

**BIOL 409 – MOLECULAR BIOLOGY  
TOWSON UNIVERSITY  
COURSE SYLLABUS – SPRING 2021**

**INSTRUCTOR INFORMATION**

**Erin M. Harberts, PhD**

OFFICE: Smith Hall 468A

WEBEX OFFICE: <https://towson.webex.com/meet/eharberts/>

E-MAIL: [eharberts@towson.edu](mailto:eharberts@towson.edu)

OFFICE HOURS: T 11am-12:30pm

Th 11am-12:30pm

\*All other times by appointment upon request\*

**ULA INFORMATION**

**Kerri Keenan**

EMAIL: [kkeena7@students.towson.edu](mailto:kkeena7@students.towson.edu)

OFFICE HOURS: W 12-1pm, \*or other times by appointment\*

Link for ULA Office Hours: <https://towson->

[edu.zoom.us/meeting/tJYqdemopzMrGtcnbuNcMTemeLSb7oQRAL8b/ics?icsToken=98tyKuCqqTkqGt2dsRmERowQB4joc\\_TxmFxcjbdekh3wLSN-Vgb7M85xMOVwlerx](https://towson-edu.zoom.us/meeting/tJYqdemopzMrGtcnbuNcMTemeLSb7oQRAL8b/ics?icsToken=98tyKuCqqTkqGt2dsRmERowQB4joc_TxmFxcjbdekh3wLSN-Vgb7M85xMOVwlerx)

Password: **MolBio2021**

**GENERAL COURSE INFORMATION**

**Lecture:** Monday, Wednesday, and Friday, 10-10:50am **Virtual** or **Smith Hall 359**

lecture zoom link: <https://towson-edu.zoom.us/j/91814406977?pwd=aHg0ODIUdTRPRWI0TTNNbzVjeUpDUT09>

password: **MolBio2021**

**Recitation:** Section (001) Tuesday, 9-10:50am **Virtual** or **Smith Hall 356**  
Section (002) Tuesday, 2:30-4:20pm **Virtual** or **Smith Hall 356**  
Section (003) Wednesday, 2-3:50am **Virtual** or **Smith Hall 264**  
Section (004) Thursday, 9-10:50am **Virtual** or **Smith 356**  
Section (005) Thursday, 1-2:50pm **Virtual** or **Smith 264**

recitation zoom link: <https://towson-edu.zoom.us/j/97819836861?pwd=dHN5L2luT0haeU84WFoyeVF3ODM5Zz09>

password: **MolBio2021**

**Course description:**

This course covers the molecular basis of genetic inheritance and gene expression. Topics include DNA and RNA structure, DNA replication, transcription, translation, DNA damage repair, genome structure and organization, and laboratory techniques.

**Text:** Craig et al, "Molecular Biology: Principles of Genome Function, 2<sup>nd</sup> Ed", 2014

**Blackboard:** Additional texts and resources will be shared on the course Blackboard page. Please make sure that you have access to this site and are included in the combined Molecular Biology course labeled: MOLECULAR BIOLOGY (BIOL409001\_002\_003\_004\_005)-1212

**Course delivery details:**

Recitation rooms large enough to accommodate proper physical distancing have been reserved. Recitation sections will be held synchronously on a virtual Zoom platform for the first two weeks, after that there will be optional in-person attendance as there is interest. Every student will be expected to log-in (or attend) during the class time once a week for their recitation period. With only ~22 students in each section, recitations are an opportunity to conduct meaningful virtual discussions for this portion of the class. Individual participation is expected and will be noted by the instructor to make up participation points included in your final grade. Recitation attendance is mandatory.

For the lecture, I will be hosting synchronous classes. Classes will be conducted on zoom, the lecture hall has seating for 100 and an in-person attendance option for the lecture may also be added. If in-person attendance becomes available, each student will have the opportunity to attend at least one of the Monday/Wednesday/Friday classes each week in person. The lectures will also be virtually broadcast via Zoom so that you can attend remotely. Attending every synchronous lecture session is not mandatory; however it is HIGHLY ENCOURAGED. Weekly lecture quizzes will be posted on BlackBoard and serve as a tool for you to use to make sure that you are keeping up with the material. Your highest 8 quiz scores will count towards your final grade, the other scores will be dropped. These quizzes will not be available to take at alternate times once the submission window closes at midnight on the listed due date.

