SYLLABUS

MOLECULAR BIOLOGY LAB (BIOL312L)

BACKGROUND

DUE TO THE COVID-19 PANDEMIC CLASSES FOR THE FALL 2020 SEMESTER WILL BE HELD ONLINE VIA ZOOM.

DESCRIPTION

Laboratory techniques relevant to the study of nutrition, ranging from biochemistry, molecular biology, genomics and bioinformatics.

COURSE FORMAT

This course will occur primarily online, using OAKS with course material divided into weekly modules. Within each module, there will be readings, video lectures, discussion board prompts, and a homework assignment. Tasks and due dates must be met before you will be permitted to move ahead. Each module can be found under the "Content" section in OAKS.

Readings:

Readings will be posted weekly for each module. Each Supplemental Reading posted is considered required reading unless noted otherwise.

Assignments:

All written assignments should be submitted electronically to OAKS Drop Box. Each assignment should be saved in pdf format with your first and last name included in the file name.

Grading:

Grades will be posted for all assignments and tests online on OAKS.

Software:

We will utilize a variety of software programs and websites in this course. All media and programs utilized will be either integrated in OAKS or free ware at no additional cost to students.

INSTRUCTOR

ANA ZIMMERMAN (zimmermana@cofc.edu).

OFFICE HOURS: Tuesdays and Thursdays: 3-4 VIA ZOOM AND BY APPT.

COURSE LEARNING OBJECTIVES

A main objective of this course is to introduce students to the theory, practice, and application of a variety of laboratory techniques that can be used to address and answer research questions in molecular biology.

Students will be challenged to apply knowledge of molecular biology to real research questions.

After completing this course students should have a good knowledge of how common techniques are performed in molecular biology.

Students will be able to fully comprehend scientific articles relevant to molecular biology, identify the components of experimental design and offer informed critique of findings in the literature.

To demonstrate knowledge of biochemical analysis used in life sciences we will:

Identify and understand study design and scientific models.

Identify limitations of research techniques.

Refine laboratory skills and interpret results from techniques used in the lab.

Interpret and critique scientific articles.

REQUIRED TEXTBOOKS:

There is no required textbook for this course. Students will use relevant literature available through CofC libraries and posted on OAKS.

PREREQUISITES

CO-ENROLLMENT OR COMPLETION OF GENETICS (BIOL305) AND CO-ENROLLMENT OR COMPLETION OF MOLECULAR BIOLOGY (BIOL312)

GRADE DISTRIBUTION:

REQUIREMENT	% GRADE
WEEKLY ASSIGNMENTS	70
MIDTERM AND FINAL EXAMS	20
GROUP PRESENTATIONS	10
TOTAL	**100**

THE MOST IMPORTANT COMPONENT OF TO ANY LEARNING EXPERIENCE IS A POSITIVE ATTITUDE. SCIENCE IS A LIFELONG CURIOSITY. MY HOPE IS TO GUIDE HANDS ON LEARNING AND DISCOVERY ON YOUR LIFE JOURNEY IN THE SCIENCES. STUDENTS GRADES WILL BE BASED ON PARTICIPATION, EVIDENCE OF WORK ACCOMPLISHED, SCIENTIFIC WRITING, AND ABILITY TO READ AND DISCUSS SCHOLARLY ARTICLES.

RELIGIOUS HOLIDAYS, STUDENT ATHLETES, AND STUDENTS WITH DISABILITIES

STUDENTS WITH SPECIAL REQUIREMENTS ARE ENCOURAGED TO SEEK OUT ACCOMMODATIONS FROM THE COLLEGE AND ARE ENCOURAGED TO NOTIFY YOUR INSTRUCTOR (DR. Z.) SO THAT YOUR NEEDS CAN BE MET.

ACADEMIC DISHONESTY

CHEATING OF ANY KIND, INCLUDING PLAGIARISM, WILL NOT BE TOLERATED. IF YOU THINK IT'S A BAD IDEA, IT PROBABLY IS. AS A VETERAN FACULTY MEMBER OF THE COLLEGE OF CHARLESTON HONOR BOARD I WOULD NOT LIKE TO SEE ANYONE IN MY CLASS IN AN HONOR BOARD HEARING EVER. THE HONOR BOARD HEARINGS ARE NOT FUN FOR ANYONE INVOLVED SO LET'S KEEP IT FUN. MORE IMPORTANTLY, OUR INTEGRITY IS THE ONLY THING WE TRULY OWN. HAVING INTEGRITY IS A REWARD OF BEING A GOOD PERSON AND IT IS FUN, EVEN MORE FUN THAN MOLECULAR BIOLOGY, FOR WHICH THE FUN NEVER ENDS.

