BIOL 4580, Molecular Genetics

Spring Semester 2014
Section A (CRN# 21969, 4 Credit hours)
Section B (CRN# 21970, 4 Credit hours)
Department of Biology, College of Arts & Science, Valdosta State University

Lecture (BC 2022): T & R 2:00 p.m. ±3:15 p.m.
Laboratory (BC 2071): Section A W 1:00 a.m. - 11:50 a.m.
Section B W 1:00 p.m. - 3:50 p.m.

Instructor : Dr. Brian C. Ring
Office: BC 2084
Office hours: T 11:00 a.m. ±12:00 p.m. & R 11:00 a.m. ±12:00 p.m.
Phone: 249-4841 (Dept. office 333-5759)
Email: bcring@valdosta.edu (please use D2L first , if I can figure it out!)

1) Comprehend the central dogma of molecular biology as illustrated through elegant experimental studies of the phage lambda (BO3, BO4, & GE4, & GE7);
2) Understand how eukaryotic genomes are experimentally investigated using biotechniques such as molecular biology, genomics, gene expression, and transgenics (BO3, BO4, & GE4);
3)

Participation is key to the success of this course. Some lecture will be provided by your instructor, but the majority of the time is left for discussion of the reading assignments collaboratively. Therefore, attendance in this course is mandatory and each missed lecture will result in 5 points lost from your participation grade and missed course time equivalent to greater than 20% (~6 days) will result in a failing grade as per University policy. Attendance may be taken at any time during the lecture or laboratory and used as an indicator of class participation as noted. Laboratories in particular are important not to miss as you will not be able to prepare for lab exams. If you miss more than 2 laboratory sessions you will fail this course as per University policy. In the event that a student will miss a lab, s/he should notify the instructor in writing by email and be prepared to provide documentation of the excused absence. It is W K H L Q V W U X F W R U ¶ V S U H U R J D W L ABSOLUTELY MANDATORY THAT STUDENTS ATTEND LABORATORIES AS THEY CANNOT BE "MADE UP."

Laboratory: (150 pts, 30%) Two exams worth 75 points each. Exams are composed of multiple choice and/or short answer covering what we learned in the laboratory. The first lab exam is the practical introduction to molecular genetics chemistry in the lab (labs 1-3). The second lab exam is based on our inquiry into your own genetic profile using the basic molecular genetic skills learned from labs 1-3.

Grade Calculation & Distribution:

TENTATIVE LECTURE & LABORATORY OUTLINE:

Week:	Date:	Topics:	Text/ Paper:	Laboratory Topic:
1	Jan. 14 (T)	Course Introduction & Objectives	--	Introduction, Safety, & Inquiry Based learning
	Jan. 16 (R)	Central Dogma & Phage Lambda	Pg. 1-10	
2	Jan. 21 (T)	The Master Elements of Control	Chpt. 1	NO LAB - prepare for lab 1 See L1 hand (D2L).
	Jan. 23 (R)	Continued	--	
3	Jan. 28 (T)	Protein-DNA Interactions & Gene Control	Chpt. 2	L1: Common Units & Measures
	Jan. 30 (R)	Continued	--	
4	Feb. 04 (T)	Control Circuits- Setting the Switch	Chpt. 3	L2: Common Stock Solutions
	Feb. 06 (R)	Continued	--	
5	Feb. 11 (T)	Catch-up & Review	--	L3: Dilution Chemistry
	Feb. 13 (R)	Lecture Exam 1	--	
6	Feb. 18 (T)	How Do We Know?- The Key Experiments	Chpt. 4	Lab Exam 1
	Feb. 20 (R)	Continued	--	
7	Feb. 25 (T)	2004: New Developments & Review	Chpt. 5	L4: Genomic DNA Isolation- - Chelex extraction (forensic lab technique)
	Feb. 27 (R)	Continued	--	
	Mar. 04 (T)	Catch-up & Review	--	L5: gDNA Quantification & Experimental Discussion
8	Mar. 06 (R)	Lecture Exam 2	--	
	Mar. 06 (R)	Midterm - last day to drop course	--	
9	Mar. 11 (T)	DNA Replication & Biotechnology I	Paper 1	L6: Human STR PCR Set-up