

Republic of Yemen
Ministry of Higher Education & Scientific Research
Emirates International University



Faculty of Medicine & Health sciences

Department of Medicine

Bachelor of Medicine & Bachelor of surgery

Course Specification of Biology

Course No. (PHYSC 111)



This template of course specifications was prepared by CAQA, Yemen, 2017.

All Rights Reserved, © 2020. Emirates International University.

Prepared by:

Dr. Dr. Hala Al-jabory

Reviewed by:

Head of the Department:

Quality Assurance head

Dean

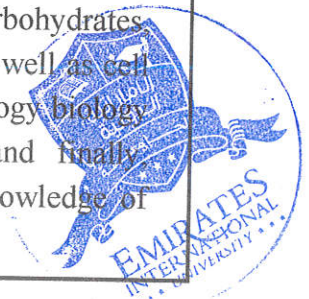


I. Course Identification and General Information:

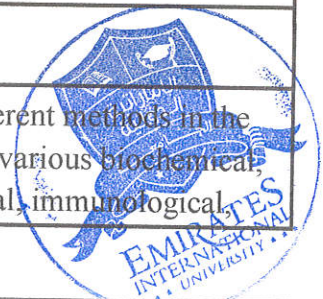
| | | | | | |
|----|--|--|--------------|----------|------------|
| 1 | Course Title: | Biology | | | |
| 2 | Course Code & Number: | PHYSC 111 | | | |
| 3 | Credit Hours: | Credit Hours | Theory Hours | | Lab. Hours |
| | | | Lecture | Exercise | |
| | | 3 | 2 | -- | 2 |
| 4 | Study Level/ Semester at which this Course is offered: | 1 st Level / 1 st Semester | | | |
| 5 | Pre –Requisite (if any): | None | | | |
| 6 | Co –Requisite (if any): | General Chemistry | | | |
| 7 | Program (s) in which the Course is Offered: | MBBS | | | |
| 8 | Language of Teaching the Course: | English | | | |
| 9 | Study System: | Semester based System | | | |
| 10 | Mode of Delivery: | Full Time | | | |
| 11 | Location of Teaching the Course: | Faculty of Medicine | | | |
| 12 | Prepared by: | Dr. Hala Jameel Aeid Al Jobory | | | |
| 13 | Date of Approval: | | | | |

II. Course Description:

A coherent introductory course, that comes from different disciplines and brought together to provide the students with the fundamental concepts, principles, and theories of biology, so that the student acquires a comprehensive idea of life characteristics, macromolecules (carbohydrates, proteins, lipids, and nucleic acids), cell structure, cell membrane (transportation), as well as cell division (meiosis and mitosis), and cell signaling. Emphasizing anatomy and physiology biology from zoological perspectives, basic concepts of genetics are also included and finally maintenance of homeostasis is discussed, all will allow the students to acquire knowledge of biological principles relevant to further studies.



| III. Course Intended Learning Outcomes (CILOs) : (maximum 8) Upon successful completion of the course, students will be able to: | | Referenced PILOs Learning out of program | |
|--|--|---|---|
| A. Knowledge and Understanding: | | I, A or E | |
| a1 | Describe the fundamental concepts, principles and theories of modern biology. | | A1 Describe the normal structure and function of the human body at molecular, cellular and biochemical, in order to maintain body homeostasis. |
| a2 | Discuss the normal structure and function of the human body at the whole body, organs, cellular, and molecular levels. | | A1 Describe the normal structure and function of the human body at molecular, cellular and biochemical, in order to maintain body homeostasis. |
| B. Intellectual Skills: | | | |
| b1 | Demonstrate understanding of the biological subjects' inputs to the development of knowledge about the origin, different levels, and complexity of life. | | B1 Integrate the concepts and principles of the basic and applied sciences in various fields of medical sciences. |
| b2 | Compare between and sketch the phases of both meiosis and mitosis, prokaryotes and eukaryotes, DNA and RNA. | | B1 Integrate the concepts and principles of the basic and applied sciences in various fields of medical sciences. |
| b3 | Link between the suitability of the structure and the function at the organs, cellular and molecular levels. | | B5 Analyze and evaluate evidence-based information needed in laboratory medicine practice. |
| | | | B6 Select appropriate investigations, analyze, and solve problems with minimal guidance. |
| C. Professional and Practical Skills: | | | |
| c1 | Tackle sufficient practical skills appropriate to the different biological | | C2 Employ different methods in the diagnosis of various biochemical, hematological, immunological, |



