BIOL 319: Introduction to Molecular and Cellular Biology
Online course Winter Session 2022
December 13, 2021-January 15, 2022

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Virtual Office Hours: TBD

Appointments may be scheduled during my lunch period 11:30am-12:30pm CT, as well as immediately before and after work hours. In general, ***email is the best way to contact me***. I check email every morning, at lunch and late in the afternoon. You should normally get an email answer within 24-48 hours (but often sooner), whereas with a voicemail, you will have to wait until I am in my office. If I will be out of town or have no email access for some reason, I'll alert you to this before it happens unless it's an emergency. **I am happy to help you, so don't be afraid to ask.**

Blackboard (Bb) Help/WKU IT Help Desk
270-745-7000

Make Sure You Know How to Use Blackboard

Bb Student User Training
If you have not used Blackboard a lot, or if this is your first online class, I *highly* recommend signing up for and completing the Blackboard Student User Training. These are topical modules. Even for those who have used Blackboard, many find them useful.

To sign up, go to Blackboard and sign in, https://wku.blackboard.com/ultra/tools. Look for Student User Training… you will gain instant access upon signing up. Again, there is no credit for this for the class, and it is not required, but it could be very helpful for you and important for your success! OR,

Orientation Module
Complete the Orientation Learning Module at http://www.wku.edu/online/orientation/index.php

Other WKU Distance Learning Student Resources:

1. https://www.wku.edu/online/services/
2. You may also want to visit the WKU Student Resource Portal: http://www.wku.edu/online/srp/

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COURSE POLICIES

Prerequisites: Biology 120/121 and 122/123 with a "C" or better and Chem 120/121

REQUIRED TEXT:
The Cell; A Molecular Approach, Eighth Edition by Geoffry Cooper. Oxford University Press

CATALOG COURSE DESCRIPTION:
Introduction to molecular and cell structure, relating molecular structure and function to cellular structure and function. Special emphasis on protein and nucleic acid structure and function and their role in coordinating cellular activities.

COURSE OBJECTIVES:

1. To understand the physical and chemical properties of the major classes of macromolecules found in all cells.
2. To understand the roles of the major macromolecules, particularly proteins, in cellular function and regulation
3. To explore and understand the tools of molecular biology and how they have been, and are applied, to the study of cells
4. To understand how cellular diversity is generated
5. To understand how cells communicate
6. To appreciate the power of genomics and bioinformatics in our understanding of cells and complex biological systems.

LEARNING OUTCOMES: From this class, students should be able to

1. Describe the basic biochemical properties of the major cellular macromolecules including proteins, nucleic acids, carbohydrates and lipids.
2. Identify and describe cellular structures so that you can
    a. Explain the diversity and function of different cellular structures
    b. Compare and contrast prokaryotic and eukaryotic cells
3. Describe how energy is manipulated in biological systems so that you can
    a. Explain how cells obtain and transform energy
    b. Explain the central role of enzymes as biological catalysts
    c. Explain mechanisms of metabolic regulation
4. Describe the mechanisms by which an organism's genome is passed on to the next generation, so that you can:
    a. Explain how DNA is replicated
5. Describe how genes are organized into genomes, the functions of different DNA sequence elements, and how these sequences can be mutated so that you can:
    a. Predict the phenotypic consequences of mutations.
    b. Explain why some mutations do not result in discernable phenotypes.
    c. Explain how DNA damage occurs and how it is repaired
    d. Explain mechanisms that generate genetic diversity
6. Describe the Central Dogma of Biology so that you can

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    a. Explain the steps in gene expression and compare and contrast how these steps are accomplished in bacteria, archaea and eukarya
    b. Explain mechanisms of gene regulation at the level of transcription, translation and post-translation
    c. Describe exceptions to the Central Dogma
7. Describe molecular and cellular interactions so that you can
    a. Explain how proteins reach their final destinations in a cell
    b. Explain signal transduction and its regulation
8. Explain methods for studying and manipulating cells, so that you can:
    a. Explain how plasmids and bacteriophages are used in molecular biology
    b. Explain primary research literature and interpret the experimental data
    c. Identify appropriate methods to investigate the structures and functions cellular components

COURSE MATERIALS AND ASSIGNMENTS:
Students are responsible for all assigned readings including articles from the primary literature, review articles and any other source as assigned by the instructor.