Flexibility is once again going to be key during this unusual semester. I will work with students' individual needs as they arise and if something just isn't working, **LET ME KNOW AS SOON AS POSSIBLE**. If you wait until the end of the semester to come to me with problems/difficulties you are having it will be too late.

**Point distribution:**

Exam 1	100 points
Exam 2	100 points
Exam 3	100 points
Final Exam	100 points
Lecture Quizzes	80 points (10 points each, best 8 count)
Recitation Quizzes	70 points (10 points each)
Recitation Exam 1	50 points
Recitation Exam 2	50 points
Recitation Take Home	50 points
Recitation Presentation	50 points
Participation	<u>20 points</u>

**BIOL 409 total 770 points**

**Final grade percentages:**

A	92 - 100%
A-	90 - 92.9%
B+	87 - 89.9%
B	83 - 86.9%
B-	80 - 82.9%
C+	76 - 79.9%
C	70 - 75.9%
D+	67 - 69.9%
D	60 - 66.9%
F	<60%

**Grading Policy:** The points will be distributed during the semester as detailed above. Once an assignment is returned to you, there will be a **48 hour** period during which you may bring any errors in grading to my attention or contest a question. After this time has passed, grades assigned will be final. Final grade percentages will be calculated based on total points earned during the semester and rounded to the nearest tenth of a percent, grades will be assigned as described above.

### Recording Disclosure

This notice is to inform you that some or all of our instructional interactions within the classroom or synchronous online meetings may be recorded. These recordings will be shared only with others enrolled in the same course and will be discarded at the conclusion of the semester. If you have any concern regarding your voice, image, or materials being captured please contact me as soon as possible. Any discussions had during “office hours” will not be recorded and content not shared with the class.

### Technology Failure Policy

If/when there is a failure in the technology functioning (for example if I ‘freeze’, or if the session is ended abruptly) please check your TU email address for at least 10 minutes after the incident for further instructions. If no update is provided within 10 minutes, it can be assumed that I have had a complete failure of internet and the session will be officially cancelled. If you have a technology failure during class, please log out and try to log back in to rejoin the class.

### Lecture Schedule:

Date	Section/Lectures Assigned	Textbook Chapters	Assignments Due
25-Jan	Course Introduction		
27-Jan	Biological Molecules and Chemical Bonds	Ch 3, pg 86-104	
29-Jan	Biological Molecules and Chemical Bonds	Ch 3, pg 104-114	Syllabus Quiz Due 1/31
1-Feb	DNA, RNA, and Proteins	Ch 2, pg 31-53	
3-Feb	DNA, RNA, and Proteins	Ch 2, pg 53-69	
5-Feb	DNA, RNA, and Proteins	Ch 2, pg 70-83	Quiz 1 Due 2/7
8-Feb	Genome Organization	Ch 4, pg 117-129	
10-Feb	Genome Organization	Ch 4, pg 142-158	
12-Feb	Epigenetics	topics in Ch 4 and 18	Quiz 2 Due 2/14
15-Feb	Molecular Tools and Techniques	Ch 19, pg 775-800	
17-Feb	Molecular Tools and Techniques	Ch 19, pg 800-823	
19-Feb	Molecular Tools and Techniques	Ch 19, pg 831-873	Quiz 3 Due 2/21
22-Feb	DNA Replication	Ch 6, pg 199-235	
24-Feb	DNA Replication	Ch 6, pg 199-235	
26-Feb	<b>Exam 1</b>		Lecture Exam
1-Mar	Regulation of DNA Replication	Ch 6, pg 238-245	
3-Mar	DNA Mutation and Repair	Ch 15, pg 587-599	
5-Mar	DNA Mutation and Repair	Ch 15, pg 601-625	Quiz 4 Due 3/7
8-Mar	DNA Mutation and Repair	Ch 15, pg 601-625	
10-Mar	DNA Replication/DNA Mutation Activity		
12-Mar	NHEJ and Homologous Recombination	Ch 16, pg 626-647	Quiz 5 Due 3/21
	<b>Spring Break</b>		
22-Mar	Homologous Recombination	Ch 16, pg 647-667	
24-Mar	Recombination and Transposition	Ch 16/17, pg 668-674	
26-Mar	<b>Exam 2</b>		Lecture Exam

