

**University of North Texas at Dallas**  
**5 week 1 Summer 2016**  
**SYLLABUS**

<b>BIOL 4930 : Special Topics in Molecular Biology 3Hrs</b>			
Department of	Life and Health Sciences	Division of	Liberal Arts and Life Sciences
<b>Instructor Name:</b>	Dr. Aubrey Frantz		
<b>Office Location:</b>	Room 251, Building 2		
<b>Office Phone:</b>	972-338-1523		
<b>Email Address:</b>	<a href="mailto:aubrey.frantz@untdallas.edu">aubrey.frantz@untdallas.edu</a>		
<b>Office Hours:</b>	MTWR 9:30 – 10:00am and 12:00 – 12:30pm (If you need another time, please contact me by email)		
<b>Classroom Location:</b>	DAL2 room 240		
<b>Class Meeting Days &amp; Times:</b>	MTWR 10:00 – 11:50am		
<b>Course Catalog Description:</b>	The concepts and techniques of molecular biology are the foundation for the studies of all aspects of modern biology. A basic understanding of molecular biology is essential for teaching current college level biology courses as well as preparation for the advanced study of a wide range of biological sciences. In this course, students will be exposed to the theoretical concepts and experimental techniques of molecular biology. Topics include genetic analysis of gene structure, regulation of gene expression and principles of molecular biology techniques.		
<b>Recommended text:</b>	Alberts et al. <b><u>Essential Cell Biology</u></b> . 4th Ed. 2013. Garland Science (Taylor & Francis Group) <b>ISBN 13: 9780815344544</b>		
<b>Access to Learning Resources:</b>	UNT Dallas Library: phone: (972) 780-3625; web: <a href="http://www.unt.edu/unt-dallas/library.htm">http://www.unt.edu/unt-dallas/library.htm</a> UNT Dallas Bookstore: phone: (972) 780-3652; e-mail: <a href="mailto:1012mgr@fhcg.follett.com">1012mgr@fhcg.follett.com</a>		
<b>Course Goals and Student Learning Objectives</b> At the end of this course, the student will			
1	Demonstrate an understanding of molecular biology concepts and techniques		
2	Critically read, analyze, interpret and communicate primary data and literature.		
3	Understand the foundations of critical molecular biology methods and understand the capacity and limitations of these methods		
4	Design experiments using molecular biology to address a hypothesis as well as expand on current knowledge		

## Course Outline

This schedule is subject to change by the instructor. Any changes to this schedule will be communicated by the instructor in class.

TIMELINE	TOPICS	Assignment Due via Blackboard ( <i>before class</i> )
6/6	Course Introduction + Fundamental Units of Life (Chapter 1) Molecular Biology Objectives (MBO)	
6/7	Proteins (Chapter 4)	
6/8	DNA + Chromosomes (Chapter 5)	
6/9	Central Dogma of Biology (Chapter 7) Prokaryotes vs. Eukaryotes ( <i>Karnkowska et al., 2016</i> )	
6/13	<b>Journal Club #1</b> – Minimal Bacterial Genome ( <i>Hutchison et al., 2016</i> ) <b>MBO Presentations– Evolution &amp; Macromolecules Structure and Function</b>	Perspective 1
6/14	<b>EXAM I</b>	
6/15	Cell Division (Chapter 18)	
6/16	Cell Cycle Control (Chapter 18)	
6/20	<b>Journal Club #2</b> - Tissue regeneration ( <i>Gawriluk et al., 2016</i> ) <b>MBO Presentations – Matter &amp; Energy Transformations</b>	Perspective 2
6/21	Apoptosis & Cancer (Chapter 20)	
6/22	Meiosis and Fertilization (Chapter 19)	
6/23	<b>Journal Club #3</b> – Polar Bodies ( <i>Wang et. al, 2015</i> ) <b>MBO Presentations – Homeostasis</b>	Perspective 3
6/27	<b>No Class (Girls Inc. Activity)</b> <i>Extended office hours for individual presentation preparation</i>	
6/28	<b>EXAM II</b>	
6/29	Molecular Techniques – Genetic Engineering (Chapter 10)	
6/30	Molecular Techniques – Genetic Engineering (Chapter 10)	
7/4	<b>Independence Day – No Class</b>	
7/5	<b>Journal Club #4</b> – selected CRISPR article ( <i>Jinek et al., 2012</i> ) <b>MBO Presentations – Biological Information (The Genome)</b>	Perspective 4
7/6	<b>Student Presentations</b> CRISPR/Cas-9 <a href="http://www.nature.com/news/crispr-1.17547#/">http://www.nature.com/news/crispr-1.17547#/News</a>	
7/7	<b>EXAM III</b>	