USE OF TECHNOLOGY:
This is an online course where all required work will be completed online through the use of Blackboard and the Internet. If you do not know how to use Blackboard, tutorials are available online (see above).

All students are expected to have reliable internet access.
All students are expected to complete the Blackboard (Bb) Orientation module or Bb Student Training
All students will produce, record and upload formal presentations. This will require that you have video and audio recording capabilities on your computer OR that you have access to this equipment. Recordings can be accomplished by using the tools provided on Blackboard. It is the student's responsibility to ensure the quality of the recording. The instructor and all students taking this online course must be able to hear you clearly.

STUDENT EMAIL AND BLACKBOARD ANNOUNCEMENTS:
The instructors may need to contact individual students or the entire class outside the classroom time. The email address assigned by the University will be used for this purpose. All students should check their WKU email accounts and the Blackboard Announcements page every day. New announcements will appear at the top of the page, so read until you get to information you already know. Not checking email or reading the announcements is not an excuse for not knowing of information given via those mediums.

GRADING:
Grades are based on quizzes, exams, presentations of research topics, participation in discussion boards and assignments. Exams and quizzes may include multiple choice, fill-in-the-blank and short answer types of questions.

Quizzes:	112
Exam 1	100
Exam 2	100
Exam 3	100
Exam 4	100
Exam 5; Final Exam	100
Presentation:	100
Discussion board posts/responses:	50
Assignments:	100
Total possible points:	**862**

GRADING SCALE:
A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69%; F = 59% and less.

POSTING OF GRADES:
Grades will **not** be given out over the telephone. All grading results will be available through the course Blackboard site: https://blackboard.wku.edu. Please login as directed on the page. You may (and should) change your password by clicking on the Student Tools option. The gradebook is available under Student Tools.

ADA ACCOMMODATION STATEMENT:
In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, 1074. The phone number is 270.745.5004 [270.745.3030 V/TTY] or email at sarc.connect@wku.edu. Please do not request accommodations directly from the professor or instructor without a faculty notification letter (FNL) from The Student Accessibility Resource Center.

ACADEMIC INTEGRITY:
It is expected that each student will do his/her own work at all times and contribute equitably in all class activities. Student work, including any suspect discussion board postings may be checked by plagiarism detection software.

ACADEMIC MISCONDUCT:
Dishonesty, in any form (cheating, plagiarism, copying assignment answers etc.) will result in a failing grade. If you are unsure of what constitutes plagiarism it is YOUR responsibility to ask the instructor. Again, student work, including any suspect discussion board postings may be checked by plagiarism detection software.

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CIVILITY:
Students are expected to abide by the Code of Student Conduct:
https://www.wku.edu/studentconduct/student-code-of-conduct.php

WITHDRAWALS:
If you wish to withdraw from the course, you should do so by the dates mandated by the University: http://www.wku.edu/registrar/academic_calendars/. Be sure you are aware of these dates because credit for the course will not be changed after the University designated time. You may not drop or withdraw from the class after the designated time. It is YOUR responsibility to drop the class. Do NOT assume that I will do this for you.

Title IX MISCONDUCT/ASSAULT STATEMENT:
Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding
WKU's Title IX Sexual Misconduct/Assault Policy (#0.2070) at www.wku.edu/syllabusinfo

Discrimination and Harassment Policy (#0.2040) at https://www.wku.edu/policies/docs/251.pdf
Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Andrea Anderson, 270-745-5398 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121.

Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are "Responsible Employees" of the University and **MUST** report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's Counseling and Testing Center at 270-745-3159.

Title IX and ADA Accommodation information as well as other helpful links for students. You may access and/or link to this webpage at: www.wku.edu/syllabusinfo.

FAILURE OF TECHNOLOGY:
We will be using Blackboard and the Internet for work in this course*. Problems with Blackboard should be directed toward the IT Help Desk (their number is listed above).* Students should not put off things until the last minute. Always save often as your prepare your work and keep a permanent copy of your work in more than one place (a hard drive and a flash drive, for instance—or email it to yourself!), Do not work online during inclement weather! I have no tolerance for "I didn't save it" or "I lost it".

