepts and vocabulary which will provide the students with an introduction to these topics and a means for the student to continue their learning.

### WEEKLY ASSIGNMENTS

Module assignments will involve analysis of the Weekly Module covered that week. The homework assignment will be posted on Blackboard and must be submitted via the **ASSIGNMENT** page by 11:59 PM EST of the due date. I will **NOT** accept late work. If serious circumstances prevent you from completing work within this time frame, you must notify the instructor prior to the due date. You will receive zeros for missed assignments unless prior approval was given. If prior approval is given for valid, documented reasons you may make up the assignment within a certain time-frame.

Students will also be required to post to a discussion forum and where indicated they will be required to post a reply to another student’s post. If the discussion board posts and replies are not submitted by the due dates, you will not receive any credit for those posts. Points will be deducted for grammar and punctuation mistakes.

You may be required to respond to at least one (1) or two (2) other postings which offer insight to the classmates posting each week in order to receive full credit. Postings of just “good description” or “explained well” although they are encouraging to your classmates and welcome, will not receive credit. Your discussion and responses to other posts should be submitted on Blackboard by 11:59 PM of the due date for that assignment. As discussion board posts involve participation and engagement among classmates, you cannot submit late work or request make-ups.

### PROJECTS

You will prepare **TWO** projects this semester. The first project is in the form of a paper. It requires you to research the structure and function of a protein. You are required to use a minimum of four references, two of which should be peer-reviewed journal articles. Your sources cannot be older than 10 years. To submit your project, click on the tab labelled “Project” on the left hand menu of Blackboard page. Then click on the title named “Project 1”, it will take you to the project submission page. At the project submission page, you have an option to attach your word or pdf document and then click submit. Submission of the project should be made by 11:59 pm of the due date. Late submission will not receive credit. There will be **NO** make-up opportunity for this project. **PLAN AHEAD. DO NOT** wait till the last day to figure out how to submit your project. If you have question or are not sure, ask beforehand.

The second project will be a group project where each student in a group will apply for the same position at a Biotechnology firm. Each student will be responsible for writing a résumé and cover letter. These will be submitted to the entire group for review.

## PROBLEMS

If you are struggling with any aspect of the course, or unexpected situations arise, you should always contact the instructor immediately. The instructor can be reached via office phone (860)343-5747, or during office hours (see above). Your instructor wants to see you succeed in the course and will make every effort to help you do so.

## ACCOMMODATIONS

Students with a physical or learning disability who may require accommodation are encouraged to contact the Disability Support Services office (Hilary Phelps, Disabilities Support Specialist at 860-343-5879 or hphelps@mxcc.edu; her office is in Founders Hall, Room 121). After disclosing the nature of the disability, students are urged to discuss their needs with individual instructors. This should be done at the beginning of each semester as accommodations are NOT made retroactively. Instructors, in conjunction with appropriate college officials, will provide assistance

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### Grading Policy:

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13 Weekly Assignments (50 points each):	600
Project 1:	200
Project 2:	200
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	1000

In the case where a particular assignment or exam is not given a letter grade, the following table shows the conversion from a numerical grade to a letter grade.

A = 92.5-100%	B = 82.5-86.4%	C = 72.5-76.4%	D = 62.5-66.4%
A- = 89.5-92.4%	B- = 79.5-82.4%	C- = 69.5-72.4%	D- = 59.5-62.4%
B+ = 86.5-89.4%	C+ = 76.5-79.4%	D+ = 66.5-69.4%	F = 0-59.4%

**Final Grades Due, Wednesday, December 20<sup>th</sup> at 5:00 PM**

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## Withdrawal Policy:

Add/Drop period ends on Monday, September 11<sup>th</sup>. You may withdraw from this class any time before the end of the work day Friday, November 10<sup>th</sup>, 2017 at 4:30PM. You may withdraw by asking me via email for permission by Thursday, November 9<sup>th</sup> in order to receive a "W" on your transcript. If you fail to complete this process on time, you will receive a letter grade at the end of the semester, which will include zeroes for any work not submitted. Course withdrawals may affect financial aid and veteran's benefits. Please make this decision carefully and with the help of your advisor. See the Academic Calendar and the College Catalog for specific dates and procedures regarding the withdrawal process.