| | | | | |
|--------------------------------|--|--|-----|---|
| | topics understudy to ensure competence. | | | microbiological, parasitic I and pathological diseases. |
| | | | C10 | Apply technical skills in using laboratory equipment, tools, and materials in laboratory practice. |
| c2 | Illustrate microscopic samples, anatomical and morphological features correctly and accurately and record observations and report the findings using the scientific methods. | | C2 | Employ different methods in the diagnosis of various biochemical, hematological, immunological, microbiological, parasitic I and pathological diseases. |
| | | | C10 | Apply technical skills in using laboratory equipment, tools, and materials in laboratory practice. |
| D. Transferable Skills: | | | | |
| d1 | Employ the internet and electronic databases as a source of information and a mean of communication. | | D1 | Evaluate numerical data using simple statistical methods by effectively using of computer skills. |
| | | | D4 | Commit to continuous education, self-development and lifelong learning to remain updated with advances in medical practice. |
| d2 | Act independently with minimal supervision or as a part of a team within standard guidelines. | | D1 | Participate in teamwork harmoniously and exhibit collaboration with colleagues and other health care professionals. |
| | | | D2 | Communicate effectively using appropriate scientific language orally and in writing. |
| | | | D4 | Commit to continuous education, self-development and lifelong learning to remain updated with advances in medical practice |



(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:

| Course Intended Learning Outcomes | | Teaching Strategies | Assessment Strategies |
|-----------------------------------|--|--|---|
| a1 | Describe the fundamental concepts, principles and theories of modern biology. | <ul style="list-style-type: none"> ▪ Interactive Lecture ▪ Presentations ▪ Discussion | <ul style="list-style-type: none"> ▪ Exams, quizzes, ▪ Homework's ▪ Group assignments. |
| a2 | Discuss the normal structure and function of the human body at the whole body, organs, cellular, and molecular levels. | <ul style="list-style-type: none"> ▪ Assignments ▪ Brainstorming ▪ Self-learning. | <ul style="list-style-type: none"> ▪ Exams, quizzes, ▪ Homeworks |

(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods:

| Course Intended Learning Outcomes | | Teaching Strategies | Assessment Strategies |
|-----------------------------------|--|--|--|
| b1 | Demonstrate understanding of the biological subjects' inputs to the development of knowledge about the origin, different levels, and complexity of life. | <ul style="list-style-type: none"> ▪ Interactive Lecture ▪ Presentations ▪ Discussion ▪ Assignments. | <ul style="list-style-type: none"> ▪ Exams, quizzes, ▪ Homework's ▪ Group assignments |
| b2 | Compare between and sketch the phases of both meiosis and mitosis, prokaryotes and eukaryotes, DNA and RNA. | <ul style="list-style-type: none"> ▪ Using visual presentations ▪ Individual or group assignments related to the topics followed by oral presentation. | <ul style="list-style-type: none"> ▪ Exams, quizzes, ▪ Homework's ▪ Group assignments |
| b3 | link between the suitability of the structure and the function at the organs, cellular and molecular levels. | | <ul style="list-style-type: none"> ▪ Exams, quizzes, ▪ Homework's ▪ Group assignments |

(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:

| Course Intended Learning Outcomes | | Teaching Strategies | Assessment Strategies |
|-----------------------------------|--|---|--|
| c1 | Tackle sufficient practical skills appropriate to the different biological topics understudy to ensure competence. | <ul style="list-style-type: none"> ▪ Laboratory experiments ▪ Computer ▪ web-based learning. | <ul style="list-style-type: none"> ▪ group assignments ▪ home works ▪ laboratory reports |
| c2 | Illustrate microscopic samples, anatomical and morphological features correctly and accurately and record observations and report the findings using the scientific methods. | | <ul style="list-style-type: none"> ▪ Exams, quizzes, ▪ Homework's ▪ Group assignments ▪ laboratory reports |

(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:

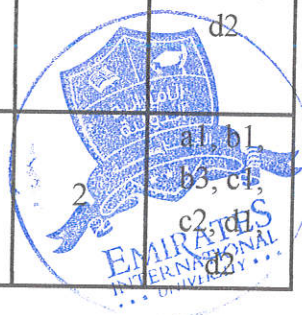
| Course Intended Learning Outcomes | | Teaching Strategies | Assessment Strategies |
|-----------------------------------|---|---|--|
| d1 | Employ the internet and electronic databases as a source of information and a mean of communication. | <ul style="list-style-type: none"> ▪ Small group discussions (Focusing on weakness points after quiz(s) or homework assessments) ▪ self-learning (library and available important websites of modern biology) ▪ Presentation of modern animations of related topics to simplify the theories and concepts. | <ul style="list-style-type: none"> ▪ group assignments ▪ home works ▪ laboratory reports. |
| d2 | Show ability to act independently with minimal supervision or as a part of a team within standard guidelines. | <ul style="list-style-type: none"> ▪ Laboratory experiments ▪ Group discussions ▪ Computer and web-based learning. | <ul style="list-style-type: none"> ▪ group assignments ▪ home works ▪ laboratory reports. |

IV. Course Contents:

A. Theoretical Aspect:

| No. | Units/Topics List | Sub Topics List | Number of Weeks | Contact Hours | Learning Outcomes (CILOs) |
|-----|--|--|-----------------|---------------|-------------------------------------|
| 1 | Introduction: The life characteristics | <ul style="list-style-type: none"> - Life characteristics. - The chemical context of life (atomic structure, chemical bonding... etc). - Water and life (hydrogen bonds, cohesion, adhesion, surface tension, specific heat, etc). - Solutions, acids and bases, buffers, and pH scale. | 1 | 2 | a1, a2, b3, c1, d1 |
| 2 | The structure and function of the biological macromolecules | <ul style="list-style-type: none"> - Carbon and the molecular diversity of life. - ATP molecules and polymers. - Carbohydrates (mono., di., and poly., structural and storage). - Lipids (structure, functions, types, phospholipids and steroids). | 2,3 | 4 | a1, a2, b1, b2, b3, c1, d1 |

| No. | Units/Topics List | Sub Topics List | Number of Weeks | Contact Hours | Learning Outcomes (CILOs) |
|-----|--|---|-----------------|---------------|------------------------------------|
| | | <ul style="list-style-type: none"> - Proteins (structure, functions, types). - Nucleic acids (structure, functions, DNA and RNA). | | | |
| 3 | The fundamental unit of life (the cell) | <ul style="list-style-type: none"> - The cell definition, and the cell theory. - Microscope (functions, types). - Eukaryotic and prokaryotic cells. - Structure and functions of animal and plant cells (cell membrane, cell wall, cytoplasm and its organelles....., nucleus). | 4,5 | 4 | a1, a2, b1, b2, b3, c1, c2, d1, d2 |
| 4 | Cell membrane structure and function | <ul style="list-style-type: none"> - Cell membrane (structure, movements across membranes: diffusion, osmosis and tonicity, passive transport, active transport, endocytosis and exocytosis). | 6 | 2 | a2, b1, b3, c1, d1, d2 |
| 5 | The cell cycle | <ul style="list-style-type: none"> - Definition of the cell cycle (key roles of cell division). - Mitosis. - Meiosis and sexual life cycle. - Meiosis Vs Mitosis. | 7 | 2 | a1, b2, c2, d1, d2 |
| 6 | Mid-Term Theoretical Exam | | 8 | 2 | a1, a2, b1, b2, b3, c1, c2, d1, |
| 7 | Animal tissues | <ul style="list-style-type: none"> - Epithelial tissues. - Connective tissues. - Muscular tissues. - Nervous tissues. | 9 | 2 | a1, a2, b1, b3, c1, c2, d1, d2 |
| 8 | Digestive system and nutrition | <ul style="list-style-type: none"> - Overview of digestion (ingestion, digestion, movement, absorption, elimination). - Parts of the digestive system and their functions and enzymes. - Classes of nutrients (carbohydrates, proteins, lipids and minerals). | 10 | 2 | a1, b1, b3, c1, c2, d1, d2 |
| 9 | Cardiovascular system | <ul style="list-style-type: none"> - Open and closed circulatory system. - Structure and functions of cardiovascular system (heart, blood vessels and blood). | 11 | 2 | a1, b1, b3, c1, c2, d1, d2 |