If you have a problem and call the IT Help Desk, forward a copy of the email they will send you when they've opened your case. In general, students are honest about having technical problems. However, there are people who claim they've called the Help Desk in an attempt to get more time to work on an assignment, discussion board posting, etc. I will contact the Help Desk for every case that I am told about to determine if there is something I can do in order to help you

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have the access that you need. **If I catch you not being honest about this, you will be reported to Judicial Affairs.** I'm an understanding person, but for such behavior, I have no tolerance. It's not fair to those who are honest and who may have genuine technical problems!

MY PLEDGES TO YOU

1. To be available to you either in a real or virtual environment to help you as you need it.
2. To do my best to have work graded and posted back to you within 7-10 days after their due dates.
3. To answer reasonable questions in person or by phone at my office during office hours or by e-mail at rodney.king@wku.edu within 48 hours.
4. To facilitate your learning by providing my expertise and research experience as a resource

Your continued enrollment in this class constitutes your acceptance of these policies.

DISCUSSON BOARDS:

While you may be accustomed to participating in face-to-face classes by attending and speaking up in class, in an online class your participation will consist of writing and posting your thoughts to electronic discussion boards and reading and responding to others' responses in writing.
In the discussion posting area, the instructor will post a topic/assignment/or question(s) for analysis and discussion. You will be expected to contribute posts that reflect your knowledge of the topic based upon the assigned readings as well as external sources. In addition to your original post on the topic, you may be asked to respond to your classmate's posts. This interaction with your classmates and the instructor will offer a rich opportunity to share impressions of the readings and share your perspectives of the material. I will notify you of any exceptions to this general rule.

Discussion board posts are all required and part of your course grade. They are NOT optional. Here are some guidelines to help you be sure to gain maximum credit on each board.

1. Do not attach files unless explicitly requested to do so.
    a. If you attach your postings rather than type them into the boards, do not be surprised if I send you a note that I will not grade them until they are posted correctly.
2. Remember that the Discussion Boards are supposed to take the place face-to-face class meetings. You wouldn't normally talk for a whole class, but these will take time, just like reading to prepare for class and listening to a classmate before responding in class.
3. Make sure you read the directions carefully and respond to classmates when requested.
4. If you do not follow directions, you will not be eligible for full credit.
5. There are no specific times you are required to log-in and participate. However, **there are due dates.** Pay close attention to posted due dates.
6. Your postings should be MEANINGFUL and use detailed paragraphs (that's 5-8 sentences). Citations should be used as appropriate. Use APA format.

    Quote or paraphrase from the assigned readings to support your postings with citations in APA format. If you use the assigned research article as the sole source, include the page number. Include links when you quote from other outside sources. If you link or cite outside sources, make sure they are scholarly. (This means no

blogs, biased special interest groups, or social networking sites.) Use news sources carefully.

IMPORTANT: I expect a reference to some source of information (text, external web site, or other books, articles, etc.) for every original post regardless of whether I specifically ask for it or not. Always ground your assertions and statements with citations. Begin to develop a habit of making all of your references and citations in APA format. As the semester progresses, I will expect you to have mastered APA style.

7. If I ask you to respond to a classmate, you must also be MEANINGFUL, which means that if you just post, "That's a good idea" or "I disagree," you won't get credit. It is okay to say, "I agree because……" and then explain yourself. Again, I'm expecting multiple sentences here, not just a single statement.
8. Build on others' responses to develop threads further.
9. Bring in related prior knowledge (work experience, prior coursework, readings, etc.)
10. Use proper netiquette (http://www.albion.com/netiquette/corerules.html: proper language, tone, mechanics, grammar, spelling, courtesy, and respect for others' opinions, etc.). Remember, this is not a blog or a chat room. The rules of good writing still apply. IM- and texting-speak are not permitted and will gain you a grade of 0.

