

**WELCOME to MOLECULAR CELL BIOLOGY**  
**BIOL 3314 - Spring 2025**

**INSTRUCTOR:** Charles T Spencer, Ph.D. (ctspencer@utep.edu)  
**OFFICE:** Biosciences Research Bldg, Rm. 5.148 (747-8776)  
**OFFICE HOURS:** Tuesday and Thursday 9:00am - 10:00am or [by appointment](#).  
**LECTURE:** Tuesday and Thursday 10:30pm – 11:50pm in UGLC 106

**REQUIREMENTS** for the course: **The CELL: A Molecular Approach**  
Ninth Edition  
By – Geoffrey M. Cooper and Robert E. Hausman

**Lockdown Browser** downloaded from the link on Blackboard  
**iClicker Cloud** either the phone app or account on your computer

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 9<sup>th</sup> 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

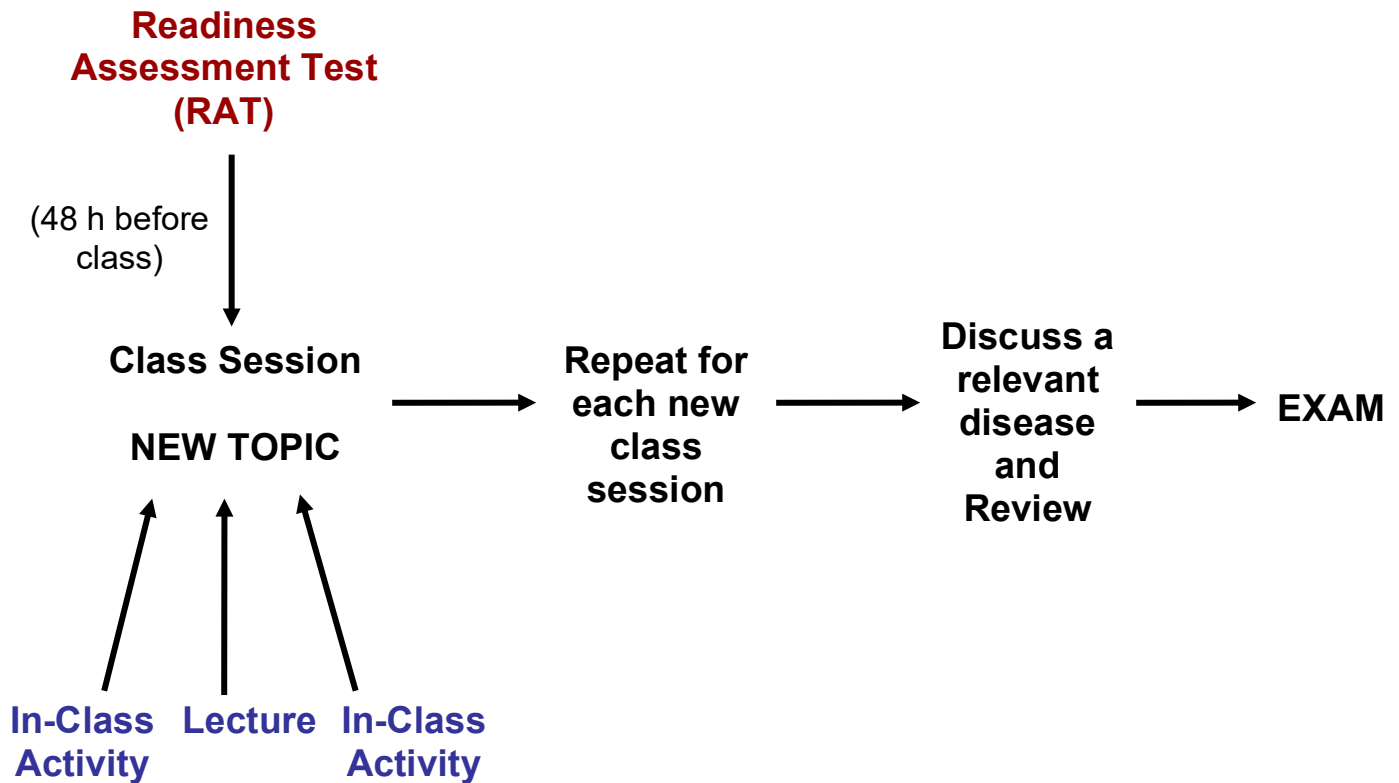
**COURSE GOALS** (What do I want you be able to do by the time you get out of this course?):

- 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 30 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).

