**Al-Nahrain University**

**College of Medicine**

**Course Title & Code: Medical biology (MED-102).**

**Grade:first year**

**Semester:First.**

**Total Hours: Theory(2) Practical (2)**

**Credits: Theory /2 Practical/ 1**

 **3credit**

**1.learning objectives**

**1.1-Cell biology and Lower organisms**

The course is designed to enable the student to:

1.Learn cell Biology, which aimed to cover a wide area of cell biology which is suitable for the first year undergraduates to Understand the concept of cell biology. and to study the types of living cells

2. Study the cell constituent

3. Correlate cell structure and function with metabolic pathwayes

4.Study the ultrastructure of cells

5-Identify the pathogenic lower organisms and their classification

6- Correlate the lower organisms with disease

**2.Instructional and Learning methods and tools**

* The syllabus of cell biology is given to students in (30) hours of theoretical lectures, The contents of the cell biology lectures include many topics related to understanding the relation between different cell types and the function which is fundamental to all other fields of biology, including medicine.
* The practical cell biology sessions include study the ultrastructure of cells by using photos electron microscopy, and demonstration of already prepared stained slides of cell division. The methods of demonstration are power points , microscope and videos.
* Session of practical comparative anatomy includes dissection of frogs and rabbits which aimed to know the important organs of these animals as preliminary session for human anatomy.
* The practical session concern demonstration of already prepared stain slides by light microscopy
* The content of pathogenic lower organism lectures it serves an aid for lower organism, those which are of interest to medical students
* The theoretical lectures and the practical session involved dividing the class into two groups, about 100 students in each, two lectures/ weeks, and 2hours practical laboratory session/ week.

**3.Syllabus / 3.1 Theory:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Topics** | **اسم التدريسي** | **week** | **Hours** |
| **1** | Introduction to cell biology- (History-cell theory-cell size and shape) | **أ.م.شذى محمود**  | **1** | **1** |
| **2** | Chemical components of living cell | **أ.م.شذى محمود** |  | **1** |
| **3** | Types of living cells | **أ.م.شذى محمود** | **2** | **1** |
| **4** | Glossary or terminology in cell biology | **أ.م.شذى محمود** |  | **1** |
| **5** | Cytoplasm (structure and inclusion) | **أ.م.شذى محمود** | **3** | **1** |
| **6** | Plasma membrane(structure ) | **أ.م.ميسون عبدالامير**  |  | **1** |
| **7** | Plasma membrane(structure and function) | **أ.م.ميسون عبدالامير** | **4** | **1** |
| **8** | Transport across the plasma membrane(Passive transport , active transportand Osmosis | **أ.م.ميسون عبدالامير** |  | **1** |
| **9** | Exocytosis and Endocytosis | **أ.م.شذى محمود** | **5** | **1** |
| **10** | Mitochondria (structure-outermembrane and inner membrane) | **أ.م.شذى محمود** |  | **1** |
| **11** | Mitochondria-(matrix and cristae) and function of mitochondria | **أ.م.شذى محمود** | **6** | **1** |
| **12** | Cellular respiration | **أ.م.شذى محمود** |  | **1** |
| **13** | Rough Endoplasmic reticulum**(**function and structure) | **أ.م.ميسون عبدالامير** | **7** | **1** |
| **14** | Smooth endoplasmic reticulum(function and structure) | **أ.م.ميسون عبدالامير** |  | **1** |
| **15** | **Mid term exam** |  | **8** | **1** |
| **16** | Golgi apparatus (structure and function) | **أ.م.ميسون عبدالامير** |  | **1** |
| **17** | Vacuoles ,vesicle , lysosomes and peroxisome | **أ.م.ميسون عبدالامير** | **9** | **1** |
| **18** | Cytoskeleton **(**Microfilament ,Intermediate filamentand Microtubules | **أ.م.ميسون عبدالامير** |  | **1** |
| **19** | Membrane junction (Tight junction and gap junction**)** | **أ.م.ميسون عبدالامير** | **10** | **1** |
| **20** | Desmosomes(structure and function) | **أ.م.ميسون عبدالامير** |  | **1** |
| **21** |  The nucleus(Definition-structure-nuclear envelope) | **أ.م.شذى محمود** | **11** | **1** |
| **22** | The nucleolus (structure and function)  | **أ.م.شذى محمود** |  | **1** |
| **23** | Chromatin (definition and type) | **أ.م.شذى محمود** | **12** | **1** |
| **24** | Cell cycle | **أ.م.شذى محمود** |  | **1** |
| **25** | The cell division (mitosis) | **أ.م.شذى محمود** | **13** | **1** |
| **26** | Meiosis I | **أ.م.شذى محمود** |  | **1** |
| **27** | Meiosis II | **أ.م.شذى محمود** | **14** | **1** |
| **28** | The protozoa  | **أ.م.ميسون عبد الامير** |  | **1** |
| **29** | Platyhelminthes( classification , general characteristics, life cycle and pathogenic symptoms) | **أ.م.شذى محمود** | **15** | **1** |
| **30** | virus (introduction, classification, structure and types of pathogenic virus) | **أ.م.ميسون عبد الامير** | **15** | **1** |
| **Total** |  |  | **30** |

**3.2 Practical:**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Topics** | **Hours** | **اسم التدريسي** |
| **1** | Planes and terminology  | **2** | **أ.م.ميسون عبدالامير** |
| **2** | Dissection of frog, external features, skin ,buccle cavity  | **2** | **أ.م.شذى محمود** |
| **3** | Skeletal muscles of frog | **2** | **أ.م.شذى محمود** |
| **4** | Dissection of frog , digestive and reproductive system  | **2** | **أ.م.شذى محمود** |
| **5** | Dissection of rabbit, internal viscera | **2** | **أ.م.ميسون عبدالامير** |
| **6** | Rabbit, reproductive system | **2** | **أ.م.ميسون عبدالامير** |
| **7** | **Midterm exam** | **2** |  |
| **8** | The Ultrastructure of the cell -1 | **2** | **أ.م.ميسون عبدالامير** |
| **9** | The Ultrastructure of the cell- 2 | **2** | **أ.م.شذى محمود** |
| **10** | The cell division , mitosis | **2** | **أ.م.شذى محمود** |
| **11** | The cell division , meiosis | **2** | **أ.م.شذى محمود** |
| **12** | Lower organisms, protoza | **2** | **أ.م.ميسون عبدالامير** |
| **13** | Lower organisms , Platyhelminthes | **2** | **أ.م.شذى محمود** |
| **14** | Final practical exam | **2** |  |

**4.Student assessment:**

The minimum requirement of a student to pass is to achieve at least 50% of total 100 marks assigned for the course.

The marks are distributed as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mid-term Theory | Mid-term Practical | Quiz&Reports | Final Practical | Final Theory |
| 18% | 10% | 12% | 20% | 40% |

Students who fail to attain the 50% cut off mark are required to re-sit for a second trial examination similar to the final one. Failing in the second trial entails the student to repeat the academic year.

 **5.Books and references:**

1-Dalley KL& Dalley AF (2006) : Clinically oriented Anatomy. 5th Ed

Lippincott Williams& wilkins. Philadelphia

2- Molecular Biology of the cell, Bruce Albert,4th Edition (2002).

3-Cell Biology and Histology,sixth edition,

Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD

4-Human Biology,Sylvia S .Mader. fifteenth Edition(2017)