

MICR/MBMB 460: Bacterial and Viral Genetics

Instructor: Dr. Bethany Rader

Class Meeting: MWF 10:00-10:50 AM

Office: Life Science II, Room 191

Class Location: LS III Rm 1059

Office Phone: 618-453-6132

Email: bethany.rader@siu.edu

Office Hours: MW 11:00 – noon, or by appointment

Course Objectives:

This course is designed to present you with a historical perspective and current knowledge of bacterial and phage genetics and genetic regulation. Knowledge of these subjects has led to great progress in understanding the process of human bacterial and viral diseases, and how we treat these diseases. But, perhaps more important is that this knowledge has created the field of Molecular Biology, a field that is used in some form by most scientists at the bench, and most likely impacts you in some way on a daily basis.

Course website:

All course material (except the text book) will be available through Desire2Learn (<https://online.siu.edu>).

Assigned reading:

We will be using the text: ‘Molecular Genetics of Bacteria’, 4th Edition, Snyder and Champness, 2013. Text book reading assignments are outlined on the schedule below. Please note that readings are assigned as chapters, but we won’t be covering all the chapter material in lecture. We will be incorporating other scientific literature as a part of lecture and assignments. All other reading assignments will be posted on the course website.

Lecture slides:

Lecture slides will be available for download as PDFs from the course website after the lecture.

Office hours:

My office hour will be held on Mondays, and Wednesdays after class (11am – noon). If you are not free at this time, you may schedule an appointment to meet with me at another time. You may also email me with questions or comments (bethany.rader@siu.edu). **When emailing please include “MICR/MBMB 460” in the subject line.** This ensures that I will see your email. I will try to answer your email in within 24 hours; however, I do not always check my email in the late evenings or weekends. For students in Springfield, I am happy to talk on the phone or skype, just please make an appointment as I am not always in my office and don’t leave skype open when not in use.

Grading policy:

There will be **NO make-up exams or assignments**. If you miss an exam or assignment, it will be considered your drop exam or assignment. Grading will be based solely on exam and assignment scores on a typical 10-percentage point grading scale.

Hourly Exams: 200 points (Best two exam scores out of three 100 point exams)

Final Exam: 200 points (The final exam will be cumulative)

Assignments (5): 20 points total (There will be 5 assignments worth 5 points each, the lowest score will be dropped)

Total: 420 points

Grading Scale:

90-100% (445 - 400 points) = A

80-89% (400 - 356 points) = B

70-79% (355 - 311 points) = C

60-69% (310 - 267 points) = D

< 59% (\leq 266 points) = F

Attendance:

I do not take attendance for this class. As a student at the senior or graduate level, the responsibility to attend class is yours alone. Keep in mind that there is a strong correlation between higher grades and attending lecture.

Assignments:

Assignments will be completed on the D2L class website. They will be available on Thursday evening by 7pm and you will have until Sunday night at midnight to complete and submit them (unless otherwise specified). They are open book/open note, and I encourage students to work together to complete them, however each student must submit an assignment that is her/his own work. Assignments are short answer questions derived from the lecture and text book material. These assignments are designed to help you understand the material, and to let me know what concepts need to be reinforced.

Extra Credit Assignment:

There is one extra credit assignment that will be available on D2L ONLY during regular class time on Sept. 9. It will be worth 5 extra credit points and is formatted like the other assignments. This assignment is in the place of lecture, which has been canceled for that day.

Midterm Exams:

Midterm exams will encompass material covered in lecture and material from the homework assignments.

Final Exam:

The final exam is cumulative.

Classroom Etiquette:

Please be respectful of your fellow students. This includes arriving on time and staying until the end of lecture. Arriving late and leaving early can be disruptive. No cell phone use (calls or texting) is permitted during class. Phones should also be in silent mode during class. This may seem like common courtesy to most students, but unfortunately it has to be pointed out to some. If an emergency arises step outside the classroom to use your phone. Phones (along with tablets and computers) may be used in class to take notes and look up material related to class.

Students with disabilities:

If you think you need accommodation for a disability, please let me know at your earliest convenience. Some aspects of the course may be modified to facilitate your participation and progress. As soon as you make me aware of your needs we can work with Disability Support Services (DSS, 618-453-5738, <http://disabilityservices.siu.edu/>) to help us determine the appropriate academic action. Any information provided is private and confidential and will be treated as such. When it comes to accommodations for the

exams and final, I require **at least** 5 days notice prior to the exam date. This ensures enough time to make the proper arrangements.

