

WELCOME to MOLECULAR CELL BIOLOGY
BIOL 3314 - Spring 2019

INSTRUCTOR: Charles T Spencer, Ph.D. (ctspencer@utep.edu)
OFFICE: Biosciences Bldg, Rm. 5.148 (747-8776)
OFFICE HOURS: Tuesday and Thursday 11:00pm - 1:00pm or [by appointment](#).
LECTURE: Tuesday and Thursday 1:30pm – 2:50pm; UGLC 116

REQUIREMENTS for the course: **The CELL: A Molecular Approach,**
Eighth Edition (*although the 7th edition would be OK*)
By – Geoffrey M. Cooper and Robert E. Hausman

iClicker Cloud App for smartphones or web access in class
Lockdown Browser downloaded from the link on Blackboard

Students are highly encouraged to buy the book. The information is current, will be essential throughout the course, and will help you prepare for future tests (GRE, MCAT, DAT, etc). The previous version /edition of the text will still work but there is a significant amount of updated information in the 8th edition.

COURSE DESCRIPTION (What will we be doing?): This course will provide you an integrated view of our current understanding of how **eukaryotic cells** work at the molecular level. The material to be covered is aimed at allowing you:

- 1) To understand the basic mechanisms by which genetic information is organized, maintained, made into RNA (transcribed), and into protein (translated).
- 2) To understand how gene expression occurs so that cells synthesize the right proteins at the right time in the right amounts
- 3) To know the structure and function of proteins that carry out specific biologically important tasks
- 4) To understand how properties of cells relate to the properties of the proteins that make up the cell

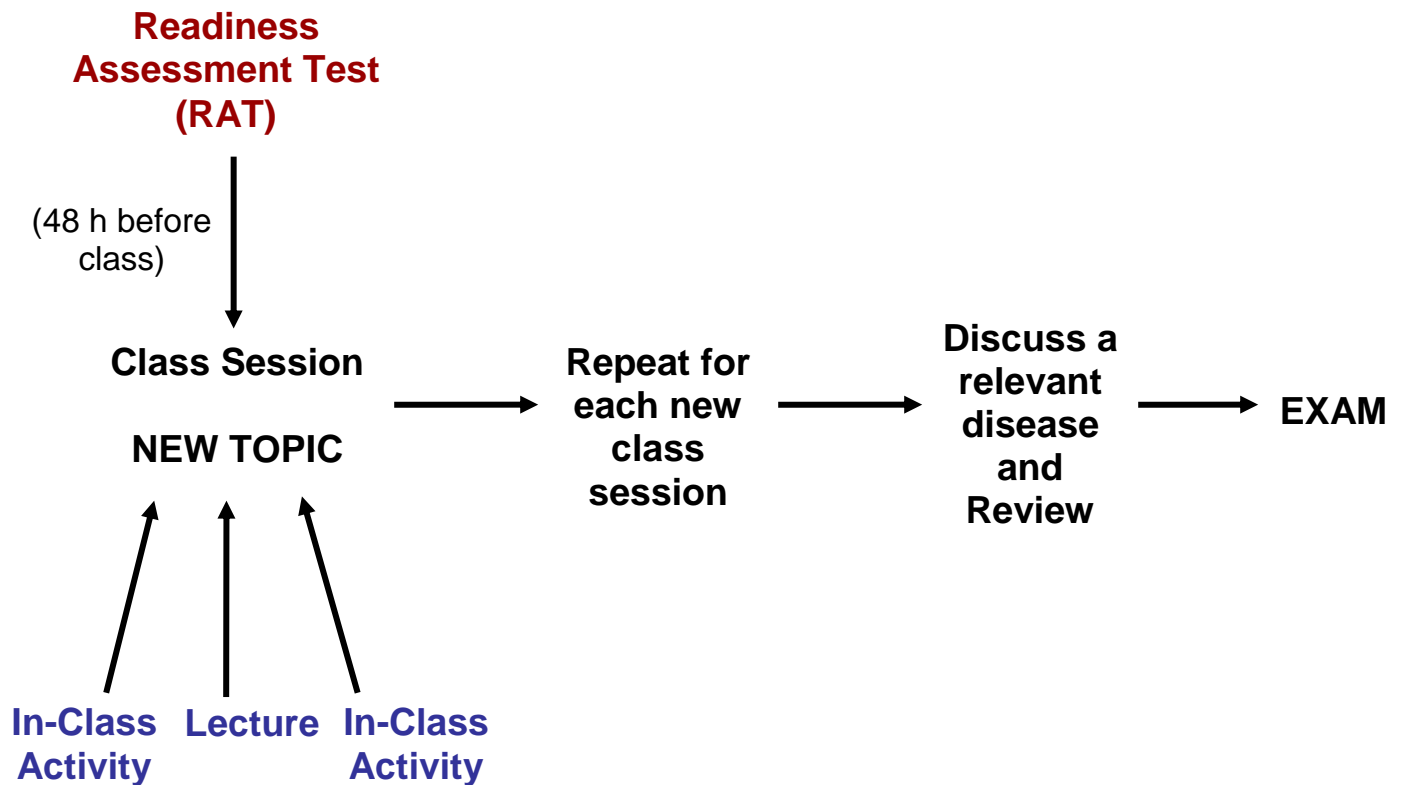
COURSE GOALS (What do I want you be able to do by the time you get out of this course?):