**GROUP ACTIVITIES** – During or after class periods, 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. 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.

Exams will be given in two parts. The first will be taken as a group. You will work together to discuss the questions but each student will submit their own answer. These will be submitted and then the second part will be taken individually for the remainder of the time. Your total grade for the exam will consist of 80% individual score and 20% group score.

**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 four 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 randomly during random class sessions 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 iClicker 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 as homework.
- 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. Since the final is optional, not all groups will be present; therefore, the final exam will consist solely of individual questions with no group discussion.

If you are interested in an oral final examination, contact the professor for this possibility near the end of the semester. Oral examinations will be conducted one-on-one with the professor. Professor will ask students questions while the student delivers the answers on a white board.

## GRADING POLICY:

Exams	400 points (4 exams/100 pts each)
RATs	100 points (20 quizzes/5 pts each)
Group work	100 points
iClicker	100 points
Team Reviews	100 points (4 reviews/25 points each)

---

800 Points Total

A = 716 – 800 pts	(>89.5 - 100%)
B = 636 - 715 pts	(>79.5 – <89.5%)
C = 556 – 635 pts	(>69.6 – <79.5%)
D = 476 – 555 pts	(>59.5 – <69.5%)
F = < 475 pts	(<59.5%)

I do round off – so, >89.5% 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 25 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 not 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 iClicker questions. If you are not in class or forgot your iClicker, 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](mailto: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 2025**

<b>WEEK</b>	<b>DATE</b>	<b>TOPICS</b>
<b>1</b>	Jan 21 Jan 23	Introduction: Why Cell Biology? and Discuss Cell Theory
<b>2</b>	Jan 28 Jan 30	OVERALL CONCEPT = Central Dogma: Information Flow Topics to be covered: DNA Replication Transcription RNA processing Translation
<b>3</b>	Feb 4 Feb 6	
<b>4</b>	Feb 11 Feb 13	
<b>5</b>	Feb 18 Feb 20	OVERALL CONCEPT = Creating Phenotype: Regulating Gene Expression and Protein Function Topics to be covered: Chromosome Structure Transcriptional Regulation Epigenetics Regulating Protein Synthesis
<b>6</b>	Feb 25 Feb 27	
<b>7</b>	Mar 4 Mar 6	
<b>8</b>	<b>Mar 10-14</b>	<b>NO CLASSES – SPRING BREAK</b>
<b>9</b>	Mar 18 Mar 20	OVERALL CONCEPT = Getting Proteins Where Their Supposed to Be: Protein Transport Topics to be covered: Nuclear Transport Protein Translocation Vesicular Trafficking Cytoskeleton & Molecular Motors
<b>10</b>	Mar 25 Mar 27	
<b>11</b>	Apr 1 Apr 3	
<b>12</b>	Apr 8 Apr 10	
<b>13</b>	Apr 15 Apr 17	
<b>14</b>	Apr 22 Apr 24	OVERALL CONCEPT = Proteins at Work: Expressing Phenotype Topics to be covered: Cell Signaling Cell Cycle Regulation Apoptosis Cancer
<b>15</b>	Apr 29 May 1	
<b>16</b>	May 6 May 8	
		<b>FINAL:</b> Thursday, May 15 <sup>th</sup> at 10:00 – 12:45 pm

**April 4<sup>th</sup> – 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 unless you are withdrawing from the University entirely.

**Schedule for  
Readiness Assessment Tests (RATs)  
SPRING 2025**

- The RATs are posted on Blackboard 48 hrs before the class session.
- You will have only 30 minutes in which to take the RAT.
- 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 10:00 am of the date indicated and will “close” or become unavailable at 10:00 am 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 8<sup>th</sup> edition of the textbook.
- \*EC\* RATs are extra credit. Completing them will get you additional points. Not completing them won't affect you.

