



Course Specifications

Revised November 2019

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|----------------------|---|
| Course Title: | Hematology |
| Course Code: | 44013321 -3 |
| Program: | BSc Microbiology |
| Department: | Department of Biology |
| College: | Faculty of Applied Science – Department of Biology |
| Institution: | UM AL – QURA UNIVERSITY |
| Revision Date | November 2019 |

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A. Course Identification

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|--|
| 1. Credit hours: 3 hours |
| 2. Course type |
| a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/> |
| b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/> |
| 3. Level/year at which this course is offered: 3rd Year / Level 5 |
| 4. Pre-requisites for this course (if any): General Biology (4011012-4) |
| 5. Co-requisites for this course (if any): |

6. Mode of Instruction (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|----|-----------------------|---------------|------------|
| 1 | Traditional classroom | 30 | 50 % |
| 2 | Blended | | - |
| 3 | E-learning | | - |
| 4 | Correspondence | | - |
| 5 | Other | 30 | 50 % |

7. Actual Learning Hours (based on academic semester)

| No | Activity | Learning Hours |
|------------------------------|---------------------------------|----------------|
| Contact Hours | | |
| 1 | Lecture | 30 |
| 2 | Laboratory/Studio | 42 |
| 3 | Tutorial | - |
| 4 | Practical/Field work/Internship | 6 |
| 5 | Others (specify) | 30 |
| | Total | 102 |
| Other Learning Hours* | | |
| 1 | Study | 30 |
| 2 | Assignments | 8 |
| 3 | Library | 15 |
| 4 | Projects/Research Essays/Theses | 10 |
| 5 | Others (specify) | - |
| | Total | 63 |

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course is designed to introduce students to the basic principles of haematology, coagulation and transfusion science. The course also will develop the students understanding of haematology as a specialized aspect of diagnostic pathology.

2. Course Main Objective

❖ After completing this course student should be able to:

- Define the haematology
- Summarize the general functions of blood components
- Differentiate between red blood cells and different types of white blood cells
- Define the blood coagulation
- List all diseases related to blood
- Describe and differentiate different types of anaemia
- Define transfusion science

3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|------|---|--------------|
| 1 | Knowledge: ❖ Upon successful completion of this course The student will be able to: <ul style="list-style-type: none"> • Define the hematology • Summarize the general functions of blood components • Differentiate between red blood cells and different types of white blood cells • define the blood coagulation • List all diseases related to blood • Describe and differentiate different types of anaemia • Define transfusion science • Define the concepts of anaemia | |
| 2 | Skills: 2.1 Cognitive skills to be developed ❖ Having successfully completed the course students should be able to: <ul style="list-style-type: none"> • Discuss the general functions of blood components • Differentiate between red blood cells and different types of white blood cells • Explain how the blood coagulating • Describe and differentiate different types of anemia • Explain how blood transfusion works. • Understand the relation between hematology and Diseases • Explain how the anemia occurred • Describe the mechanisms of anemia | |

| CLOs | | Aligned PLOs |
|----------|---|--------------|
| | <ul style="list-style-type: none"> Understand the Genetic defects and their relation to hemoglobin's; refractory anemia. | |
| 2.4. | Psychomotor Skills <ul style="list-style-type: none"> Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> Perform haematological tests. Use tools, kits, instruments that are used in haematological laboratories | |
| 3 | Competence: | |
| 3.1 | <ul style="list-style-type: none"> Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> Developing oral presentations. Communicating personal ideas and thoughts. Work independently and as part of a team to finish some assignments. Communicate results of work to others. Use of needed precautions when dealing with pathogen infections. demonstrate professional attitudes and behaviors towards others. propose the smart questions understand and dissecting the problem so that it is fully solved understood. Demonstrate the assertiveness for his decision. Demonstrate his capability for the responsibility and Accountability show Effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, Non-verbal Communication, good listening for the others, Questioning, Good manners, Problem solving, Social Awareness, Self-management, Responsibility and Accountability) Enhancing the ability of students to use computers and internet. Interpret the laboratory data Know how to write a report. | |

