Molecular Biotechnology, BIOL 844
Online Course (3 credit hours)
Spring 2018

Course Description

The course will consist of a short review of pertinent principles in protein structure and function, enzyme mechanisms and kinetics, and the basics of the genetic dogma and recombinant DNA technology. The bulk of the course will be made up of a topical consideration of subjects in biotechnology such as: the production of protein pharmaceuticals, genetic engineering of animals and plants, and cloning of organisms.

Learning Objectives

1. Recognize the foundations of modern biotechnology
2. Identify the steps involved in gene expression and protein engineering
3. Provide examples of current applications of biotechnology in different areas such as the medical, agricultural, environmental fields
4. Describe the principles of generating transgenic plants and animals
5. Discuss the ethical challenges and issues related to biotechnology

Instructor

Dr. Saili Moghe
Email: moghes1@unk.edu
Canvas Inbox: you can also use the Canvas inbox to contact me
Canvas discussion boards: general comments/questions/concerns can be posted on weekly discussion boards. Please ensure that these questions are general (rather than pertaining to you specifically).

I will respond to emails, inbox messages and discussion board posts within 48 hours.

Course Materials

- Technical Requirements: Full access to a computer and Internet

Course Structure

I will have all weekly materials up on Canvas by Tuesday at 12:00pm (CT), and an announcement will always go up at this same time letting you know that all
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materials are up, and provide any information and other details you need to know for that particular week.

Each week the following will be posted:

- Video lectures
- Outline lecture notes corresponding to the lecture videos
- Assigned readings from the textbook or supplemental readings
- Quiz or Assignment
- Link to the weeks discussion board for questions/concerns/comments
- Occasional supplementary materials/resources

Assessments

Your progress in class will be assessed by quizzes, assignments, and exams.

- **Quizzes**
  - 10pts each (total of 8 quizzes)
  - Multiple-choice questions (5-10 questions worth 1-2pts each)
  - 6-day access to each quiz
  - Timed at 10 minutes per quiz

- **Assignments**
  - 20pts each (total of 3 assignments)
  - Assignments will be 1-2 page short essays questions

- **Exams**
  - 100pts each (total of 3 exams)
  - Multiple choice, matching, fill-in the blank, short answer questions (2-6pts each)
  - 6-day access to each exam
  - Timed at 60 minutes per exam

Grades

3 Exams – 300pts  
1 Introduction post – 10pts  
8 Quizzes – 80pts  
3 Assignments – 60pts  
**TOTAL: 450pts**
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Grade Assignment

Final grades will be assigned using the following grading scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>97 - 100%</td>
</tr>
<tr>
<td>A</td>
<td>93 - 96%</td>
</tr>
<tr>
<td>A-</td>
<td>90 - 92%</td>
</tr>
<tr>
<td>A</td>
<td>93 - 96%</td>
</tr>
<tr>
<td>B+</td>
<td>88 - 89%</td>
</tr>
<tr>
<td>B</td>
<td>83 - 87%</td>
</tr>
<tr>
<td>B-</td>
<td>80 - 82%</td>
</tr>
<tr>
<td>C+</td>
<td>78 - 79%</td>
</tr>
<tr>
<td>C</td>
<td>73 - 77%</td>
</tr>
<tr>
<td>C-</td>
<td>70 - 72%</td>
</tr>
<tr>
<td>D+</td>
<td>68 - 69%</td>
</tr>
<tr>
<td>D</td>
<td>63 - 67%</td>
</tr>
<tr>
<td>D-</td>
<td>60 - 62%</td>
</tr>
<tr>
<td>F</td>
<td>Below 60%</td>
</tr>
</tbody>
</table>

All grades are final unless there is a calculation error.

Expectations from students

- As students enrolled in this class it is your responsibility to log in to Canvas every week and keep up with all weekly course materials. Seek help when you need it and do not wait till the last moment to do this.

- You must log on to Canvas at least weekly and keep up with the course. Make sure that you keep up with the Announcements and stay informed about what is happening and going to happen in class.

- It is your full responsibility to complete exams, quizzes and learning journals within the time that they are available.

- Understandably, you all have several commitments in your life other than this class. Nonetheless, as a student who has registered for this class, it is absolutely your full responsibility to ensure that you can meet the time requirements any deadlines associated with this class.

- You are encouraged to utilize the discussion board not only for any comments/questions/concerns that you may have, but also to interact with your classmates (provided you keep such interactions primarily related to the class). Always be respectful to everyone when using discussion boards.

Class Policies

- **Policy on plagiarism**: Anyone caught plagiarizing any exercise you will receive a 0 for that exercise; subsequent violations will result in referral to the Vice Chancellor for Academic Affairs for dismissal from the university.

- **Policy on incomplete**: All students are expected to progress through the requirements for this course in a timely fashion. Incompletes will only be considered if circumstances are extenuating and beyond your control, and will require documentation.