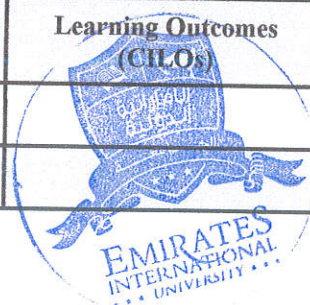


| No. | Units/Topics List | Sub Topics List | Number of Weeks | Contact Hours | Learning Outcomes (CILOs) |
|--|--------------------------------|---|-----------------|---------------|--------------------------------|
| | | <ul style="list-style-type: none"> - Blood clotting. - The lymphatic system. | | | |
| 10 | Genetics | <ul style="list-style-type: none"> - DNA and RNA. - The genetic code. - Transcription, processing and translation. | 12 | 2 | a1, a2, b2, d1 |
| 11 | Hormonal system and regulation | <ul style="list-style-type: none"> - Endocrine Vs exocrine glands. - Hormonal Vs nervous system. - Different forms of hormonal signals. - Classes of hormones. - Hormones (glands, target tissues and principal actions). | 13 | 2 | a1, a2, b1, b3, c1, d1, d2 |
| 12 | Nervous system and regulation | <ul style="list-style-type: none"> - Coordination and control (digestion regulation, maintaining the heart's rhythmic beat.) - Nervous system disorders (schizophrenia, drugs addiction, Alzheimer disease, Parkinson's disease). | 14 | 2 | a1, a2, b1, b3, c1, d1, d2 |
| 13 | Excretory system | <ul style="list-style-type: none"> - Different excretory organs and tissues. - Structure of urinary system (kidneys, ureters, urinary bladder and urethra). - Function of the urinary system (excretion of metabolic wastes, maintenance of water-salt balance- maintenance of acid-base balance- secretion of hormones). - Nephron in details. | 15 | 2 | a1, a2, b1, b3, c1, c2, d1, d2 |
| 14 | Final Theoretical Exam | | 16 | 2 | a1, a2, b1, b2, c1, c2, |
| Number of Weeks /and Units Per Semester | | | 16 | 32 | |



| B. Case Studies and Practical Aspect: | | | | |
|--|--|-----------------|---------------|--------------------------------|
| No. | Tasks/ Experiments | Number of weeks | Contact Hours | Learning Outcomes (CILOs) |
| 1 | - Biological safety and measurements I. | 1 | 2 | c1, d2 |
| 2 | - Biological safety and measurements II (lab equipments and measurements). | 2 | 2 | c2, d2 |
| 3 | - Acids, bases and pH scale (measuring the pH of different biological fluids). | 3 | 2 | a1, a2, b3, c1, c2, d2 |
| 4 | - Microscope structure and applications. | 4 | 2 | c1, c2, d2 |
| 5 | - Cell structure and function. | 5 | 2 | a2, b2, b3, c1, c2, d2 |
| 6 | - Biological macromolecules I, II. | 6,7 | 4 | a2, b2, c1, d1, d2 |
| 7 | - Permeability and osmosis. | 8 | 2 | a2, b2, c1, c2, d1, d2 |
| 8 | - Mitosis and meiosis. | 9 | 2 | b1, b2, c1, d1 |
| 9 | - Animal tissues. | 10 | 2 | a2, b1, b3, c1, c2, d1, d2 |
| 10 | - Dissecting a rabbit or hamster in order to identify the different organs, their locations and link them to the information obtained theoretically. | 11 | 2 | b1, b3, c1, c2, d1, d2 |
| 11 | Final exam | 12 | 2 | a1, a2, b1, b2, c1, c2, d1, d2 |
| Number of Weeks /and Units Per Semester | | 12 | 24 | |

| C. Tutorial Aspect: (ان وجدت) | | | | |
|--|----------|-----------------|---------------|---------------------------|
| No. | Tutorial | Number of Weeks | Contact Hours | Learning Outcomes (CILOs) |
| 1 | None | | | |
| Number of Weeks /and Units Per Semester | | | | |



V. Teaching Strategies of the Course:

- Interactive Lectures.
- Presentations.
- Discussion.
- Assignments.
- Brainstorming.
- Pre-readings.
- Self-learning.
- Laboratory experiments.
- Computer and web-based learning.