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## Plagiarism & Academic Honesty:

- Plagiarism is defined as the use of another's idea(s), or phrase(s) and representing that/those idea(s) as your own either intentionally or unintentionally.
- Plagiarism includes (NOT limited to) cheating on examinations, unauthorized collaboration on assignments, unauthorized access to examinations or course materials, copying from another student, cutting/pasting from another source without referencing, falsifying an excuse for absence and other proscribed activities.
- Whether this is done intentionally or unintentionally, plagiarism will result in loss of credit for the work in question and a report will be filed to the Dean.
- Repeated cases of plagiarism will result in an "F" for the course and a report will be filed to the Dean.
- Always write using your own words when submitting a written assignment.
- When you get information from any source, make sure you provide a citation to protect yourself if there is a question about copying.
- College's policy on Plagiarism can be found by clicking on the following link:

### Communication:

The following are important points to consider when writing emails to any of the faculty with which you interact. A polite email message consists of:

1. A salutation (e.g. Dear Dr. S.,)
2. The content of your message, written in grammatically correct English.
3. A sign off and your name (e.g. Thanks!, Jane Student)

**Response time:** I will usually respond to messages quite rapidly, I am not always able to do so. Messages received during the week will be responded to within 24 hours. **Typically, emails received after 5PM on a weekday will be responded on the next weekday.** Emails and messages received on the weekends will be responded to within 48 hours. **Emails received after 5PM on Friday will receive a response on Monday morning.** When in doubt, please check this syllabus, it probably has the answer to your questions.

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## COLLEGE POLICIES

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### IMPORTANT COLLEGE POLICIES!! PLEASE READ CAREFULLY!



For information about the college's policies and procedures regarding academic honesty, accessibility/disability services, attendance, audio-recording in the classroom, grade appeals, plagiarism, religious accommodations, weather and emergency closings, and more, please go to the following website: [www.mxcc.edu/catalog/syllabus-policies/](http://www.mxcc.edu/catalog/syllabus-policies/) or scan the QR code with your smart phone. Also, please become familiar with the policies regarding nondiscrimination, sexual misconduct, and general student conduct at the following website: [www.mxcc.edu/nondiscrimination/](http://www.mxcc.edu/nondiscrimination/).

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### Course Alignment with MxCC TAP Competencies:

The Transfer and Articulation Program (TAP) is a new program for ensuring Connecticut community college students complete degree programs that transfer to Connecticut State Universities and Charter Oak without either losing or generating excess credit.

This course is designated for the following competency:

#### Appreciation of the Ethical Dimensions of Humankind

1. Recognize and reflect critically on ethical issues.
2. Apply appropriate concepts and terminology in identifying ethical problems and proposing and defending solutions to them.
3. Apply standards and practices of scholarship, research, and documentation to defend positions and beliefs, including reevaluating beliefs in light of unforeseen implications or new evidence.
4. Recognize the value of creative, collaborative, and innovative approaches to problem-solving, including the ability to acknowledge differing points of view.

This course meets the following competencies as embedded:

#### Scientific Knowledge /Understanding

1. Communicate using appropriate scientific terminology.
2. Use representations and models to communicate scientific knowledge and solve scientific problems.
3. Evaluate the quality of scientific information on the basis of its source and the methods used to generate it.

#### Written Communication in English

1. Respond to Rhetorical Situations
  - Identify and evaluate the specific audience and purpose in different writing situations, and adapt their writing appropriately to those situations.
  - Develop effective prose that influences attitudes, beliefs, and actions through appropriate logical, ethical, and emotional appeals.

## 2. Use Sources

- Locate and evaluate sources appropriate to the rhetorical situation.
- Read, comprehend, and summarize an argument from a complex piece of writing.
- Analyze, evaluate, and respond to an argument from a complex piece of writing.
- Summarize, paraphrase, and quote accurately the ideas of others, clearly differentiating them from the students' own ideas.
- Synthesize and integrate others' ideas purposefully and ethically with correct and appropriate documentation.