- **Extensions or rescheduling** of Exams/quizzes/assignments will NOT be possible unless circumstances are exceptional – a legitimate excuse (based
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• on my discretion) with provided documentation will be required for such considerations

• Assignments, quizzes, exams will receive zero (0) points if they are not completed by the given due dates

Students with Disabilities or Students Who are Pregnant

It is the policy of the University of Nebraska at Kearney to provide flexible, individualized, and reasonable accommodations to students with documented disabilities or students who are pregnant. To receive accommodation services for a disability, students must be registered with UNK Disabilities Services. Contact David Brandt, in the Academic Success Office, 163 Memorial Student Affairs Building, 308-865-8214 or by email brandtdl@unk.edu to register. For students needing accommodation due to pregnancy, you need to contact Student Health. (The following link provides information for students and faculty regarding pregnancy rights. http://www.nwlc.org/resource/pregnant-and-parenting-students-rights-faqs-college-and-graduate-students) Students with disabilities or students who are pregnant need to provide the proper documentation from Disability Services or Student Health to their faculty members in order to receive academic accommodations. Anyone who feels they were not afforded these rights, should contact the campus Title IX/ADA Officer at 308-865-8655. Attached is the link to the above statement for your convenience. http://www.unk.edu/offices/disabilityservices.aspx?id=13673

Please keep in mind that accommodations become valid only after I sign relevant paperwork, therefore if you require any accommodations please contact me, and the relevant office as soon as possible.

Reporting Student Sexual Harassment, Sexual Violence or Sexual Assault

Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who believes she or he may be the victim of sexual misconduct is encouraged to report to one or more of the following resources:
Local Domestic Violence, Sexual Assault Advocacy Agency 308-237-2599
Campus Police (or Security) 308-627-4811
Title IX Coordinator 308-865-8655
## Tentative Class Schedule, BIOL 844

<table>
<thead>
<tr>
<th>Topic</th>
<th>Assignment/Quiz/Exam</th>
<th>Reading</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Biotechnology</td>
<td>Assignment #1 <em>(Due: 16 Jan)</em></td>
<td></td>
<td>1 (8 Jan)</td>
</tr>
<tr>
<td>Genes and Genomics</td>
<td>Chapter 1</td>
<td></td>
<td>2 (15 Jan)</td>
</tr>
<tr>
<td>Genes and Genomics</td>
<td>Quiz 1 <em>(Available: 24 Jan-30 Jan)</em></td>
<td></td>
<td>3 (22 Jan)</td>
</tr>
<tr>
<td>Proteins and Proteomics</td>
<td>Quiz 2 <em>(Available: 31 Jan-6 Feb)</em></td>
<td>Chapter 2</td>
<td>4 (29 Jan)</td>
</tr>
<tr>
<td>Proteins and Proteomics</td>
<td>Quiz 3 <em>(Available: 7 Feb-13 Feb)</em></td>
<td></td>
<td>5 (5 Feb)</td>
</tr>
<tr>
<td>Recombinant DNA Technology</td>
<td><strong>EXAM 1</strong> <em>(covers Wk 1-5)</em> <em>(Available: 14 Feb-20 Feb)</em></td>
<td>Chapter 3</td>
<td>6 (12 Feb)</td>
</tr>
<tr>
<td>Agricultural Biotechnology</td>
<td>Quiz 4 <em>(Available: 21 Feb-27 Feb)</em></td>
<td>Chapter 4</td>
<td>7 (19 Feb)</td>
</tr>
<tr>
<td>Agricultural Biotechnology</td>
<td>Assignment #2 <em>(Due: 6 Mar)</em></td>
<td></td>
<td>8 (26 Feb)</td>
</tr>
<tr>
<td>Environmental Biotechnology</td>
<td>Quiz 5 <em>(Available: 8 Mar-13 Mar)</em></td>
<td>Chapter 9</td>
<td>9 (5 Mar)</td>
</tr>
<tr>
<td>Animal Biotechnology</td>
<td><strong>EXAM 2</strong> <em>(covers Wk 6-9)</em></td>
<td>Chapter 7</td>
<td>10 (12 Mar)</td>
</tr>
<tr>
<td></td>
<td><strong>SPRING BREAK</strong></td>
<td>Chapter 8</td>
<td>11 (19 Mar)</td>
</tr>
<tr>
<td>Animal Biotechnology</td>
<td>Quiz 6 <em>(Available: 28 Mar-3 Apr)</em></td>
<td></td>
<td>12 (26 Mar)</td>
</tr>
<tr>
<td>Medical Biotechnology</td>
<td>Quiz 7 <em>(Available: 4 Apr-10 Apr)</em></td>
<td>Chapter 9</td>
<td>13 (2 Apr)</td>
</tr>
<tr>
<td>Medical Biotechnology</td>
<td>Quiz 8 <em>(Available: 11 Apr-27 Apr)</em></td>
<td></td>
<td>14 (9 Apr)</td>
</tr>
<tr>
<td>Ethics in Biotechnology</td>
<td>Assignment #3 <em>(Due: 24 Apr)</em></td>
<td></td>
<td>15 (16 Apr)</td>
</tr>
<tr>
<td>Q &amp; A</td>
<td><strong>EXAM 3</strong> <em>(covers Wk 10-15)</em> <em>(Available: 25 Apr-2 May)</em></td>
<td></td>
<td>16 (23 Apr)</td>
</tr>
<tr>
<td>FINALS WEEK</td>
<td><strong>EXAM 3</strong> <em>(Available: 25 Apr-2 May)</em></td>
<td></td>
<td>17 (30 Apr)</td>
</tr>
</tbody>
</table>

- All weekly materials will be posted by 12:00pm (CST) on Tuesdays
- Quizzes and exams will be available from 12:00pm (CST) on Wednesdays until 12:00pm (CST) the following Tuesday