Final note:

The material on the syllabus is fluid and may fluctuate some during the term. This is due to the ever-changing nature of scientific research and information, my desire to add and present material that is relevant, useful and exciting, and the fact that the pace at which I present the material changes each time Micro 460 is taught. Therefore please note that as the term progresses, the syllabus will not be strictly followed, and ANY information on the syllabus, with the exception of midterm and final exam dates, is subject to change. Any changes that are made to the syllabus as the course proceeds will be announced in class.

Important Dates!!!

09/05/16	Labor Day NO CLASS
10/08/16 - 10/11/16	Fall Break NO CLASS
10/30/16	Last day to drop class
11/11/16	Veterans Day
11/23/16 - 11/27/16	Thanksgiving Break NO CLASS
12/14/15	Final Exam 10:15 – 12:15AM, LS III Rm 1059

Preliminary Class Schedule

Lecture	Date	Topic	Reading
1	8/22	Welcome! Intro and DNA structure	Chapter 1
2	8/24	Chromosomal Replication	Chapter 1
3	8/26	Transcription	Chapter 2
4	8/29	Translation	Chapter 2
5	8/31	Proteins	Chapter 2
6	9/2	Protein Secretion (Assignment 1)	Chapter 2,14
-	9/5	Labor Day – No Class	-
7	9/7	FUNDamentals in genetic analysis	Chapter 3
-	9/9	Extra Credit Assignment, NO CLASS	
-	9/12	Exam I	-
8	9/14	Plasmids	Chapter 4
9	9/16	Conjugation	Chapter 5
10	9/19	Transformation	Chapter 6
11	9/21	Bacteriophages: Lytic Cycle, T4 Phage Genetics	Chapter 7
12	9/23	Bacteriophages: Transduction Mapping	Chapter 7
13	9/26	Bacteriophages: Lysogeny,	Chapter 8
14	9/28	Lambda: Lytic cycle	Chapter 8
15	9/30	Lambda: Lysogeny (Assignment 2)	Chapter 8
16	10/3	Lambda: Review and Decision Making	Chapter 8
17	10/5	Phage Toxins	Chapter 8
18	10/7	Transposition	Chapter 9
-	10/10	Fall Break – No Class	-
-	10/12	Review for exam 2	Chapters 4-8
-	10/14	Exam 2-Lectures 9-17	-
19	10/17	Transposable Elements	Chapter 9
20	10/19	Other Mobile Elements	Chapter 9
21	10/21	Recombination	Chapter 10
22	10/24	Recombination (Assignment 3)	Chapter 10
23	10/26	DNA Mutagenesis and Repair	Chapter 11
24	10/28	DNA Mutagenesis and Repair	Chapter 11
25	10/31	Regulation of Expression	Chapter 12
26	11/2	Regulation of Expression	Chapter 12
27	11/4	Global Regulation – cAMP	Chapter 13
-	11/7	Global Regulation - Nitrogen Regulation and TCS	Chapter 13
28	11/9	Global Regulation - Regulation of the Ribosome	Chapter 13
29	11/11	Veteran's Day – No Class	Chapter 13
30	11/14	Global Regulation - Heat Shock Response	Chapter 13
31	11/16	Regulatory RNAs (Assignment 4)	Chapter 12
-	11/18	Review for exam 3	Chapter 9-13
-	11/21	Exam 3-Lecture 18-31	-
-	11/23	Thanksgiving Break – No Class	-
-	11/25	Thanksgiving Break – No Class	-

32	11/28	Regulatory RNAs	Chapter 13
33	11/30	Global Regulation - Regulation of virulence	Chapter 13
34	12/2	Global Regulation - Regulation of symbiosis	Chapter 13
35	12/5	Global Regulation – Regulation of biofilm formation	Review paper
-	12/7	Review of New Material	-
-	12/9	Final Review (Assignment 5)	-
-		Final Exam-Cumulative	-

IMPORTANT DATES *

<u>Semester Class Begins:</u>	08/22/2016
<u>Last day to add full-term course</u> (without Dean's signature):	08/28/2016
<u>Last day to withdraw from the University with a full refund:</u>	09/02/2016
<u>Last day to drop a full-term course for a credit/refund:</u>	09/04/2016
<u>Deadline to apply to graduate at the end of this term:</u>	09/16/2016
<u>Last day to drop a full-term course (W grade, no refund):</u>	10/30/2016
<u>Final examinations:</u>	12/12–12/16/2016
<u>Commencement:</u>	12/17/2016

Note: For more detailed information on the above deadlines, please visit <http://registrar.siu.edu/calendars>. For add/drop dates that apply to shorter-than-full-term courses, please look at the Schedule of Classes search results at <http://registrar.siu.edu/schedclass/index.html>.