VI. Assessment Methods of the Course:

- Exams.
- Quizzes
- Homework.
- Assignments.
- Laboratory experiments' reports.

VII. Assignments:

| No. | Assignments | Week Due | Mark | Aligned CILOs (symbols) |
|--------------|---|--|------|------------------------------------|
| 1 | Homework (Search for answers to questions using the internet or the scientific references available in the library) . | 3 rd , 7 th , 10 th | 4.5 | a1, a2, b1, b2, b3, c1, c2, d1, d2 |
| 2 | Oral presentation. | 5 th | 1.5 | a1, a2, b1, b2, b3, c1, c2, d1, d2 |
| 3 | Self-learning (extracting information about the effect of minerals and the importance of excretory system). | 9 th , 13 th | 4 | a1, a2, b1, b3, c1, c2, d1, d2 |
| Total | | | | |

VIII. Schedule of Assessment Tasks for Students During the Semester:

| No. | Assessment Method | Week Due | Mark | Proportion of Final Assessment | Aligned Course Learning Outcomes |
|-----|-------------------|--|------|--------------------------------|----------------------------------|
| 1 | Attendance | 1-16 | 10 | | |
| 2 | Assignments | 3 rd , 5 th , 7 th , | 5 | 6.67% | a1, a2, b1, b2, c1, c2, d1, d2 |

| No. | Assessment Method | Week Due | Mark | Proportion of Final Assessment | Aligned Course Learning Outcomes |
|--------------|--|---|------------|--------------------------------|---------------------------------------|
| | | 9 th , 10 th , 13 th | | | |
| 3 | Quizzes 1 & 2 | 6 th , 12 th | 5 | 6.67% | a1, a2, b1, b2, b3, c1, c2, d1, d2 |
| 4 | Mid-Term Theoretical Exam | 8 th | 20 | 13.33% | a1, a2, b1, b2, b3, c1, c2, |
| 5 | Final Practical Exam including Project Presentation & Evaluation | 15 th | 20 | 20% | a1, b1, b2, b3, c1, c2, d1, d2 |
| 6 | Final Theoretical Exam | 16 th | 40 | 40% | a1, a2, b1, b2, b3, c1, c2, |
| Total | | | 100 | 100% | |

IX. Learning Resources:

1- Required Textbook(s) (maximum two):

1. Martha R. Taylor, M. R., *et al*; 2018: Campbell Biology Concepts and Connections, 9th Edition; Pearson.
2. Reece, B. J., Wasserman, S. A., Urry, L. A., Minorsky, P. V., Cain, M. L., and Jackson, R. B., 2017: Campbell Biology, 11th Edition, Library of Congress Cataloging-in-Publication data.

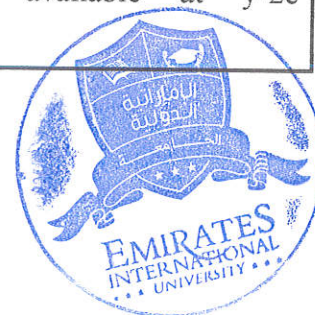
2- Essential References:

1. Pendarvis & Crawley, 2018: Lab Manual: Exploring Biology in the Laboratory Core Concepts, Morton Publishing, ISBN# 978-161731-9006.
2. Cain, M. L., Damman, H., Lue, R., Yoon, C. K., and Morel, R., 2009: Discover Biology. 4th Edition, W.W. Norton & Company.

3- Electronic Materials and Web Sites etc.:

Websites:

1. Biology 2e, 2018 OpenStax- an open-source textbook available at y-2e <http://openstax.org/details/books/biology-2e>



| X. Course Policies: (Based on the Uniform Students' By law (2007)) | |
|---|--|
| 1 | Class Attendance: Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes. |
| 2 | Tardiness: A student will be considered late if he/she is not in class after 10 minutes of the start time of class. |
| 3 | Exam Attendance/Punctuality: No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed. |
| 4 | Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same. |
| 5 | Cheating: Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply. |
| 6 | Forgery and Impersonation: Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply. |
| 7 | Other policies: The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration. |