FINALLY

PLEASE BE ASSURED THAT I WANT EACH AND EVERY STUDENT TO REACH THE GOALS THAT THEY SET FOR THEMSELVES. IF YOU FIND YOURSELF HAVING UNDUE DIFFICULTY WITH ANY PORTION OF THE MATERIAL IN THIS COURSE PLEASE MAKE AN APPOINTMENT WITH ME FOR ADDITIONAL HELP.

Molecular Biology Lab Fall 2020: Tentative Schedule:

Date	Topic
WEEK ZERO	**WELCOME**
	Syllabus Posted
August 26 (W)	Instructor Course Overview Video Posted
WEEK ONE	**COVID-19 – Where are we now?**
August 31 (M)	Module 1 Posted (Assignment and Links) Book Club Selections.
WEEK TWO	**Bioinformatics – Annotation of SARS-CoV-2 genome.**
Sept. 7 (M)	Module 2 Posted (Assignment and Links)
Sept. 9 (W)	Module 1 Due (Wednesday by 11:59 pm)
WEEK THREE	**Central Dogma – Isolating DNA, RNA, or Proteins.**
Sept. 14 (M)	Module 3 Posted (Assignment and Links)
Sept.16 (W)	Module 2 Due (Wednesday by 11:59 pm)
WEEK FOUR	**PCR, RT-PCR, Primer Design for SARS-CoV-2 Spike Protein.**
Sept. 21 (M)	Module 4 Posted (Assignment and Links)
Sept. 23 (W)	Module 3 Due (Wednesday by 11:59 pm)
WEEK FIVE	**Vaccine production and review of CoVID-19 vaccine candidates.**
Sept. 28 (M)	Module 5 Posted (Assignment and Links) Coordination of Book Club Discussion Groups.
Sept. 30 (W)	Module 4 Due (Wednesday by 11:59 pm)
WEEK SIX	**SCIENTIFIC LITERATURE - ONE**
Oct. 5 (M)	Module 6 Posted (Review Questions for Midterm)
Oct. 7 (W)	Module 5 Due (Wednesday by 11:59 pm)
WEEK SEVEN	**Review and Midterm Exam**
Oct. 12 (M)	Midterm Exam Posted at 8 am. Group Writing Project Due.
Oct. 14 (W)	Midterm Exam Due (Wednesday by 11:59 pm)
WEEK EIGHT	**MOLECULAR TECHNIQUES: Recombinant DNA, DNA Sequencing, and more.**
Oct. 19 (M)	Module 7 Posted (Assignment and Links)
Oct. 21 (W)	**Group Project Selections.**
WEEK NINE	**MOLECULAR TECHNIQUES: ELISA, therapeutic antibodies to SARS-CoV-2.**
Oct. 26 (M)	Module 8 Posted (Assignment and Links)
Oct. 28 (W)	Module 7 Due (Wednesday by 11:59 pm)
WEEK TEN	**SCIENTIFIC LITERATURE - TWO**
Nov. 2 (M)	Module 9 Posted (Assignment and Links)

Nov. 4 (W)	Module 8 Due (Wednesday by 11:59 pm)
WEEK ELEVEN	**MOLECULAR TECHNIQUES: CRISPR and other emerging molecular technologies.**
Nov. 9 (M)	Video Lectures Posted
Nov. 11 (W)	Module 9 Due (Wednesday by 11:59 pm)
WEEK TWELVE	**COVID-19: Where are we now?**
Nov. 16 (M)	Video Lectures Posted
Nov. 18 (W)	Zoom Review Session **Group Projects Due.**
WEEK THIRTEEN	**Review for Final Exam**
Nov. 23 (M)	Zoom Review Session
Nov. 25 (W)	Thanksgiving Holiday
WEEK FOURTEEN	
Nov. 30 (M)	Final Exam posted at 8 am.
Dec. 2 (W)	Final Exam Due (Wednesday by 11:59 pm)