RAT	Date Open	Date Closed	TOPIC	Reading (8 <sup>th</sup> ed)
0	Tues, Jan 21	Fri, Jan 24	Review of the Syllabus	On Blackboard
1	Tues, Jan 21	Fri, Jan 24	Cell Theory and Central Dogma	Ch1:p4-17; Ch4:p113-127
*EC*	Fri, Jan 24	Sun, Jan 26	Cells as Experimental Models and Tools of Cell Biology	Ch1:18-43; Ch4:128-156; Ch5:157-184
2	Sun, Jan 26	Tues, Jan 28	DNA Replication part 1	Ch7: 215-231
3	Tues, Jan 28	Thurs, Jan 30	DNA Replication part 2	Ch7: 215-231
4	Sun, Feb 2	Tues, Feb 4	Transcription	Ch8: 253-264
5	Tues, Feb 4	Thurs, Feb 6	RNA processing	Ch8: 265-276
6	Sun, Feb 9	Tues, Feb 11	Translation	Ch10: 315-326
	Tues, Feb 11	Thurs, Feb 13	Replication vs Transcription vs Translation	
*EC*	Thurs, Feb 13	Sun, Feb 16	Complexity of Eukaryotic Genomes	Ch6: 187-204
7	Sun, Feb 16	Tues, Feb 18	Chromosome Structure	Ch6: 205-214
8	Tues, Feb 18	Thurs, Feb 20	Transcriptional Regulation	Ch9: 285-300
9	Sun, Feb 23	Tues, Feb 25	Transcriptional Regulation – Chromosome structure	Ch9: 301-313
10	Tues, Feb 25	Thurs, Feb 27	Epigenetics	Ch9: 301-313
11	Sun, Mar 2	Tues, Mar 4	Post-transcriptional Translational Regulation	Ch8: 276-284; Ch10: 326-330
	Tues, Mar 4	Thurs, Mar 6	Review of regulating gene expression	
*EC*	Thurs, Mar 6	Sun, Mar 16	Organization of the Nucleus	Ch11: 369-382
12	Sun, Mar 16	Tues, Mar 18	Nuclear Transport	Ch11: 355-368
13	Tues, Mar 18	Thurs, Mar 20	Cotranslational Translocation	Ch12: 383-389
14	Sun, Mar 23	Tues, Mar 25	Insertion of Proteins into Membranes	Ch12: 390-400
15	Tues, Mar 25	Thurs, Mar 27	Vesicular Trafficking – targeting proteins	Ch12: 400-412
16	Sun, Mar 30	Tues, Apr 1	Vesicular Trafficking – mechanism	Ch12: 412-416; Ch14: 479-483
17	Tues, Apr 1	Thurs, Apr 3	Cytoskeleton	Ch 14: 453-465; 472-479; 490-497
18	Sun, Apr 6	Tues, Apr 8	Cytoskeletal motors	Ch 14: 465-472; 479-490
19	Tues, Apr 8	Thurs, Apr 10	Regulating Protein Folding and Function	Ch10: 331-351
	Thurs, Apr 10	Tues, Apr 15	Overview of protein trafficking	
20	Tues, Apr 15	Thurs, Apr 17	Cell Cycle	Ch18: 603-609



21	Sun, Apr 20	Tues, Apr 22	Cell Cycle Regulation	Ch18: 610-622
22	Tues, Apr 22	Thurs, Apr 24	Mitosis and Meiosis (M Phase)	Ch18: 623-635
*EC*	Thurs, Apr 24	Sun, Apr 27	Cell Renewal	Ch19: 637-654
23	Sun, Apr 27	Tues, Apr 29	Cell Signal Transduction	Ch17: 565-599
24	Tues, Apr 29	Thurs, May 1	Apoptosis	Ch19: 655-668
25	Sun, May 4	Tues, May 6	Cancer	Ch20: 669-708
	Tues, May 6	Thurs, May 8	Mitosis, Meiosis, Cancer and Cell Cycle Review	