

Laboratory Techniques in Biotechnology JUNE 11 - JULY 30, 2024
Summer Semester 2024
BIOL 4010 (CRN# 53461) Special Topics in biology
Credit hours: 4

Instructor: Dr. Ansul Lokdarshi
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Office (Student) hours Wednesday 3:30 PM-

This course learning outcomes support the achievement of the Department of Biology Educational Outcomes 1, 3 and 4 (<http://catalog.valdosta.edu/pdf/2021-2022.pdf>) (https://www.usg.edu/academic_affairs_handbook/section2/C738).

Attendance:

Attendance to both lecture and lab is required. If you miss a lecture or lab I reserve the right to determine what constitutes an excused or unexcused absence. To name a couple of examples of unexcused absences, scheduled appointments or leaving town, except for University related activities (e.g. you are on a sports team or are

Quizzes and in-class assignments will be given throughout the semester, which is why attendance is required. Generally, quizzes or in-class assignments in lecture cannot be made up if lecture is missed. If you miss the lecture and I approved your absence the total number of points possible to you will be reduced. If you miss quizzes and/or in-class lecture assignments and I did not approve the absence a zero will be given for that particular assignment, quiz, etc.

Lectures and Labs cannot be made up; therefore do not miss either. I also reserve the right to determine what constitutes an excused absence from lab. If you miss 2 labs (excused or unexcused) you will earn an F for the course as per University policy.

If students must be absent due to a quarantine or isolation requirement for COVID-19, they must report this situation via the COVID Self Reporting Link in MyVSU and through the Dean of Students Office to report any other absences as well.

Mid-term and Attendance: Students will have several lecture and laboratory assignments to determine their overall

Tentative schedule: Please check BV for any changes that may occur during the semester.

DAY	DATE	LECTURE	LAB
Tuesday		Course Introduction and Objectives; <u>Syllabus quiz</u>	Lab safety, Pipetting, Units of Measures, pH and Buffers, Microbiology aseptic techniques
Thursday		Fundamentals of DNA, RNA and protein structure and function	Molecular Cloning PART I - Spectrophotometry and Bacterial transformation
Tuesday		Protein-DNA and Protein-RNA Interactions	Molecular Cloning PART II - PCR genotyping and bacterial cell culture
Thursday		Control of gene expression Transcription and Translation	Molecular Cloning PART III Plasmid DNA extraction and Restriction endonuclease mapping, DNA gel Electrophoresis, Lab notebook review.
Tuesday		Review	LAB EXAM 1
Thursday		LECTURE EXAM 1	Biochemistry lab - Protein extraction and purification - Chromatography
Tuesday		Molecular Biology and Biochemical Techniques PART I (Gene editing - RNAi)	Biochemistry lab - Colorimetric assay for protein quantification and denaturing gel electrophoresis
Thursday		Molecular Biology and Biochemical Techniques PART II (Gene editing - CRISPR)	Biochemistry lab - Immunoblotting -I
Tuesday		Review	Biochemistry lab - Immunoblotting -II
Thursday		LECTURE EXAM 2	LAB EXAM 2
Tuesday		Molecular Biology and Biochemical Techniques PART III	Data analysis using Image J and statistical tests. Lab notebook review. Student project Part I (Choice of Molecular OR, Biochemical technique)
Thursday		Molecular Biology and Biochemical Techniques PART IV	Student project Part I continued.
Tuesday		Review + <u>Headshot photoshoot and Workshop on Resume building, LinkedIn and job search</u>	Student project Part II (Completion of team project)
Thursday		FINAL EXAM	Final student project submission on Blazeview, 11:59 PM ET