## Course Evaluation Methods

**Exams** – written tests designed to measure knowledge of presented course material – You will be given three in-class exams. Each exam is worth 100 points. The exams will consist of a combination of multiple choice, labeling and short answer questions. **Attendance is required for all exams.** Any student found cheating on any exam will receive a zero for that exam and may face disciplinary action(s).

**Journal Club** – Several of the course goals and SLO are served by analyzing primary literature. Reading these journal articles exposes you to the process of scientific investigation and recent advancements in the field. Through these readings, you should gain insight into how scientists design experiments to answer hypotheses and into the way scientists analyze data to draw conclusions. **Preparation, attendance and class participation in the journal club is essential.**

**Journal club perspective papers:** Prior to each journal club, you are expected to read the selected paper(s) and write a 1-2 page perspective describing the main findings of the paper and evaluating the research. Instructions for these writing assignments will be posted on Blackboard and distributed in class. Prior to the journal club discussion, your perspectives should be submitted via Blackboard. **Late perspective papers will not be accepted.**

**Presentations** – You will be required to give a short presentation on a specific molecular biology topic. This presentation will include a discussion of a primary research article related to the topic. Instructions and guidelines will be discussed in class and posted on Blackboard.

**Class participation** – Class discussion is an essential part of this course. You will receive 10 points per class session for contributing to the scheduled class discussion, *journal club and student presentations*. If you miss class, there is no make-up for attendance/class participation points.

### Grading Matrix:

Instrument	Value (points)
Exams (3 x 100 points)	300
Journal Article Perspectives (4 x 25 points)	100
Presentation	50
Attendance & Participation	50
<b>Total:</b>	<b>500</b>

### Grade Determination:

- A = 90% or better
- B = 80 – 89 %
- C = 70 – 79 %
- D = 60 – 69 %
- F = less than 60%

## University Policies and Procedures

### **Students with Disabilities (ADA Compliance):**

*The University of North Texas Dallas faculty is committed to complying with the Americans with Disabilities Act (ADA). Students' with documented disabilities are responsible for informing faculty of their needs for reasonable accommodations and providing written authorized documentation. Grades assigned before an accommodation is provided will not be changed as accommodations are not retroactive. For more information, you may visit the Student Life Office, Suite 200*

**Student Evaluation of Teaching Effectiveness Policy:** *The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching.*

**Exam Policy:** *Exams should be taken as scheduled. No makeup examinations will be allowed except for documented emergencies (See Student Handbook).*

**Academic Integrity:** *Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of Academic Integrity policy. Any person suspected of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. Refer to the Student Code of Academic Integrity at [http://www.unt.edu/unt-dallas/policies/Chapter%2007%20Student%20Affairs,%20Education,%20and%20Funding/7.002%20Code%20of%20Academic\\_Integrity.pdf](http://www.unt.edu/unt-dallas/policies/Chapter%2007%20Student%20Affairs,%20Education,%20and%20Funding/7.002%20Code%20of%20Academic_Integrity.pdf) for complete provisions of this code.*

**Attendance and Participation Policy:** *The University attendance policy is in effect for this course. Class attendance and participation is expected because the class is designed as a shared learning experience and because essential information not in the textbook will be discussed in class. The dynamic and intensive nature of this course makes it impossible for students to make-up or to receive credit for missed classes. Attendance and participation in all class meetings is essential to the integration of course material and your ability to demonstrate proficiency. Students are responsible to notify the instructor if they are missing class and for what reason. Students are also responsible to make up any work covered in class.*