

**LINCOLN UNIVERSITY
DEPARTMENT OF BIOLOGY
COURSE SYLLABUS**

COURSE TITLE:	Cell Biology	COURSE NUMBER:	BIO207, 207L
CREDIT HOURS	4	PREREQUISITE (S):	BIO104
TERM:	S2017	CO-REQUISITE (S)	
COURSE METHOD	Lecture and Laboratory	MEETING DAY AND TIME:	
INSTRUCTOR:		CLASSROOM/LAB/STUDIO LOCATION:	
OFFICE LOCATION:		E-MAIL:	
OFFICE HOURS:		PHONE EXTENSION:	

COURSE DESCRIPTION: This course studies the fundamental unit of life, the living cell. The course focuses on studies of cell structure and function at the cellular, subcellular, and molecular levels. Topics covered include organelles, micro-tubular and cytoskeletal components, signaling pathways and principles of bioenergetics.

REQUIRED TEXT: Alberts, Bruce. Essential Cell Biology, 4th edition. 2014
ISBN 978-0815345251

REQUIRED MATERIALS: None

CSLOs	PSLOs	ILOs	Measures of PSLO
CSLO_1	4c	5, 8	2, 3, 4, 5, 7, 8
CSLO_2	4c	5, 8	2, 3, 4, 5, 7, 8
CSLO_3	4d	5, 8	2, 3, 4, 5, 7, 8
CSLO_4	4d	5, 8	2, 3, 4, 5, 7, 8
CSLO_5	4d	5, 8	2, 3, 4, 5, 7, 8
CSLO_6	4d	5, 8	2, 3, 4, 5, 7, 8
CSLO_7	4b	5, 8	2, 3, 4, 5, 7, 8
CSLO_8	4c	5, 8	2, 3, 4, 5, 7, 8
CSLO_9	4c	5, 8	2, 3, 4, 5, 7, 8
CSLO_10	4c	5, 8	2, 3, 4, 5, 7, 8
CSLO_11	4c	5, 8	2, 3, 4, 5, 7, 8
CSLO_12	4c, 4d	5, 8	2, 3, 4, 5, 7, 8
CSLO_13	2,3	1	1, 6
CSLO_14	2	1	1
CSLO_15	2	1	6

COURSE STUDENT LEARNING OUTCOMES (CSLO):

Students that pass this class will understand and be able to apply the knowledge of the below in a scientific setting.

1. Cellular polymer biosynthesis
2. Protein Structure and function
3. How chromosomal DNA code is converted into protein
4. Gene Expression Control
5. Genetic Manipulation
6. DNA replication
7. Cellular energy generation
8. Membrane structure and transport
9. How cells communicate with each other
10. Apoptosis/necrosis
11. Cellular structure proteins
12. Eukaryotic Cell Meiosis and mitosis

Furthermore, by the completion of this course, students can expect to have:

13. Expand scientific comprehension of written articles
 - a. Learn major components of scientific journal articles
 - b. Learn to interpret data published in scientific journal articles
 - c. Analyze and critique, in written and oral form, published cell biology articles.
14. Learn to Organize data and information for presentation
15. Develop public speaking skills to be able to communicate properly in Cell Biology

PROGRAM STUDENT LEARNING OUTCOMES PSLO):

2. Communicate effectively biological concepts through written, spoken and visual means.
3. Interpret numerical displays of data and apply quantitative skills and reasoning to biological problems.
- 4a. Explain the processes that lead to evolutionary change and recognize biological structures and functions as products of evolutionary change.
- 4b. Relate energy flow to nutrient cycling at multiple levels of biological organization.
- 4c. Correlate structure and function at multiple levels of biological organization.
- 4d. Describe how genetic information is stored, expressed and transmitted from one generation to the next

INSTITUTIONAL LEARNING OUTCOMES (ILO):

1. Effective Communication
5. Critical Thinking
8. Integrative & Life-Long Learning

DIRECT AND INDIRECT ASSESSMENT MEASURES FOR EACH SLO:

1. Laboratory reports
 - Measured by rubrics that calculate the students' competency in effectively communicating the hypothesis, purpose, methods, results and analysis of an experiment.

- Standard: 75% of the students should reach the minimally acceptable score of 75%.
2. Quizzes
- Entire quizzes or select quiz questions that measure a specific SLO.
 - Standard: 75% of the students should reach the minimally acceptable score of 75%.
3. Multiple choice (MC) questions on hour and final exams
- Select MC questions designed to measure a specific SLO on exams.
 - Standard: 75% of the students should reach the minimally acceptable score of 75%.
4. Short answer questions on hour and final exams
- Select short answer and problem solving questions designed to measure a specific SLO on exams.
 - Standard: 75% of the students should reach the minimally acceptable score of 75%.
5. Essay questions on hour and final exams
- Select essay questions designed to measure a specific SLO on exams.
 - Standard: 50% of the students should reach the minimally acceptable score of 75%.
6. Oral presentations
- Assessed by rubrics to measure effective communication of biological concepts.
 - Standard: 100% of the students should reach the MAS of 75%.
7. In-class assignments
- Designed to measure a specific SLO and assessed by rubrics.
 - Standard: 75% of the students should reach the MAS of 75%.
8. Homework questions
- Designed to measure a specific SLO and assessed using rubrics.
 - Standard: 80% of the students should reach the MAS of 75%.

