BIOL 322, Molecular Biology, Fall 2023

Biology 322, 3.0 credits
Tues and Thurs: 9:30-10:45 AM, Newton 212
Prerequisites: BIOL 222 (Genetics) and a Biochemistry course (CHEM 300, CHEM 302, BIOL 335)
*Biology students with a D or less in prerequisite courses will be deregistered

Instructor

Dr. Kevin T. Militello (Dr. M.)
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Office hours: Mondays from 2:30-3:45 PM, Wednesdays from 8:15-9:15 AM, Thursdays from 8:15-9:15 AM, or by appointment

Course Description

Molecular Biology is an advanced course focused on genetic mechanisms at the cellular and molecular level. The primary emphasis of the course is the flow of genetic information (Central Dogma of Molecular Biology) and the regulation of information flow. Classic and current research articles, an important component of the course, are discussed as a mechanism to evaluate evidence for historical and new models in Molecular Biology.

End of Course Learning Outcomes

At the conclusion of the course……..
*students will be able to explain the fundamental principles of molecular biology at the level appropriate for senior Biochemistry and Biology majors.
*students will have practiced problem solving, critical thinking, and communication skills both generally and with respect to molecular biology topics.
*students will be able to describe, analyze, and interpret both classical and modern experiments that contribute to our knowledge of molecular biology.
*students will be able to describe modern experimental approaches in molecular biology and design experiments to answer current questions in molecular biology.

Textbook

The required text for the course is Molecular Biology Principles and Practice by MM Cox, JA Dounda, and M O'Donnell (2nd edition, Freeman and Company, ISBN 1-4641-2614-3). The first edition of the text might suffice as well with some extra work.

Course Notes

*Students are expected to check their email/Brightspace announcements at least once a day for course information.
*Attendance will be taken at each class/session.
*Grade disputes must be initiated within 7 days from the date the assignment is handed back.

Grading

3 examinations @ 100 points each	300 points
1 question set on outside research article during final	30 points
6 quizzes @ 10 points each (drop one)	50 points
homework	30 points
class participation*	20 points
	430 points total

*A statement describing your expected class participation score and evidence thereof will be due at the end of the course (details to follow). Note: class participation is NOT the same as class attendance.

The following scale (minimum averages) will be used to calculate final grades. Student point totals or grading scheme may be adjusted to reflect course difficulty or section differences (instructor's discretion), but are not typically adjusted.

A, 94; A-, 90
B+, 87; B, 84; B-, 80
C+, 77; C, 74; C-, 70
D, 65; E, < 65

How to excel in BIOL 322

Each student is unique, learns by different mechanisms, and has a different background. Thus, there is no one, magical formula for success in this or any course. However, these are some general pieces of advice that are likely important for most students.

*Attend class each session. Although this is a bit cliché, there is no way to replicate our discussions of research articles if you miss class for any reason. Also, it will be difficult for you to argue for a strong class participation score if you do not attend.
*Get help when necessary. We generally keep this class at 25 students or less, so getting help is feasible. It might feel uncomfortable, but don't be shy.
*Read, Read, Read. It might take a couple of times for some of the reading assignment topics to stick. This is normal. Be patient and leave extra time for required reading.

Students With Disabilities

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional or learning disabilities. Students should consult with the Office of Accessibility (Erwin 22, access@geneseo.edu) and their individual faculty (Dr. M.) regarding any needed accommodations as early as possible in the semester.

Academic Honesty and Plagiarism

All students are expected to follow the specific rules of academic honesty and plagiarism for SUNY Geneseo. Please refer to the 2023-2024 Undergraduate Bulletin for more details.

Physical and Mental Health

We take physical and mental health seriously, yet do not likely understand the unique challenges each student faces. If you have to miss class, please contact your instructor (Dr. M.) for a make up strategy. See Brightspace as well. For all emergencies, call University Police at 585-245-5222 or 911.

Copyright Protection

Date	Quiz	Lecture	Reading
8/29/2023		Molecular Techniques 1	Cox ch7, 211-249
8/31/2023		Molecular Techniques 2	Cox ch7, 211-249
9/5/2023		Bacterial Transcription 1	Cox ch15, 519-531
9/7/2023	yes		Article 1
9/12/2023		Bacterial Transcription 2	Cox ch15, 531-536
9/14/2023	quiz back		Article 2
9/19/2023		Eukaryotic Transcription 1	Cox ch15, 537-546; Troop ch 13 466-491
9/21/2023	yes		Article 3
9/26/2023	quiz back		Article 4
9/28/2023		Exam 1	

10/3/2023		Eukaryotic Transcription 2	Moore and Fan, 23-30
10/5/2023	exam back		Article 5
10/10/2023		NO CLASSES, FALL BREAK	
10/12/2023		Eukaryotic Transcription 3	Cox ch10, 331-360
10/17/2023	yes		Article 6
10/19/2023	quiz back		Article 7
10/24/2023		mRNA processing	Cox ch16, 553-573
10/26/2023	yes		Article 8
10/31/2023	quiz back		Article 9
11/2/2023		Exam 2	
11/7/2023		Small Regulatory RNAs	Troop ch 15, 600-619
11/9/2023	exam back		Article 10
11/14/2023		Translation 1	Cox ch17, 589-609
11/16/2023	yes		Article 11
11/21/2023		Translation 2	Cox ch18, 617-649
11/23/2023		NO CLASSES, THANKSGIVING BR.	
11/28/2023	quiz back		Article 12
11/30/2023		Novel RNA Biology, CRISPRs	Bhaya review
12/5/2023	yes		Article 13
12/7/2023	quiz back		Article 14
12/19/2023		Exam 3, article exam @ 330 PM	