Faculty of Medicine & Health Sciences

Department of Medicine

Program of Medicine

Course Plan (Syllabus) of Biology

Course No. (*PHYSC 111*)

| I. Information about Faculty Member Responsible for the Course: | | | | | | | |
|---|--------------------------------|----------------|-----|----|-----|-----|-----|
| Name of Faculty Member: | Dr. Hala Jameel Aeid Al Jobory | Office Hours | | | | | |
| Location & Telephone No.: | Yemen, Sana'a 772299734 | 4 Hours weekly | | | | | |
| E-mail: | Aljebouri_999@hotmail.com | SAT | SUN | MN | TUE | WED | THU |



I. Course Identification and General Information:

| | | | | | |
|----|--|--|--------------|----------|------------|
| 1 | Course Title: | Biology | | | |
| 2 | Course Code & Number: | PHYSC111 | | | |
| 3 | Credit Hours: | Credit Hours | Theory Hours | | Lab. Hours |
| | | | Lecture | Exercise | |
| | | 3 | 2 | -- | 2 |
| 4 | Study Level/ Semester at which this Course is offered: | 1 st Level / 1 st Semester | | | |
| 5 | Pre –Requisite (if any): | None | | | |
| 6 | Co –Requisite (if any): | General Chemistry | | | |
| 7 | Program (s) in which the Course is Offered: | MBBS | | | |
| 8 | Language of Teaching the Course: | English | | | |
| 9 | Study System: | Semester based System | | | |
| 10 | Mode of Delivery: | Full Time | | | |
| 11 | Location of Teaching the Course: | Faculty of Medicine | | | |
| 12 | Prepared by: | Dr. Hala Jameel Aeid Al Jobory | | | |
| 13 | Date of Approval: | | | | |

II. Course Description:

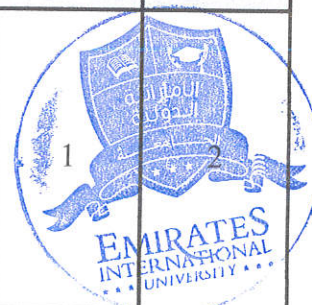
A coherent introductory course, that comes from different disciplines and brought together to provide the students with the fundamental concepts, principles, and theories of biology, so that the student acquires a comprehensive idea of life characteristics, macromolecules (carbohydrates, proteins, lipids, and nucleic acids), cell structure, cell membrane (transportation), as well as cell division (meiosis and mitosis), and cell signaling. Emphasizing anatomy and physiology biology from zoological perspectives, basic concepts of genetics are also included and finally, maintenance of homeostasis is discussed, all will allow the students to acquire knowledge of biological principles relevant to further studies.

III. Course Intended Learning Outcomes (CILOs) : **(maximum 8)**

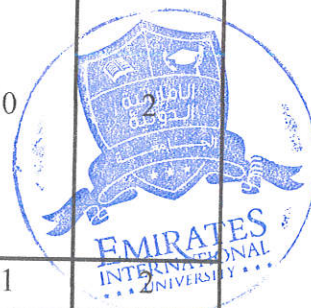
Referenced PILOs
Learning out of program

| | |
|--|--|
| Upon successful completion of the course, students will be able to: | |
| A. Knowledge and Understanding: | |
| a1 | Describe the fundamental concepts, principles and theories of modern biology. |
| a2 | Discuss the normal structure and function of the human body at the whole body, organs, cellular, and molecular levels. |
| B. Intellectual Skills: | |
| b1 | Demonstrate understanding of the biological subjects' inputs to the development of knowledge about the origin, different levels, and complexity of life. |
| b2 | Compare between and sketch the phases of both meiosis and mitosis, prokaryotes and eukaryotes, DNA and RNA. |
| b3 | Link between the suitability of the structure and the function at the organs, cellular and molecular levels. |
| C. Professional and Practical Skills: | |
| c1 | Tackle sufficient practical skills appropriate to the different biological topics understudy to ensure competence. |
| c2 | Illustrate microscopic samples, anatomical and morphological features correctly and accurately and record observations and report the findings using the scientific methods. |
| D. Transferable Skills: | |
| d1 | Employ the internet and electronic databases as a source of information and a mean of communication. |
| d2 | Act independently with minimal supervision or as a part of a team within standard guidelines. |

