

BIOL 120 – Biological Concepts: Cells, Metabolism and Genetics
Winter 2024

Lectures: On the Web from 12/11/23 – 01/13/24

Homepage: <http://blackboard.wku.edu> Login using your Net ID and Password

PROFESSOR INFO:

Ajay Srivastava, PhD, MBA

Office Phone: 270-745-6008

e-mail: ajay.srivastava@wku.edu (best way to get in touch with me)

Required Textbook: **Freeman's Biological Science, 7th Edition.**

Access comes with registration in this course. Please read the statement on textbooks in this syllabus for more information.

Required Student Access Kit: Mastering Biology, Access comes with registering for this course.

Required Classroom Response System: None



GENERAL EDUCATION COURSE CONTENT AND GOALS:

Course content and goals: This course is designed for Biology and science majors and will emphasize: cellular organization and processes, metabolism, DNA structure and replication, and Mendelian and population genetics. This course requires that Biol 121 be taken as a co-requisite.

After a student completes this course they will have a foundational knowledge in the fields of biochemistry, cell biology, molecular biology and genetics. Specifically, they will be able to:

- Recognize and describe the structure and function of biological molecules
- Outline and compare cellular energetics, cellular metabolism, and photosynthesis.
- Recognize and describe the structure and function of prokaryotic and eukaryotic cells, as whole entities and in terms of their subcellular organization and processes.
- Describe and explain the synthesis, structure, and function of nucleic acids and proteins in prokaryotes and eukaryotes.
- Understand and apply the principles of inheritance from molecular mechanisms to population consequences (diversity).
- Appraise and evaluate biological knowledge in an ethical and social context.

In addition, this course fulfills the D.1. (Science/Mathematics) general education requirement.

Natural Science Explorations Category of Colonnade

This course fulfills the Natural Science Explorations Category of Colonnade. Students will gain the ability to:

1. Demonstrate and understand the methods of scientific inquiry in biology
2. Explain basic concepts and principals in biology
3. Apply scientific principles to interpret and make predictions in biology
4. Explain how scientific principles relate to issues of personal and/or public importance

COURSE OVERVIEW:

This online summer term course covers all the same basic material and uses the same textbook that would be found in a regular semester Bio 120 course, only it does so in less than three weeks. As the lab for this course (Bio 121) is a co-requirement, you will be required to take Bio 121 in the summer or fall term if you have not already done so.

All of the assignments and exams will be done online. To keep up with the material, students will need to read approximately one chapter of the textbook (about 15-20 pages) per day (see suggested reading and exam schedule in Blackboard). PowerPoint lecture notes will be provided as an outline of the most important points and to help you in your reading and studying.

Assignments will be due almost daily and exams are due in blocks. That is, tests are due two at a time. This is to allow some flexibility in student's schedules. Assignments and exams can be done any time before their due dates and it is recommended that they are done early so that assignments/exams are not accidentally missed.

SCHEDULE:

A suggested reading schedule and the due dates for assignments and tests will be placed in the "Content" folder on the Blackboard course website.

<u>Tentative Lecture Schedule</u>		
Class Hours: <u>On the web, MTWRF</u>		
DAY	Tentative Topic	Text section
Section 1	The Chemistry of Life	Chapters 1-6.1
Day 1	Cell Theory /The Tree of Life/ Doing Biology	
	Atoms / Chemical evolution	
Day 2&3	Carbon and Water	
Day 4&5	Proteins	
	Nucleic Acids	
Day 6	Carbohydrates & Lipids	
Section 2	Cell – the fundamental unit of life	Chapters 6.2-7, 11-12
Day 7	Prokaryotic and Eukaryotic Cells	
	Membrane structure and function	
Day 8	Cytoskeleton	
	Cell Adhesion / recognition	
Day 9	Cell communication	
Day 10	Cell cycle – mitosis / cytokinesis	
	Cancer	
December 28th	Exams 1 & II are due at 11:59PM CDT on Blackboard	