29-Mar	*no class- Panopto recording* Transcription	Ch 8, pg 296-313	
31-Mar	*no class-Panopto recording* Transcription	Ch 8, pg 313-329	
2-Apr	Transcription	Ch 8, pg 313-329	Quiz 6 Due 4/4
5-Apr	Transcriptional Regulation	Ch 9, pg 330-340	
7-Apr	Transcriptional Regulation	Ch 9, pg 363-374	
9-Apr	RNA Processing	Ch 10, pg 375-388	Quiz 7 Due 4/11
12-Apr	RNA Splicing	Ch 10, pg 388-405	
14-Apr	The Genetic Code	Ch 11, pg 421-431	
16-Apr	<b>Exam 3</b>		Lecture Exam
19-Apr	Translation	Ch 11, pg 431-442	
21-Apr	Translation	Ch 11, pg 443-460	
23-Apr	Translation	Ch 11, pg 472-478	Quiz 8 Due 4/25
26-Apr	Translational Regulation	Ch 12, pg 479-489	
28-Apr	Translational Regulation	Ch 12, pg 489-497	
30-Apr	Regulatory RNAs	Ch 13, pg 498-511	Quiz 9 Due 5/2
3-May	Regulatory RNAs	Ch 13, pg 519-527	
5-May	Protein Modification, targeting and degradation	Ch 14, pg 539-585	
7-May	Catch-up and Final Exam Review		
10-May	Catch-up and Final Exam Review		

### Recitation Schedule

Date (Week of)	Recitation Topics	Assigned Reading
Jan 26-28	Introduction and Review of How to Read Scientific Articles	
Feb 2-4	Example Literature Presentation and <b>Quiz</b>	Ben-David et al, 2017
Feb 9-11	Tools and Techniques in Molecular Biology	
Feb 16-18	Student Article Presentation #1 and <b>Quiz</b>	Meselson and Stahl, 1958
Feb 23-25	Student Article Presentation #2 and <b>Quiz</b>	Herb et al, 2012
March 2-4	<b>Recitation Exam 1</b>	
March 9-11	Student Article Presentation #3 and <b>Quiz</b>	Georgescu et al, 2009
March 16-18	Spring Break, <b>**no recitation this week**</b>	
March 23-25	Student Article Presentation #4 and <b>Quiz</b>	Jinek et al, 2012
Mar 30-Apr 1	<b>**no recitation this week**</b>	
April 6-8	<b>Recitation Exam 2</b>	
April 13-15	TBD Activity	
April 20-22	Student Article Presentation #6 and <b>Quiz</b>	Ingolia et al, 2009
April 27-29	Student Article Presentation #7 and <b>Quiz</b>	Fire et al, 1998
May 4-6	Final exam review and <b>Take Home Recitation Exam 3</b>	

### Copyright

My lectures and course materials, including, but not limited to power point presentations, tests, outlines, and similar materials, are protected by copyright. I am the exclusive owner of copyright in those materials they create. You may take notes and make copies of course materials for your own use;

however, you may not, nor may you allow others to, reproduce or distribute lecture notes and course materials publicly whether or not a fee is charged without my express written consent. Similarly, you own copyright in your original papers and exam essays. If I am interested in posting your answers or papers on the course web site, I will ask for your written permission.

### **Academic Integrity**

Students are responsible members of the academic community. You are therefore obligated not to violate the basic standards of integrity. You are also expected to take an active role in encouraging other members of the community to respect those standards. Should you have reason to believe that a violation of academic integrity has occurred, you are encouraged to make the suspicion known to a member of the faculty or University administration.