- 1) to *know the language* of molecular cell biology
- 2) to *understand fundamental concepts* of molecular cell biology
- 3) to *solve problems* based on information and facts in molecular cell biology
- 4) to *value* the application of molecular cell biology to modern medicine
- 5) to *engage* in open-minded and well informed discussions on the impact of biomedical discoveries on our family and friends

COURSE APPROACH: I will conduct this course in a combination of self-teaching, team-learning, and traditional lecture.

- 1) The “self-teaching” component is reading the textbook and utilizing the Blackboard site associated with this course. Quizzes will be posted on Blackboard, otherwise known as Readiness Assessment Tests (RATs). These RATs will assess your basic understanding of the required reading for the upcoming class sessions. YES, you will be quizzed on reading material BEFORE it is covered in class. This helps you to keep up with the material and helps me design the class session.
- 2) The “team-learning” will entail the formation of teams of 4 individuals per group (no more – no less!!). Team membership is for the duration of the semester. The teams are to be utilized for in-class activities. The activities are designed to cover course material and have the teams “teach” while conducting the activity.
- 3) We will not entirely get away from lectures. I will attempt to lecture only on material that seems to be problematic as a whole and not on every concept that is to be covered during the course. I will determine what areas are more problematic than others based on your responses to the RATs. Hopefully, lectures will not be longer than 30 minutes each (a couple per class session).

SO, THIS IS WHAT THE COURSE WILL LOOK LIKE:



RATS – “Readiness Assessment Tests”. These quizzes are designed to quickly assess your familiarity with the new material. The RAT will only cover the material for the new topic (the new upcoming session) and it requires that you read the new topics before coming to class. The RATs are posted on Blackboard 48 hrs before the class session. You will have only 45 minutes in which to take the RAT and you will not receive your score for the RAT until the quiz period is completed. Moreover, you can only access the RAT once! Correct answers will not be provided but you will be informed if you got a question wrong; this is to help you figure out the material on your own. To determine what material the RAT will be covering and when they will be available to take, look at the final page of this syllabus. Also, I will be providing you with an outline/notes for each major topic so that you know what concepts or issues to focus on when you are reading (these will be also be posted on Blackboard). The questions will cover new vocabulary words and overview of new general concepts.

LECTURES - I will attempt to keep the lecture short and if there is more than one concept that needs to be covered, each will be covered in a mini-lecture (rather than one big long lecture). I will be using Power Point Presentations (due to the structure of the room). All my presentations will be posted on Blackboard before class session, however updated versions may not be posted until after class session (this depends on how much I decide to redesign the session).

IN-CLASS ACTIVITIES – Before and following a mini-lecture, you will get into your teams and conduct an in-class activity. The activities are designed to help you go over and to apply concepts being covered. All activities must be conducted as a team. All team activities will end up on a test somehow.

iClicker Cloud. In-class interactive questioning system that allows professor to gauge the level of student understanding and students to ask anonymous questions. These will be used throughout the class period and semester. The sum total will be accounted for in the final grade.

