

BIOL241

STUDENT WARNING: This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

Course Summary

Course : BIOL241 **Title :** Cell Biology

Length of Course : 8

Prerequisites : BIOL134, CHEM134 **Credit Hours :** 3

Description

Course Description: This cell biology course will provide a detailed understanding of the fundamental processes of cellular functions. The course will include aspects of prokaryotic and eukaryotic cells as both often share similar mechanisms. In the first half of the course, the focus is on the macro-level with an exploration of basic cell characteristics, cellular membranes, cellular respiration and how cells interact with the environment. In the second half of the course, the focus is on genetics with a look at chromosomes, genes, gene expression, how cells accomplish DNA replication, repair errors that can result in DNA, how cells reproduce, how cells communicate, and finally we will explore the relationship between cancer and the immune system at the cellular level. Prerequisite: BIOL134, CHEM134

Course Scope:

This course is an exploration of the cellular characteristics, interactions, and processes of prokaryotic and eukaryotic cells. The intent is to develop an understanding of how living cells interact at the macro-level with the environment then turn our attention internal to investigate the genetic mechanisms that regulate these functions.

Objectives

The successful student will fulfill the following learning objectives:

- CO-1 Explain the characteristics of prokaryotic and eukaryotic cells to include enzyme activities.
- CO-2 Compare and contrast biological membranes to include both the plasma membrane and cytoplasmic, organelle, membranes.
- CO-3 Describe cellular respiration in both animal and plant cells.
- CO-4 Illustrate the extracellular matrix, the interaction of cells with their environment and the cytoskeleton.
- CO-5 Summarize chromosomes, the genome, genes, and gene expression.
- CO-6 Explain control of gene expression, DNA replication and repair.
- CO-7 Evaluate cellular reproduction, signaling, and signal transduction pathways.
- CO-8 Describe cancer and the immune response.

Outline

Week 1: Student Introductions, Introduction to Cell and Molecular Biology, Thermodynamics, enzymes, and metabolism

Learning Objective(s)

CO-1, CO-2

Reading(s)

BIOL240 Syllabus

Karp Text:

Chapter 1 (*Introduction to the Study of Cell and Molecular Biology*)

Chapter 3 (*Bioenergetics, Enzymes, and Metabolism*)

Assignment(s)

Week 1 Forum

Week 1 Assignment

Quiz #1: Karp *Chapters 1 and 3*.

Week 2: Plasma and cytoplasmic membranes, Cytoplasmic membranes and trafficking

Learning Objective(s)

CO-2

Reading(s)

Karp Text:

Chapter 4 (*The Structure and Function of the Plasma Membrane*)

Chapter 8 (*Cytoplasmic Membrane Systems: Structure, Function, and Membrane Trafficking*)

Assignment(s)

Week 2 Forum

Week 2 Assignment

Quiz #2: Karp *Chapters 4 and 8*.

Week 3: Animal and plant cell respiration, Carbohydrate metabolism

Learning Objective(s)

CO-3

Reading(s)

Karp Text:

Chapter 5 (*Aerobic Respiration and the Mitochondrion*)

Chapter 6 (*Photosynthesis and the Chloroplasts*)

Assignment(s)

Week 3 Forum

Week 3 Assignment

Quiz #3: Karp *Chapters 5 and 6*.

Week 4: Cells and the extracellular space, Cytoskeletal structure and cell movement

Learning Objective(s)

CO-4

Reading(s)

Karp Text:

Chapter 7 (*Interactions Between Cells and Their Environment*)

Chapter 9 (*The Cytoskeleton and Cell Motility*)

Assignment(s)

Week 4 Forum

Week 4 Assignment

Quiz #4: Karp *Chapters 7 and 9*

Week 5: Genes, The Genome, Gene expression, Transcription, Translation

Learning Objective(s)

CO-5

Reading(s)

Karp Text:

Chapter 10 (*The Nature of the Gene and the Genome*)

Chapter 11 (*Gene Expression: From Transcription to Translation*)

Assignment(s)

Week 5 Forum

Week 5 Assignment

Quiz #5: Karp *Chapters 10 and 11*.

Week 6: Gene regulation, DNA replication, DNA repair mechanisms

Learning Objective(s)

CO-6

Reading(s)

Karp Text:

Chapter 12 (*Control of Gene Expression*)

Chapter 13 (*DNA Replication and Repair*)

Assignment(s)

Week 6 Forum

Week 6 Assignment

Quiz #6: Karp Chapters 12 and 13.

Week 7: Replication of cellular organelles, Cell signaling within and between cells

Learning Objective(s)

CO-7

Reading(s)

Karp Text:

Chapter 14 (*Cellular Reproduction*)

Chapter 15 (*Cell Signaling and Signal Transduction: Communication Between Cells*)

Assignment(s)

Week 7 Forum

Week 7 Assignment

Quiz #7: Karp Chapters 14 and 15.