Successful Online Posting:

1. Try to keep your posts to 150-200 words. Texts longer than 150-200 words are more difficult to follow on screen.
2. Better-formulated, grammatically correct, clear posts attract more attention (from both instructor and colleagues).
3. Before you post, first think about the assignment and jot down notes as you read.
4. Develop your initial post in a word processing program where you can edit; then post. This gives you the added advantage of leaving you with a record of your observations. The saved word processing format is always available to you to refer back to after the course is completed.
5. Cite and/or provide links to help readers associate and/or find the source you are paraphrasing or quoting.
6. Title your post with a descriptive and/or interesting topic line to flag attention and to solicit response from others.
7. After you have posted, check back to see if someone has responded and keep the dialogue going.

Example Grading Criteria for Topical Discussion Posts:

	Excellent	**Good**	**Poor**
Timely contributions	Original contributions posted by the due dates with at least two responses. *(2 points)*	Original contributions posted late and/or less than two responses. *(1 point)*	Postings late or missing. *(0 points)*
Responsiveness to assignment. Demonstration of knowledge and understanding gained.	Demonstrates clear and concise analysis. Relates to course materials or related articles. Page numbers or URLs are included. Uses APA style. *(2 points)*	Demonstrates some analysis. Relates case to personal experience. No references, page numbers or URLs included. Does not use APA style. *(1 point)*	Lacks critical analysis. Superficial or questionable relationship to the course material. *(0 points)*
Structure, mechanics, netiquette, and validity of sources (see above)	Well-formulated, grammatically correct. Proper netiquette. Reliable/scholarly sources. *(2 points)*	Well-formulated, Proper netiquette. Satisfactory, but not scholarly sources.*(1 point)*	Lacks structure. Improper netiquette. Unreliable/biased sources. *(0 points)*

RESEARCH TOPICS PRESENTATIONS:
Presentations will be based on appropriate topics approved by the instructor. Presenters should consult with the instructor as needed. Each presentation must be tailored to the topic and based on up-to-date, scientifically sound research. You will be graded based on your demonstrated depth of understanding of the subject (theory, methodology, mechanisms, etc.), the logic of you interpretations and your ability to get your point across; this includes stylistic considerations including clarity of your presentation, organization and quality of your visual aids.

This is a winter term course and we will move through the material quickly. You will work at your own pace but **you must complete work by the due dates** published on Blackboard. It is your responsibility to keep up. A major part of your success in this course will be how well you manage your time and your ability to meet deadlines. Don't procrastinate!

I cannot overemphasize how important reading and understanding the required textbook is for your success in this course. Read ahead, make notes and ask questions. Use the textbook resources. Quiz yourself by answering the questions at the end of the chapters.

Biology 319 Winter Term Lecture Schedule:

NOTE: This schedule is subject to change and does NOT include information on quizzes or other assignments. Detailed information on due dates for quizzes, assignments and presentation will be provided on Blackboard. All Exams are timed and you will be required to use lockdown browser. The timer begins when you start the exam.

Week 1	Syllabus. Respond to Discussion Board post Introduce yourself Discussion Board post Chapter 1 Introduction to Cells and Cell Research Chapter 2 Molecules and Membranes Chapter 3 Bioenergetics and Metabolism Chapter 4 Fundamentals of Molecular Biology Exam 1: Saturday, Dec. 18. Additional details and instructions will be provided on the course BB site.
Week 2	Chapter 5 Genomics, Proteomics and Systems Biology Chapter 6 Genes and Genomes Chapter 7 Replication Maintenance and Rearrangements of Genomic DNA Exam 2: Thursday Dec. 23. Additional details and instructions will be provided on the course BB site
Week 3	Chapter 8 RNA synthesis and processing Chapter 9 Transcriptional Regulation and Epigenetics Exam 3: Saturday Jan 1. Additional details and instructions will be provided on the course BB site.
Week 4	Chapter 10 Protein synthesis, processing and regulation Chapter 12 Protein Sorting and Transport Chapter 17 Signaling Exam 4: Saturday Jan 8. Additional details and instructions will be provided on the course BB site.
Week 5	Chapter 18 The Cell Cycle Chapter 19 Cell Renewal and Cell Death Chapter 20 Cancer Exam 5: Saturday Jan 15. Additional details and instructions will be provided on the course BB site.