ANALYSIS and REVIEWS – During the class session before an exam, we will hold a number of activities. The first is to discuss and assess a disease or newly developed therapy that is related to the topics to be covered on the upcoming exam. This is to provide you with an opportunity to apply the material that is being covered and to evaluate the applicability of what you are learning to modern medicine. We will also hold a team review. These activities are to help you remember what is to be covered on the exams.

EXAMS - The course is divided into FOUR sections and you will have an exam for each section. See the syllabus for the dates of the Exams or the Blackboard Calendar. These are progress exams that will test your understanding and your ability to APPLY all material covered in the text, in class, and on activities. Exams only cover material during that section of the course. Exams will be given electronically using the Lockdown browser to secure your computer. You will need a laptop with this program installed on exam days. If you do not have a laptop, you can borrow one from the library. Please tell them that it is for an exam and verify that it has Lockdown browser installed.

GRADING POLICY: Your grade will be determined on the basis of a comprehensive assessment of your skills and their development using the following elements.

- I. **Readiness Assessment Tests (RATs):** A total of 25 RATs will be provided to you. However, only the top 20 scores will count towards your grade (your five lowest RAT scores will be dropped). There will NO be makeups of RATs, missed RATs will be given a zero which can count toward your lowest grades.
- II. **iClicker Questions:** Multiple choice questions will be asked every class session that relate to material recently covered or to be covered in a class session. Although questions can be discussed amongst teammates, every student must respond with their own individual REEF account. iClicker questions and points cannot be made up.
- III. **Team Reviews:** A review will be held prior to each exam and will be taken as a team. These are designed to help students assess what they understand and what they still need to cover before the exam. These reviews will be conducted as teams and will be turned in for a grade. Depending on available time, these may be conducted during a class session or online.
- IV. **Progress examinations:** A total of four examinations will be administered. All will count towards your grade.
- V. **Final Examination:** An optional cumulative final will be administered during Finals Week at our designated time. This exam will can be used to *replace* your lowest exam grade.
- VI. **Attendance:** Attendance will be taken using the badge scanners outside of the lecture hall. Attendance is mandatory and is part of your grade.

GRADING POLICY:

Exams	400 points (4 exams/100 pts each)
RATs	200 points (20 quizzes/10 pts each)
Group work	100 points
iClicker	100 points
Team Reviews	120 points (4 reviews/30 points each)
Attendance	80 points
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	1000 Points Total

A = 900 – 1000 pts (90-100%)

B = 800 - 899 pts (80 – 89%)

C = 700 – 799 pts (70 – 79%)

D = 600 – 699 pts (60 – 69%)

F = < 599 pts (59% and below)

I do round off – so, an 89.6% is an “A” – but an 89.2% is a “B”. I do not push an 89.2% to an “A” considering that you will be given several opportunities to improve your grade (only the top 20 highest RAT scores out of 23 are kept and the lowest Exam grade is exchanged with your grade for the Final if it is higher). DO NOT ASK FOR EXTRA CREDIT OPPORTUNITIES.

Grades are not based on a curve. Everyone will receive a grade that is reflective of the effort put into the course, the knowledge learned during the course, and the skills acquired during the course.

You EARN your grade, I do not give you a grade.

MAKEUP POLICY:

(1) RATs: *The date of RATs will never change!* So don't complain that you didn't know – it is posted on this syllabus. **Since quite a few of the RATs will be dropped, there will be no makeups.** Missed RATs will be given a zero and can count toward your lowest grade.

(2) EXAMS: *The date of EXAMS will never change!* If you know ahead of time that you will not be available to take an exam, notify me and I will schedule for you to take the exam early, with no penalty. If you miss an exam and you can provide PROOF for your absence (you were admitted to the hospital for example), the exam will be rescheduled, at my convenience but must be taken before the graded exam is distributed to the class. If you miss the exam, and you cannot provide proof for your absence that I accept, there are **NO makeups!!**

CONTESTING: If anyone wants to contest the wording of a quiz question or of an exam question or contest that there could be more than one answer on a question, DO NOT contact me during class. **E-mail me.** If you can appropriately present your case, can rationally explain your point of view, I may give you credit (not guaranteed). If anyone wants to contest the scoring of an assignment, email me and I will review your argument for the assignment, however, this will entail an entire review of the assignment and could result in regrading, including earning a lower grade.