Section 3	Energy – What Powers the Cell	Chapters 9-10
Day 12	An Introduction to Metabolism, Glycolysis	
	Glycolysis II	
Day 13	Kreb's cycle	
	Electron transport chain	
	Fermentation	
Day 14&15	Photosynthesis	
Section 4	Genetics – Information transfer	Chapters 13-17
Day 16	Meiosis: Mechanism and Consequences	
	Meiosis: Why?	
Day 17	Mendel and the Gene	
	Chromosomal Basis of Heredity	
Day 18&19	The Molecular Basis of Heredity/ DNA Replication	
	Central Dogma	
	Transcription	
	Translation	
	DNA Technology/ Genomics	
January 13 th	Exam III&IV are due at 11:59PM CDT on Blackboard	

COURSE POLICIES:

STATEMENT ABOUT E-TEXTBOOK AND ONLINE ACCESS

The Department of Biology at WKU has worked together to reduce the price of course materials for students. In order to save you money, maximize your effective use of your textbook, increase learning and evaluate the best ways of teaching you difficult topics, we have entered into a partnership with PEARSON.

By enrolling in this course, you agree to purchase the digital materials associated with this course. These materials include a 6 to 24 month (depending on the course) access to Freeman's Biological Science, 7th edition and Mastering Biology (for assignments), where appropriate, a downloadable e-copy of the textbook, and the option to purchase a loose leaf copy of your textbook at a greatly reduced cost. The cost per text is about 35% to 50% the cost of purchasing a new textbook, even before purchasing online materials. If you would like to purchase a printed copy at a reduced price, you must order it through The WKU Store during the first week of class.

In order to make these savings available to you, we have partnered with The WKU Store to streamline the delivery process. As a result, after drop/add period, you will be billed the cost of materials for the course. Each student will have access to all course materials from day one. If you choose to drop the course during the regular add-drop period you will not be charged for the online portion of the material. You should note that for this course, you WILL BE CHARGED for the digital materials. Please DO NOT buy a copy of the book from online or local vendors. ONLY the digital format is required for use in this course.

EXAM FORMAT: Exams will be administered online on Blackboard and may include true/false, multiple choice, matching, diagrams, and other types of questions. The final exam is comprehensive.

The first three exams will have ~40 questions and the final exam will have ~80 questions. You will be given 60 minutes to take each of the exams. You will be given a score as soon as you complete each exam and **you will have a single opportunity to take the exam.**

GRADING: There will be a total of approximately 740 points possible in this course, consisting of some variation of.....

- 240 pts. - Twelve 20-point Assignments
- 300 pts. - Three 100-point Exams
- 200 pts. - One 200-point Cumulative Final Exam (100 pts. material SINCE Exam III + 100 pts. on Exam I-III material)
- **Total = ~740 pts.**

Final letter grades will be determined based on the following percentage scale. To determine your final grade (%) use the formula: (your raw score/740) X 100

Grading Scale :		
90-100%	A	Outstanding
80-89%	B	Above average
70-79%	C	Average
60-69%	D	Below Average
Below 60%	F	Failing

Withdrawal by the deadline will get you a grade of "W"

DISABILITY ACCOMODATIONS: "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, Room 1074. The SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via 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."

If you need extra time on assignments, you must make arrangements with me PRIOR TO THE DUE DATE of the assignment.

The Learning Center (TLC) Peer Tutoring Services

The Learning Center (TLC) provides free tutoring services that empower students to achieve academic success. Trained peer tutors are available to review course content, answer questions, and demonstrate effective study strategies. TLC offers individual appointments and group sessions (PASS) for hundreds of undergraduate courses. For more information or to make an appointment, visit www.wku.edu/tlc.

Links to Additional Information for Students

More information about various topics concerning students in this course can be found at: <https://www.wku.edu/syllabusinfo/index.php>

RSI (Regular and Substantive Interaction) statement:

In this course, regular and substantive interaction will occur as follows:

- Replies to e-mails within 24-48 hours
- Regular announcements pertaining to the course
- Assignments and Exams Deployed throughout the duration of the course
- Discussion Board for Student, Professor Interaction
- Recorded Zoom Lectures

**THIS SYLLABUS IS SUBJECT TO CHANGE AT MY DISCRETION.
HOWEVER, I WILL NOTIFY YOU WHEN I MAKE A CHANGE. PLEASE
CHECK THE DATE THIS SYLLABUS WAS LAST UPDATED TO ENSURE
THAT YOU HAVE THE LATEST VERSION**

**BY STAYING ENROLLED IN THIS CLASS YOU ACCEPT THE POLICIES
OUTLINED IN THIS SYLLABUS**