| IV. Course Contents: | | | | |
|-------------------------------|---|--|-----------------|---------------|
| A. Theoretical Aspect: | | | | |
| No. | Units/Topics List | Sub Topics List | Number of Weeks | Contact Hours |
| 1 | Introduction: The life characteristics | <ul style="list-style-type: none"> - Life characteristics. - The chemical context of life (atomic structure, chemical bonding... etc). - Water and life (hydrogen bonds, cohesion, adhesion, surface tension, specific heat, etc). - Solutions, acids and bases, buffers, and | 1 | 2 |



| No. | Units/Topics List | Sub Topics List | Number of Weeks | Contact Hours |
|-----|---|--|-----------------|---------------|
| | | pH scale. | | |
| 2 | The structure and function of the biological macromolecules | <ul style="list-style-type: none"> - Carbon and the molecular diversity of life. - ATP molecules and polymers. - Carbohydrates (mono., di., and poly., structural and storage). - Lipids (structure, functions, types, phospholipids and steroids). <ul style="list-style-type: none"> - Proteins (structure, functions, types). - Nucleic acids (structure, functions, DNA and RNA). | 2,3 | 4 |
| 3 | The fundamental unit of life (the cell) | <ul style="list-style-type: none"> - The cell definition, and the cell theory. - Microscope (functions, types). - Eukaryotic and prokaryotic cells. - Structure and functions of animal and plant cells (cell membrane, cell wall, cytoplasm and its organelles....., nucleus). | 4,5 | 4 |
| 4 | Cell membrane structure and function | <ul style="list-style-type: none"> - Cell membrane (structure, movements across membranes: diffusion, osmosis and tonicity, passive transport, active transport, endocytosis and exocytosis). | 6 | 2 |
| 5 | The cell cycle | <ul style="list-style-type: none"> - Definition of the cell cycle (key roles of cell division). - Mitosis. - Meiosis and sexual life cycle. - Meiosis Vs Mitosis. | 7 | 2 |
| 6 | Mid-Term Theoretical Exam | | 8 | 2 |
| 7 | Animal tissues | <ul style="list-style-type: none"> - Epithelial tissues. - Connective tissues. - Muscular tissues. - Nervous tissues. | 9 | 2 |
| 8 | Digestive system and nutrition | <ul style="list-style-type: none"> - Overview of digestion (ingestion, digestion, movement, absorption, elimination). - Parts of the digestive system and their functions and enzymes. - Classes of nutrients (carbohydrates, proteins, lipids and minerals). | 10 | |
| 9 | Cardiovascular | <ul style="list-style-type: none"> - Open and closed circulatory system. | 11 | |



| No. | Units/Topics List | Sub Topics List | Number of Weeks | Contact Hours |
|--|--------------------------------|--|-----------------|---------------|
| | system | - Structure and functions of cardiovascular system (heart, blood vessels and blood). - Blood clotting. - The lymphatic system. | | |
| 10 | Genetics | - DNA and RNA. - The genetic code. - Transcription, processing and translation. | 12 | 2 |
| 11 | Hormonal system and regulation | - Endocrine Vs exocrine glands. - Hormonal Vs nervous system. - Different forms of hormonal signals. - Classes of hormones. - Hormones (glands, target tissues and principal actions). | 13 | 2 |
| 12 | Nervous system and regulation | - Coordination and control (digestion regulation, maintaining the heart's rhythmic beat.) - Nervous system disorders (schizophrenia, drugs addiction, Alzheimer disease, Parkinson's disease). | 14 | 2 |
| 13 | Excretory system | - Different excretory organs and tissues. - Structure of urinary system (kidneys, ureters, urinary bladder and urethra). - Function of the urinary system (excretion of metabolic wastes, maintenance of water-salt balance-maintenance of acid-base balance- secretion of hormones). - Nephron in details. | 15 | 2 |
| 14 | Final Theoretical Exam | | 16 | 2 |
| Number of Weeks /and Units Per Semester | | | 16 | 32 |

