

# Modern Methods in Molecular Analysis

## MMED 5015 (2 SCH)

FALL 2020

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**CLASS DAYS and TIME:** TUESDAYS, August 25 to December 15, 2020, 9:30 AM – 11:30 AM (except the orientation on August 25 which meets at 11 am)

**CLASSROOM:** GCCRI Auditorium 2.160 - Tentative

**COURSE FACULTY:** Course Director: P. Renee Yew, Ph.D.

**OFFICE LOCATION and HOURS:** STRF 261.2 – 10:00 AM – 4:00 PM (By Appointment)

**EMAIL:** yew@uthscsa.edu

**TELEPHONE:** 210-562-4150 (office); 210-573-3847 (cell)

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**READ THIS DOCUMENT CAREFULLY - YOU ARE RESPONSIBLE FOR ITS CONTENTS.**

### COURSE DESCRIPTION AND OBJECTIVES

Modern Methods in Molecular Analysis, (MMED 5015), Fall Semester Only - This course is designed to introduce students to the basic experimental techniques used in the study of cell biology, biochemistry, molecular biology, protein analysis, genomics, and personalized molecular medicine. This course will include didactic lectures.

**Pre-requisites** – None

**Semester credit hours** – 2.0

By the end of this course, each student should be able to:

- Explain the methods and their principles for studying cell biology, biochemistry, molecular biology, protein chemistry, genomics, and personalized molecular medicine.
- Compare and contrast methods for studying DNA, RNA, and proteins.
- Compare and contrast different animal models for studying molecular medicine.
- Explain the current methods used in personalized molecular medicine.
- Present a short instructional seminar on a specialized method used in molecular medicine.

### COURSE ORGANIZATION

**The main teaching modalities used in this course include:**

- 1) Didactic lectures on specific method topics with the purpose of conveying important concepts.
- 2) Team based learning with students researching, presenting, and leading discussions on new methods for personalized molecular medicine.

**Materials** – Laptop for presentations and viewing the lecture notes in Canvas.

**Reading Assignments** – Course materials will be distributed to students via Canvas prior to class periods.

## ATTENDANCE

**Attendance and participation are mandatory.** One large component of the grading is class participation so if a student misses a class due to sickness, the student needs to inform the instructors and course directors as soon as possible since this may result in an incomplete for the student. Any scheduled absences must be approved by the course director prior to the absence and may need to be made up depending on the wishes of the lecturer.

## TEXTBOOKS

No required textbooks.

## GRADING POLICIES AND EXAMINATION PROCEDURES

Grades will be based on attendance, class participation, presentations, and one **closed book** examination. Exam questions will be in the form of short answer, multiple choice, matching, and essay questions. Each faculty lecturer will be asked to provide 1-2 questions with all questions totaling 100 points. The final grade will be based on the score of the examination as well as on the student presentation, class participation, and attendance.

### Grading System

A = 90-100%      B = 80-89%      C = 70-79%      F = < 69%

## REQUESTS FOR ACCOMODATIONS FOR DISABILITIES

In accordance with policy 4.2.3, **Request for Accommodation Under the ADA and the ADA Amendments Act of 2008 (ADAAA)**, any student requesting accommodation must submit the appropriate request for accommodation under the American with Disabilities Act (ADA, form 100). to his/her appropriate Associate Dean of their School and a copy to the ADA Coordinator. Additional information may be obtained at <http://uthscsa.edu/eoo/request.asp>.

## ACADEMIC INTEGRITY AND PROFESSIONALISM

Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, signing attendance sheets for another student, and any act designed to give unfair advantage to a student or the attempt to commit such an act. Additional information may be obtained at <http://catalog.uthscsa.edu/generalinformation/generalacademicpolicies/academicdishonestypolicy/>

## TITLE IX AT UTHSCSA

### **Title IX Defined:**

Title of the Education Amendments of 1972 is a federal law that prohibits sex discrimination in education. It reads "no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

### **University of Texas Health Science Center San Antonio's Commitment:**

University of Texas Health Science Center San Antonio (UTHSCSA) is committed to maintaining a learning environment that is free from discriminatory conduct based on gender. As required by Title IX, UTHSCSA does not discriminate on the basis of sex in its education programs and activities, and it encourages any student, faculty, or staff member who thinks that he or she has been subjected to sex discrimination, sexual harassment (including sexual violence) or sexual misconduct to immediately report the incident to the Title IX Director.

In an emergency, victims of sexual abuse should call 911. For non-emergencies, they may contact UPD at 210-567-2800. Additional information may be obtained at <http://students.uthscsa.edu/titleix/>

**EMAIL POLICY**

Course information and instructions will be e-mailed to students. Additionally, students should communicate with the course director via e-mail.

**USE OF RECORDING DEVICES**

Recording devices during the lectures are allowed with the permission of each instructor.

**ELECTRONIC DEVICES**

Electronic devices such as cell phones, computers, tablets, etc. are permitted in class, but we ask that you silence your cell phones during class.

## Fall 2020 Schedule

Tuesdays 9:30-11:30 am in GCCRI 2.160 (except August 25 which will be at 11 am)

DATE	TOPIC	INSTRUCTOR
August 25- 11 am	Course Orientation (Please note different class time for this day only)	P. Renee Yew
September 1	Nucleic Acid Techniques	Masahiro Morita
September 8	Protein Techniques I	Subapriya Rajamanickam
September 15	Protein Techniques II	Thomas Boyer
September 22	DNA Protein Interactions	Zhijie (Jason) Liu
September 29	Cell Biology Techniques	P. Renee Yew
October 6	Bioinformatics	Victor Jin and Yufan Zhou
October 13	Yeast Genetics	Sang Eun Lee
October 20	Single Cell Analysis	Chun-Liang Chen
October 27	Antibody Production/Characterization	Kexin Xu
November 3	Transgenic Animals	E. Paul Hasty
November 10	Spectroscopy	Pawel Osmulski
November 17	Microscopy/Imaging	Maria Gaczynska
November 24	Special Topic Presentations	Students P. Renee Yew
December 1	Methods to evaluate chromosome instability from yeast to humans	Katsumi Kitagawa
December 8	Multiplex systems and analyses	Nameer Kirma
December 15	Final Examination ( <b>Closed book</b> examination on all course content)	Term ends Dec 18