Week 8: Cancer Biology, The Immune System

Learning Objective(s)

CO-8

Reading(s)

Karp Text:

Chapter 16 (*Cancer*)

Chapter 17 (*Immune Response*)

Assignment(s)

Week 8 Forum

Week 8 Assignment

Final Exam

Evaluation

Forum Assignments (8)

The student will be responsible for participating in Forum activities in which each student will respond to questions posed by the instructor, offer his/her feedback to the questions posed, and respond to at least two of his/her classmates' posts.

Evaluation/Grading of each Forum Assignment: Postings will be evaluated on their quality and the degree to which the postings promote discussion with classmates. Participation on all forums is required. Points are allocated based on the original posting and replies (Total of 100 points):

The initial post is due by **Wednesday** of the assigned week.

Forum responses are due by **Sunday** of the assigned week.

Online Quizzes (7)

Each of the quizzes will cover the reading material from the Karp textbook. Each quiz will be open book format and non-proctored. You will have 2 hours to take each quiz which will contain 20 questions from the Karp textbook.

Do not click on the quiz until you are ready to take the quiz! You may only access the quiz one time! If you attempt to access the quiz before you are ready to take it and then try to go back and access it again later, you will be locked out of the quiz and will receive a ZERO. Once you begin the quiz, the timer will begin running continuously for the 2 hours; therefore, you have 2 hours from when the timer begins to complete your quiz. The quiz will auto-submit if you go over this limit and record a zero. Be sure not to exceed this limit.

Specific Karp chapters covered for each of the quizzes can be found in the Course Outline section of the syllabus below and inside the electronic classroom in the weekly Lessons.

Weekly Assignments (8)

Each week you will complete a weekly assignment to submit for grading inside the assignments area of the classroom. The list of questions will cover material relevant to the weekly reading in the Karp textbook chapters, the weekly discussion forum, and/or any additional reading or reference material(s) provided for the assignment. The questions must be answered completely using full sentences. Typically, three to five (or more) sentences will be required to provide an adequate response to the assignment question to receive full-credit.

The weekly assignments are application-type questions and are designed for you to think critically about the reading material. For example, you will be asked to propose hypotheses, design experiments, and/or interpret results in these weekly assignments to apply the knowledge you have learned from your weekly readings and discussions in the forums.

Evaluation/Grading of the Weekly Assignment Questions: Grading of your Weekly Assignment Questions will be based on;

- (20%) Complete and thorough response to each question
- (35%) Use of concepts from the Karp textbook and/or additional references or resources provided
- (35%) Accurate use of concepts
- (10%) Spelling, grammar, and punctuation

Final Exam

A Final Exam for the course is a comprehensive exam that will cover concepts integrated throughout the course. The Final Exam will become available in the tests and quizzes section of the electronic classroom on Monday of week 8 and is due by the last day of the course or Sunday of week 8 at 11:55 PM. The Final Exam

will be 50 questions, open book and open note, not proctored, and you will have 3 hours to complete the exam once you begin. The Final Exam is worth 23% of the final course grade.

Please see the [student handbook](#) to reference the University's [grading scale](#).

Grading:

Name	Grade %
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Materials

Book Title: Karp's Cell and Molecular Biology, 8th ed - the VitalSource e-book is provided inside the classroom

Author: Karp

Publication Info: Wiley

ISBN: 9781118886144

Required Technology

- See the Technology Requirements section of the undergraduate catalog for the minimum hardware and software requirements.
 - Microsoft Office 365 is available to APUS students for free. To sign up, visit <http://products.office.com/en-us/student>. If you have questions about accessing the software, please contact Classroom support at classroomsupport@apus.edu
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Course Guidelines

Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format.

Tutoring

- [Tutor.com](#) offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.

- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

Turn It In

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

Academic Dishonesty

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

Submission Guidelines

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

Disclaimer Statement

- Course content may vary from the outline to meet the needs of this particular group.

Communicating on the Forum

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- “Substantive” means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says “I agree” is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.
- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

Identity Verification & Live Proctoring

- Faculty may require students to provide proof of identity when submitting assignments or completing assessments in this course. Verification may be in the form of a photograph and/or video of the student's face together with a valid photo ID, depending on the assignment format.
- Faculty may require live proctoring when completing assessments in this course. Proctoring may include identity verification and continuous monitoring of the student by webcam and microphone during testing.

University Policies

[Student Handbook](#)

- [Drop/Withdrawal policy](#)
- [Extension Requests](#)
- [Academic Probation](#)
- [Appeals](#)
- [Disability Accommodations](#)

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