**Course Outline**

**Course Title:** Cell Biology

**Course Number:** 10201321

**Credit hours:** 3

**Course Duration:** One semester

**Academic Year:** Second

**Course Type:** Compulsory

**Prerequisite:** General Biology 1020102

Practical General Biology 10201108

**Course description and Objectives**:  
This course introduces the students to some aspects of cell structure and function. It focuses on eukaryotic cell biology. Important cellular processes such as transport, cell signalling pathways, cell-cell communication, cell cycle control and regulation, and cancer biology are discussed with great details.

**Course contents**:

The course covers the following topics: membrane structure and functions, subcellular organelles, cell communication, hormones and endocrine signalling, cytoskeletal system, extracellular matrix, cell cycle regulation and DNA replication, and cancer cells.

**Text Book:**• World of the cell (8th edition), Jeff Hardin, Gregory Bertoni and Lewis J. Kleinsmith

\*Other available references in the Internet.

**Intended Learning Outcomes (ILOs).**

At the end of this course, the student is expected to

* Distinguish between the different types of cellular transport methods through cell membranes.
* Know the different components of cell membrane and how they contribute to membrane structure
* Distinguish and differentiate between the structure and function of the different cell organelles.
* Compare the structure and function of the different cellular cytoskeletal elements.
* Understand the basics for cell signalling pathways and cell-cell communication.
* Understand the mechanisms used to control and regulate the cell cycle and relate any changes or mutations of DNA to the development of cancer.
* Demonstrate the ability to work with a team in order to execute information related to a research topic.

**Learning Methods**

* PowerPoint presentations and discussion.
* Moodle
* Zoom
* Self learning

|  |  |
| --- | --- |
| **Week** | **Topic** |
| 1 | Membranes: their structure, Function, and Chemistry |
| 2 | Transport Across Membranes: Overcoming the Permeability Barrier |
| 3 & 4 | The Endomembrane System and Peroxisomes |
| 5 & 6 | Signal Transduction Mechanisms: Messengers and Receptors |
| 7 | **Midterm Exam** |
| 7 & 8 | Cytoskeletal Systems |
| 9 & 10 | Beyond the Cell: Cell Adhesion, Cell Junctions, and Extracellular Structures |
| 10 & 11 | The Structural Basis of Cellular Information: DNA, Chromosomes, and the Nucleus |
| 12 & 13 | The Cell Cycle, DNA Replication, and Mitosis |
| 14 & 15 | Cancer Cells |
| 16 | **Final Exams** |

**Assessment Criteria**

|  |  |  |
| --- | --- | --- |
| **Type** | **Exam Format** | **Weight (%)** |
| **Midterm Exam** | **MCQs + Short Essays** | **30%** |
| **Research Assignment and Activities** | **Rubric System + Essays** | **20%** |
| **Final Exam** | **MCQs + Short Essays** | **50%** |