FALL SEMESTER HOLIDAYS

Labor Day Holiday 09/05/2016
Fall Break 10/08—10/11/2016
Veterans Day Holiday 11/11/2016
Thanksgiving Vacation 11/23—11/27/2016

WITHDRAWAL POLICY ~ Undergraduate only

Students who officially register for a session must officially withdraw from that registration in a timely manner to avoid being charged as well as receiving a failing grade for those classes. An official withdrawal must be initiated by the student, or on behalf of the student through the academic unit, and be processed by the Registrar's office. For the proper procedures to follow when dropping courses and when withdrawing from SIU visit: <http://registrar.siu.edu/students/withdraw.html>

INCOMPLETE POLICY~ Undergraduate only

An INC grade may be assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments for the course. An INC must be changed to a completed grade within one full semester (undergraduates), and one full year (graduate students), from the close of the term in which the course was taken or graduation, whichever occurs first. Should the student fail to complete the remaining course requirements within the time period designated, the incomplete will be converted to a grade of F and such grade will be computed in the student's grade point average. *For more information visit:*

<http://registrar.siu.edu/grades/incomplete.html>

REPEAT POLICY

An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit more than once. For students receiving a letter grade of A, B, C, D, or F, the course repetition must occur at Southern Illinois University Carbondale. Effective for courses taken Summer 2013 or later, only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned.

This policy will be applied to all transferrable credit in that only the last grade will be used to calculate grade point average. Only those courses taken at the same institution are considered repeats under this policy. *See full policy at*

<http://registrar.siu.edu/students/repeatclasses.html>

GRADUATE POLICIES

Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please refer to the graduate catalog at <http://gradschool.siu.edu/about-us/grad-catalog/index.html>

DISABILITY POLICY

Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must contact DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements.

<http://disabilityservices.siu.edu/>

PLAGIARISM

Student Conduct Code http://srr.siu.edu/student_conduct_code/
Guidelines for Faculty <http://pvcaa.siu.edu/common/documents/Plagiarism/Guide%20to%20Preventing%20Plagiarism.pdf>

SAFETY AWARENESS FACTS AND EDUCATION

Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here:

<http://safe.siu.edu>

SALUKI CARES

The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For Information on Saluki Cares: call(618) 453-1492, email siucares@siu.edu, or <http://salukicare.siu.edu/index.html>

SIU's EARLY WARNING INTERVENTION PROGRAM (EWIP)

Students enrolled in courses participating in SIU's Early Warning Intervention Program might be contacted by University staff during a semester. More information can be found at the Core Curriculum's Overview webpage: <http://corecurriculum.siu.edu/program-overview/>

EMERGENCY PROCEDURES

We ask that you become familiar with **Emergency Preparedness @ SIU**. Emergency response information is available on posters in buildings on campus, on the Emergency Preparedness @ SIU website, and through text and email alerts. *To register for alerts visit:* <http://emergency.siu.edu/>

INCLUSIVE EXCELLENCE

SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well as an essential preparation for any career. *For more information visit:* <http://www.inclusiveexcellence.siu.edu/>

LEARNING AND SUPPORT SERVICES

Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:

Tutoring : <http://tutoring.siu.edu/>

Math Labs <http://math.siu.edu/courses/course-help.php>

WRITING CENTER

The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit:

<http://write.siu.edu/>

AFFIRMATIVE ACTION & EQUAL OPPORTUNITY

Our office's main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. *For more information visit:* <http://diversity.siu.edu/#>

MILITARY COMMUNITY

There are complexities of being a member of the military community and also a student. Drill schedules, calls to active duty, complications with GI Bill disbursement, and other unforeseen military and veteran related developments can complicate academic life. If you are a member of the military community and in need of accommodations please visit Veterans Services at <http://veterans.siu.edu/>

Additional Resources:

ADVISEMENT: <http://advisement.siu.edu/>

SIU ONLINE: <http://online.siu.edu/>

SALUKINET: <https://salukinet.siu.edu/>

MORRIS LIBRARY HOURS: <http://www.lib.siu.edu/>