CALCULATION OF FINAL GRADES:

Lecture and recitation grading:

Four one hour exams	40 %
Assignments + Quizzes:	15%
Oral Presentation on selected topic	5%
Attendance and Participation:	5%
Cell Laboratory	20%
Cell Laboratory Final Project	5%
Cumulative Final Exam:	10 %
Total:	100%

GRADING SCALE: (Should follow Department and/or College Template)

93 –100 = A	77-79 = C+
90-92 = A-	72-76 = C
87-89 = B+	68-71 = C-
83-86 = B	65-67 = D+
80-82 = B-	58-64 = D
	Below 58 = F

The lecture-part is worth 75% and the lab-part 25% of the final grade.

The recitation grade will be part of the lecture grade.

SCHEDULE OF LEARNING TOPICS COVERED-CLASS

CLASS MEETS: •ASSIGNMENT SELECTION & SCHEDULE MAY BE SUBJECT TO CHANGE•	
Week 01:	Principle Features of Cells
Week 02:	Chemical bonds/groups, Sugars, Fatty Acids
Week 03:	Amino Acids, Proteins
Week 04:	Nucleotides, Protein Structure and Function
Week 05:	Energy, Catalysis and Biosynthesis
Week 06:	DNA and Chromosomes
Week 07:	Control of Gene Expression, Nucleic Acid Hybridization
Week 08:	Cell Membrane Structure, Membrane Transport
Week 09:	Glycolysis, Citric Acid Cycle, Oxidative Phosphorylation
Week 10:	Electron Transport Chain, Chloroplast, Mitochondria
Week 11:	Membrane Enclosed Organelles, Protein Sorting, Cytoskeleton, Microtubules
Week 12:	Actin filaments, Muscle Contraction, Cell signaling, G-proteins, Enzyme-linked Receptors
Week 13:	Cell Cycle Control Apoptosis and Necrosis, Cell Division, Mitosis
Week 14:	Meiosis, Tissues and Cancer.
Week 15:	Review

SCHEDULE OF LEARNING TOPICS COVERED-LABORATORY

CLASS MEETS: •ASSIGNMENT SELECTION & SCHEDULE MAY BE SUBJECT TO CHANGE•	
Week 01:	Introduction
Week 02:	Bacteriological Techniques
Week 03:	Bacterial Microscopy
Week 04:	Eukaryotic Microscopy
Week 05:	Sugar metabolism
Week 06:	Enzymes
Week 07:	Protein Solubilization
Week 08:	ELISA, Antibody function
Week 09:	Review
Week 10:	Respiration
Week 11:	Cell Fractionization
Week 12:	Cell cycle
Week 13:	Apoptosis
Week 14:	Cell Culture
Week 15:	Lab Practical

UNIVERSITY ATTENDANCE POLICY:

Lincoln University uses the class method of teaching, which assumes that each student has something to contribute and something to gain by attending class. It further assumes that there is much more instruction absorbed in the classroom than can be tested on examinations. Therefore, students are expected to attend all regularly scheduled class meetings and should exhibit good faith in this regard.

<http://www.lincoln.edu/registrar/2014Catalog.pdf>

STUDENTS WITH DISABILITIES STATEMENT:

Lincoln University is committed to non-discrimination of students with disabilities and therefore ensures that they have equal access to higher education, programs, activities, and services in order to achieve full participation and integration into the University. In keeping with the philosophies of the mission and vision of the University, the Office of Student Support Services, through the Services for Students with Disabilities (SSD) Program, provides an array of support services and reasonable accommodations for students with special needs and/or disabilities as defined by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. The Services for Students with Disabilities Program seeks to promote awareness and a campus environment in which accommodating students with special needs and/or disabilities is natural extension of the University's goal.

Any student with a documented disability should contact the Office of Student Support Services.

<http://www.lincoln.edu/studentservices/index.html>

UNIVERSITY ACADEMIC INTEGRITY STATEMENT:

Students are responsible for proper conduct and integrity in all of their scholastic work. They must follow a professor's instructions when completing tests, homework, and laboratory reports, and must ask for clarification if the instructions are not clear. In general, students should not give or receive aid when taking exams, or exceed the time limitations specified by the professor. In seeking the truth, in learning to think critically, and in preparing for a life of constructive service, honesty is imperative. Honesty in the classroom and in the preparation of papers is therefore expected of all students. Each student has the responsibility to submit work that is uniquely his or her own. All of this work must be done in accordance with established principles of academic integrity.

<http://www.lincoln.edu/registrar/2014Catalog.pdf>

POLICY ON ELECTRONIC DEVICES IN CLASSROOM:

Electronic devices may be used during class times in order to follow along with lectures that have been distributed on Moodle.

Moodle: Moodle will be an integral part of the course. You are therefore expected to check your Moodle account frequently for announcements and homework assignments. Links on the homepage will take you to the syllabus, power-point lectures, homework assignments, handouts etc. Your grade will be posted and continuously updated after the first exam. While all homework assignments will be posted on Moodle, the problem solving nature of many assignments requires that they be handed in on paper.