B. Case Studies and Practical Aspect:

| No. | Tasks/ Experiments | Number of weeks | Contact Hours |
|-----|--|-----------------|---------------|
| 1 | - Biological safety and measurements I. | 1 | 2 |
| 2 | - Biological safety and measurements II (lab equipments and measurements). | 2 | 2 |
| 3 | - Acids, bases and pH scale (measuring the pH of different biological fluids). | 3 | 2 |
| 4 | - Microscope structure and applications. | 4 | 2 |

| No. | Tasks/ Experiments | Number of weeks | Contact Hours |
|--|--|-----------------|---------------|
| 5 | - Cell structure and function. | 5 | 2 |
| 6 | - Biological macromolecules I, II. | 6,7 | 4 |
| 7 | - Permeability and osmosis. | 8 | 2 |
| 8 | - Mitosis and meiosis. | 9 | 2 |
| 9 | - Animal tissues. | 10 | 2 |
| 10 | - Dissecting a rabbit or hamster in order to identify the different organs, their locations and link them to the information obtained theoretically. | 11 | 2 |
| 11 | Final exam | 12 | 2 |
| Number of Weeks /and Units Per Semester | | 12 | 24 |

C. Tutorial Aspect: (ان وجدت)

| No. | Tutorial | Number of Weeks | Contact Hours |
|--|----------|-----------------|---------------|
| 1 | None | | |
| Number of Weeks /and Units Per Semester | | | |

V. Teaching Strategies of the Course:

- Interactive Lectures.
- Presentations.
- Discussion.
- Assignments.
- Self-learning.
- Laboratory experiments.
- Computer and web-based learning.

VI. Assessment Methods of the Course:

- Exams.
- Quizzes
- Homework.
- Assignments.
- Laboratory experiments' reports.

VII. Assignments:

| No. | Assignments | Week Due | Mark |
|-----|-------------|----------|------|
| | | | |



| No. | Assignments | Week Due | Mark |
|--------------|--|--|------|
| 1 | Homework (Search for answers to questions using the internet or the scientific references available in the librar) . | 3 rd , 7 th , 10 th | 4.5 |
| 2 | Oral presentation. | 5 th | 1.5 |
| 3 | Self-learning (extracting information about the effect of minerals and the importance of excretory system). | 9 th , 13 th | 4 |
| Total | | | |

VIII. Schedule of Assessment Tasks for Students During the Semester:

| No. | Assessment Method | Week Due | Mark | Proportion of Final Assessment |
|--------------|--|--|------------|--------------------------------|
| 1 | Attendance | 1-16 | 10 | |
| 2 | Assignments | 3 rd , 5 th , 7 th , 9 th , 10 th , 13 th | 5 | 6.67% |
| 3 | Quizzes 1 & 2 | 6 th , 12 th | 5 | 6.67% |
| 4 | Mid-Term Theoretical Exam | 8 th | 20 | 13.33% |
| 5 | Final Practical Exam including Project Presentation & Evaluation | 15 th | 20 | 20% |
| 6 | Final Theoretical Exam | 16 th | 40 | 40% |
| Total | | | 100 | 100% |

IX. Learning Resources:

1- Required Textbook(s) (maximum two):

- Martha R. Taylor, M. R., *et al*; 2018: Campbell Biology Concepts and Connections, 9th Edition; Pearson.
- Reece, B. J., Wasserman, S. A., Urry, L. A., Minorsky, P. V., Cain, M. L., and Jackson, R. B., 2017: Campbell Biology, 11th Edition, Library of Congress Cataloging-in-Publication data.

2- Essential References:

- Pendarvis & Crawley, 2018: Lab Manual: Exploring Biology in the Laboratory Core Concepts, Morton Publishing, ISBN# 978-161731-9006.
- Cain, M. L., Damman, H., Lue, R., Yoon, C. K., and Morel, R., 2009: Discover Biology. 4th Edition, W.W. Norton & Company.

3- Electronic Materials and Web Sites etc.:

Websites:

- Biology 2e, 2018 OpenStax- an open-source textbook available at y-2e
<http://openstax.org/details/books/biology-2e>



X. Course Policies: (Based on the Uniform Students' By law (2007))

| | |
|---|--|
| 1 | Class Attendance: Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes. |
| 2 | Tardiness: A student will be considered late if he/she is not in class after 10 minutes of the start time of class. |
| 3 | Exam Attendance/Punctuality: No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed. |
| 4 | Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same. |
| 5 | Cheating: Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply. |
| 6 | Forgery and Impersonation: Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply. |
| 7 | Other policies: The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration. |