MISSING CLASS: Attendance will be monitored. It is up to you to determine whether you need to be here or not. Keep in mind that there are no makeups for missing REEF questions. If you are not in class or forgot your REEF, you do not receive points.

CIVILITY STATEMENT: All smart phones and tablets must be turned off or placed on silent mode. DO NOT answer phones while in class! In addition, please show up to class on time. It's quite disturbing to have individuals stroll into class late. Lastly, although laptops are allowed in class as a resource for class material (Blackboard access for example); however, they CANNOT be used for other activities other than those related to class.

HONORS CREDIT: I still haven't decided what will earn a student honor's credit. However, if you plan to do so, please notify me as soon as possible so that we can plan for your activities.

ACADEMIC DISHONESTY: It is the policy of the University of Texas at El Paso that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures.

For further information, please refer to UTEP's Handbook of Operating Procedures, Chapter 1: Student Conduct and Discipline <http://admin.utep.edu/Default.aspx?PageContentID=2084&tabid=30292> . Please also see Plagiarism and Scholastic Integrity webpage, at UTEP's Library: <http://libraryweb.utep.edu/research/plagiarism.php>

ADA ACCESSIBILITY: Students who need an accessible classroom or access to adjustable tables or chairs, should register no later than the last week in September for Spring Semester, or by the first week in April for Summer and Fall Semester with the Center for Accommodations and Support Services (CASS) (<http://sa.utep.edu/cass/>). CASS is located in Union East 106, phone 915-747-5148, email cass@utep.edu. If a student has or suspects he/she has a disability and needs an accommodation, he/she should contact the CASS.

MILITARY STATEMENT: If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact the instructor by phone and/or email at the earliest convenience.

MCB COURSE SCHEDULE – SPRING 2019

WEEK	DATE	TOPICS
1	Jan 22	Introduction: Why Cell Biology? and Discuss Cell Theory
	Jan 24	OVERALL CONCEPT = Central Dogma: Information Flow Topics to be covered: DNA Replication
2	Jan 29	
	Jan 31	Transcription
3	Feb 5	
	Feb 7	Translation
4	Feb 12	EXAM 1
	Feb 14	OVERALL CONCEPT = Creating Phenotype: Regulating Gene Expression and Protein Function Topics to be covered: Chromosome Structure
5	Feb 19	
	Feb 21	Transcriptional Regulation
6	Feb 26	
	Feb 28	Epigenetics
7	Mar 5	Regulating Protein Synthesis
	Mar 7	EXAM 2
8	Mar 12	OVERALL CONCEPT = Getting Proteins Where Their Supposed to Be: Protein Transport
	Mar 14	Topics to be covered: Nuclear Transport Cotranslational Translocation Vesicular Trafficking
	Mar 18-22	NO CLASSES – SPRING BREAK
9	Mar 26	OVERALL CONCEPT = Getting Proteins Where Their Supposed to Be: Protein Transport
	Mar 28	Topics to be covered:
10	Apr 2	Nuclear Transport
	Apr 4	Cotranslational Translocation
11	Apr 9	Vesicular Trafficking
	Apr 11	Exam III
12	Apr 16	OVERALL CONCEPT = Proteins at Work: Expressing Phenotype Topics to be covered: Protein Regulation
	Apr 18	
13	Apr 23	Mitosis versus Meiosis
	Apr 25	Cell Cycle Regulation
14	Apr 30	Apoptosis
	May 2	Cancer
15	May 7	
	May 9	EXAM IV
		FINAL: Thursday, May 16 th at 1:00 – 3:45 pm

April 5th – Course Drop Deadline - I will not “drop” you from the course; this is your responsibility. It is the policy of the College of Science that only a student can drop himself or herself from a course. In addition, the College of Science will remain aligned with the University and will not approve any drop requests after the semester drop date.

