



**TRINITY**  
MEDICAL SCIENCES  
UNIVERSITY

SCHOOL OF  
BIOMEDICAL SCIENCES

## **CELL AND MOLECULAR BIOLOGY**

### **BIOS 204**

#### **Course Description**

This course aims at providing students with a basic knowledge of the structure and functional properties of cells. Students will be introduced to genetic, biochemical, developmental and physiological aspects of cells with emphasis on eukaryotic cells.

**Credit: 3 credits**

**Repeatable: No**

#### **Course Structure**

The course will be presented in different formats: Lectures with PowerPoints, self-directed learning, discussions and student assignments etc.

#### **Competencies**

This course emphasizes competencies to enhance skills essential for a future health care professional.

- Knowledge
  - **Demonstrate content knowledge and skills in foundational courses required by biomedical professionals**
  - **Demonstrate information literacy**
  - Demonstrate quantitative reasoning
  - **Demonstrate longitudinal learning through coursework**
- Critical Thinking
  - **Develop the skills of self-reflection and peer assessment to improve personal performance.**
  - **Demonstrate the ability to analyze literature and written material**
  - Demonstrate the ability to distinguish between well-reasoned and poorly reasoned arguments
- Communication Skills
  - **Demonstrate effective presentation skills to faculty and peers.**
  - **Demonstrate effective listening skills**
  - **Demonstrate effective written communication**

**Objectives:**

At the end of BIOS 204 course students should be able to:

1. Explain the molecular architecture of eukaryotic and prokaryotic cells and organelles, including membrane structure and dynamics.
2. Discuss how cellular components are used to generate and utilize energy in cells.
3. Explain the cellular components underlying cell motility, division and cell cycle.
4. Apply the knowledge of cell molecular biology to selected examples of changes or losses in cell function.

**Schedule:** Dates and times to be posted at the beginning of the term on the online calendar.

**Course Topics / Outline**

Activity #	Lecture Topics
Week1	A Tour of the Cell
Week 2	Membrane Structure and Function, An Introduction to Metabolism
Week 3	Cellular Respiration and Fermentation
Week 4	<b>Quiz 1</b> , Photosynthesis
Week 5	Cell Communication, The Cell Cycle
Week 6	Meiosis and Sexual Life Cycles
Week 7	<b>Mid-Term Exam</b>
Week 8	Mendel and the Gene Idea
Week 9	The Chromosomal Basis of Inheritance, The Molecular Basis of Inheritance
Week 10	From Gene to Protein
Week 11	<b>Quiz 2</b> , Regulation of Gene Expression
Week 12	Biotechnology
Week 13	Genomes and Their Evolution
Week 14	<b>End of Term Exam</b>

**Assignments:**

Students are required to present a topic (the presentation time is 15-20 minutes and the students are required to submit the power-point 24 hours before the presentation schedule), and/or to write a summary of a lecture topic.

**Textbooks and Reference Materials:****Required Texts**

Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Jane B. Reece. Campbell Biology. 11<sup>th</sup> Edition. Publisher: Pearson.

## Recommended Texts

Geoffrey Cooper. The Cell: A Molecular Approach. 8<sup>th</sup> Edition. Publisher: Oxford University Press.

Nalini Chandar and Susan Viselli. Lippincott Illustrated Reviews: Cell and Molecular Biology. 2<sup>nd</sup> Edition. Publisher: LWW.

Gerald Karp. Cell and Molecular Biology: Concept and Experiments. 8<sup>th</sup> Edition. Publisher: Wiley.

**Evaluation:** Students are evaluated by two quizzes, a midterm exam, a final exam, assignments and their attendance.

Points:

	Percent (%)
Assignments	10
Quizzes	20
Mid Term	30
Final exam	30
Attendance	10
Total	100

**Grade:**

Percent of Points	Letter Grade
95-100%	A(h)
90-94%	A
85-89%	B+
80-84%	B
75-79%	C+
70-74%	C
<70%	F

## Attendance:

Students are expected to attend at least 80% of all scheduled learning activities. Attendance in the class will be recorded. Students attended 80% or more will be awarded with 10% on total scoring system. Please note that absences due to illness or misadventure will be factored into the 20% of allowable absences if informed respective faculty or the Dean of students.

## Policies:

### Professional Demeanor

The student should be thoughtful and professional when interacting with faculty and other students. Inappropriate behavior includes the use of offensive language, gestures, or remarks with sexual overtones. Students should maintain a neat and clean appearance, and dress in attire that is generally accepted as professional.

## Honesty

Students are expected to demonstrate honesty and integrity in all aspects of their education and in their interactions with faculty, administration, physicians, patients, and fellow students. They will not cheat, plagiarize, or assist others in the commission of these acts.

### **Faculty:**

Dr. Rama Paudel, Assistant Professor

Contact office hours:

- Tuesday and Thursday 10:00 AM-12:00 Noon (subject to change)
- Students can also make an appointment via email.
- Drop-in visits are also welcome.