Cheating means using, attempting to use, and/or disseminating unauthorized materials, information, notes, study aids, videos or other devices in any academic exercise. This includes unauthorized communication of information during an exercise or exam. Some examples include but are not limited to: Copying from another student's paper or receiving unauthorized assistance during any graded deliverable; using books, notes or other devices (e.g., calculators, phones, watches, laptops, or other internet enabled devices) when these are not authorized; procuring without authorization tests or examinations before the scheduled exercise (including discussion of the substance of examinations and tests when it is expected these will not be discussed); copying reports, laboratory work, computer programs or files and the like from other students; collaborating on laboratory or computer programs or files and the like with other students; collaborating on laboratory or computer work without authorization and without indication of the nature and extent of the collaboration; sending a substitute to take an examination, using solutions manuals, providing exam and assignment questions to student websites or using such a website to complete an assignment and/or exam (including free or pay websites that maintain textbook and/or instructor solutions). To clarify, copying or collaborating with other students or using external resources, including other people, on any type of assignments that are expressly designed to be completed individually is cheating.

Recorded sessions and any associated materials are designated ONLY for registered students in the class. Any sharing or dissemination of recordings beyond the student body registered in the course and section constitutes a violation of privacy and may also be categorized as cheating or defamation of character (depending on the circumstance), a possible copyright infringement.

Complicity in Academic Dishonesty means helping or attempting to help another commit an act of academic dishonesty. Some examples include but are not limited to: Allowing another to copy from one's paper during an examination or test; distributing test questions or substantive information about the material to be tested without authorization before the scheduled exercise; collaborating on academic work that is expressly designed to be completed individually; taking an examination or test for another student; signing a false name on an academic exercise; or sharing assignment or exam information before, during, or after the deliverable in written, electronic, video, or verbal form. (Note: Collaboration and sharing information are characteristics of academic communities. These become violations when they involve dishonesty. Students should seek clarification when in doubt).

Abuse of Academic Materials means destroying, stealing, or making inaccessible library or other resource materials. Some examples include: Stealing or destroying library or reference materials needed for common academic exercises; hiding resource materials so others may not use them;

destroying computer programs or files needed in academic work; stealing or intentionally destroying another student's notes or laboratory experiments; receiving assistance in locating or using sources of information in an assignment where such assistance has been forbidden by the instructor.

### **Online Conduct and Netiquette**

The discussion board should be viewed as a course forum to discuss the readings, videos, and other course-related content. Your participation in the discussions counts as asynchronous attendance for this online course. The tone of all posts should be respectful and professional in nature.

- Treat the other students and your faculty member the same online as you would in person. Engage with others in a respectful manner.
- Keep in mind that written communication lacks the non-verbal cues we use to understand each other. It may be helpful to review what you write to ensure the message reads the same way you are intending it to.
- It is not appropriate to post statements of a personal or political nature, or statements criticizing classmates or faculty. Inappropriate statements/language will be deleted by the course faculty.

Students in this course are expected to observe common rules of netiquette (or Internet etiquette).

Those rules include but are not limited to:

1. Proofread your message before you hit send.
2. ALL CAPITALS is the same as shouting your message, check your caps' lock button.
3. Don't flame—everyone is entitled to the right to speak their opinion. Respect the opinions of others.
4. Make meaningful replies. Don't just agree—say why you agree! Or disagree, as the case may be—just do so respectfully.
5. Follow the TU code of student conduct.
6. Know that students who do not follow basic netiquette rules may be suspended from discussion board use.

### **Loaner Laptop Availability and Student Support Funds**

The Office of Technology Services (OTS) has a limited number of laptops to loan to students whose personal computers are unable to run Blackboard, WebEx, Zoom or applications required by the curriculum. If you need to borrow a device, please talk to me; I can submit a request on your behalf. The Towson University Foundation has created the Student Emergency Fund, which has some funds available to assist students in purchasing hotspots, upgrading home internet, and other necessary technologies.

### **Diversity Statement**

Towson University values diversity and fosters a climate that is grounded in respect and inclusion, enriches the educational experience of students, supports positive classroom and workplace environments, promotes excellence, and cultivates the intellectual and personal growth of the entire university community. Should you feel that you are experiencing a negative environment related to diversity issues or cultural sensitivity, we encourage you to contact the Department's Diversity Committee Chair, [Dr. Colleen Winters [cwinters@towson.edu](mailto:cwinters@towson.edu)].

### **Americans with Disabilities Act**

If you are a qualified student with a disability seeking accommodations under the Americans with Disabilities Act, you are required to self-identify with Disability Student Services in the Administration Building and present a letter to me from DSS. This should be done during the first week of class or ASAP. Accommodations cannot be provided without a letter from Disability Services.