**Schedule for
Readiness Assessment Tests (RATs)
SPRING 2019**

- The RATs are posted on Blackboard but will not become available (you will not have access to the RAT) until 48 hrs before the class session.
- You will have only 45 minutes in which to take the RAT and you will not receive your score for the RAT until the quiz period is completed.
- Moreover, you can only access the RAT once!
- Correct answers will not be provided but you will be informed if you got a question wrong; this is to help you figure out the material on your own.
- All RATs will “open” or become available at 12:00 pm of the date indicated and will “close” or become unavailable at 12:00 pm of the date indicated
- Since quite a few of the RATs will be dropped, there will be no makeups (5 RATs that will be dropped).
- Please be aware that our syllabus is subject to change and that page numbers differ between different textbook editions. The pages listed below are based on the 8th edition of the textbook.

RAT	Date Open	Date Closed	TOPIC	Reading
0	Tues, Jan 22	Fri, Jan 25	Review of the Syllabus	On Blackboard
1	Tues, Jan 22	Fri, Jan 25	Cell Theory and Central Dogma	Ch1:p4-17; Ch4:p113-127
EC	Fri, Jan 25	Sun, Jan 27	Cells as Experimental Models and Tools of Cell Biology	Ch1:18-43; Ch4:128-156; Ch5: 157-184
2	Sun, Jan 27	Tues, Jan 29	DNA Replication	Ch7: 215-231
3	Tues, Jan 29	Thurs, Jan 31	Transcription	Ch8: 253-264
4	Sun, Feb 3	Tues, Feb 5	RNA processing	Ch8: 265-276
5	Tues, Feb 5	Thurs, Feb 7	Translation	Ch10: 315-326
6	Thurs, Feb 10	Mon, Feb 12	Replication vs Transcription vs Translation	
7	Tues, Feb 12	Thurs, Feb 14	Chromosome Structure	Ch6: 205-214
EC	Thurs, Feb 14	Sun, Feb 17	Complexity of Eukaryotic Genomes	Ch6: 187-204
8	Sun, Feb 17	Tues, Feb 19	Transcriptional Regulation	Ch9: 285-313
9	Tues, Feb 19	Thurs, Feb 21	Epigenetics	Ch9: 301-313
10	Sun, Feb 24	Tues, Feb 26	Post-transcriptional Regulation	Ch8: 276-284
11	Tues, Feb 26	Thurs, Feb 28	Translational Regulation	Ch10: 326-330
12	Sun, Mar 3	Tues, Mar 5	Regulating Protein Folding and Function	Ch10: 331-351
13	Tues, Mar 5	Thurs, Mar 7	Review of regulating gene expression	
EC	Thurs, Mar 7	Sun, Mar 10	Organization of the Nucleus	Ch11: 369-382
14	Sun, Mar 10	Tues, Mar 12	Nuclear Transport	Ch11: 355-368
15	Tues, Mar 12	Thurs, Mar 14	Cotranslational Translocation	Ch12: 383-389
16	Sun, Mar 24	Tues, Mar 26	Insertion of Proteins into Membranes	Ch12: 390-400
17	Tues, Mar 26	Thurs, Mar 28	Vesicular Trafficking – targeting proteins	Ch12: 400-412
18	Sun, Mar 31	Tues, Apr 2	Vesicular Trafficking – mechanism	Ch12: 412-416; Ch14: 479-483
19	Tues, Apr 2	Thurs, Apr 4	Overview of protein trafficking	
20	Tues, Apr 10	Thur, Apr 12	Cell Cycle	Ch18: 603-609
21	Sun, Apr 15	Tues, Apr 17	Cell Cycle Regulation	Ch18: 610-622
22	Sun, Apr 22	Tues, Apr 24	Mitosis & Meiosis	Ch18: 623-635; Ch14: 487-490
23	Tues, Apr 24	Thurs, Apr 26	Apoptosis	Ch19: 655-668
EC	Tues, Apr 17	Sun, Apr 22	Cell Renewal	Ch19: 637-654
24	Sun, Apr 29	Tues, May 1	Cancer	Ch20: 669-708
25	Sun, Apr 29	Wed, May 2	Mitosis, Meiosis, Cancer and Cell Cycle Review	