C. Course Content

| Topics to be Covered | | |
|---|-------------|---------------|
| Topic | No of Weeks | Contact hours |
| <ul style="list-style-type: none"> Introduction: to Hematology <ul style="list-style-type: none"> -Definition of hematology - Importance of hematology -The components and importance of plasma | 1 | 2 |

| | | |
|---|-----------------|--------------|
| ❖ The red blood cells - Formation - Function | 1 | 2 |
| ❖ The haemoglobin Function, Normal abnormal rates -Blood grouping (ABO system) | 1 | 2 |
| ❖ Hematocrite , Reticulocytes, erythrocytes sedimentation rates: Definitions and clinical significance | 2 | 4 |
| ❖ Anemia : - concepts - classification -mechanisms - genetic defects of hemoglobin's; refractory anemia. | 2 | 4 |
| ❖ White Blood Cells (WBC) -Definition -classification -functions -WBC disorders (e.g. leukemia) | 2 | 4 |
| ❖ Blood platelets - Definition - production - functions | 2 | 4 |
| ❖ Coagulation and transfusion science -normal hemostasis -normal response to vascular damage -causes of acquired and inherited coagulation defects -treatment and monitoring of anticoagulant -antibody detection in transfusion science -blood and blood products -complement related to blood group serology -hazards of transfusion | 3 | 6 |
| | 14 weeks | 28hrs |

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|------|--|--|---|
| 1.0 | Knowledge | | |
| 1.1 | <ul style="list-style-type: none"> ❖ Upon successful completion of this course The student will be able to: • Define the hematology • Summarize the general functions of blood components | <ul style="list-style-type: none"> • Lectures which must start with preliminary one showing course contents • Using images and movies. | <ul style="list-style-type: none"> • Periodical exam and reports 10% • Mid- term theoretical exam 20% • Mid-term practical exam 5% |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|------------|---|---|---|
| | <ul style="list-style-type: none"> Differentiate between red blood cells and different types of white blood cells define the blood coagulation List all diseases related to blood Describe and differentiate different types of anaemia Define transfusion science Define the concepts of anaemia | <ul style="list-style-type: none"> Enable the reference books and scientific sites concerning fungi in internet. All students will be involved in on-line learning process and each student is required to create an E-mail address to facilitate student web | <ul style="list-style-type: none"> Final practical exam 15% Final exam 40% |
| 2.0 | Skills | | |
| 2.1 | <p>Cognitive skills</p> <ul style="list-style-type: none"> Having successfully completed the course students should be able to: <ul style="list-style-type: none"> Discuss the general functions of blood components Differentiate between red blood cells and different types of white blood cells Explain how the blood coagulating Describe and differentiate different types of anemia Explain how blood transfusion works. Understand the relation between hematology and Diseases Explain how the anemia occurred Describe the mechanisms of anemia Understand the Genetic defects and their relation to hemoglobin's; refractory anemia. | <ul style="list-style-type: none"> - Lectures -Brain storming -Discussion | <ul style="list-style-type: none"> - Exam must contain questions that can measure these skills. - Discussions after the lecture. |
| 2.2 | <p>Psychomotor Skills</p> <ul style="list-style-type: none"> Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> Perform haematological tests. Use tools, kits, instruments that are used in haematological laboratories | <ul style="list-style-type: none"> - Follow up students the students in lab and during carryout all the laboratory experiments | <ul style="list-style-type: none"> -Giving additional marks for the students they have accurate laboratory results and good seminar presentation -Practical exam. |
| 3.0 | Competence | | |
| 3.1 | <ul style="list-style-type: none"> Upon successful completion of this course, the student is expected to be able to: | <ul style="list-style-type: none"> Lab work Case Study Active learning Small group | <ul style="list-style-type: none"> Oral exams. Evaluate the efforts of each student in preparing the report. |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|------|---|--|---|
| | <ul style="list-style-type: none"> • Developing oral presentations. • Communicating personal ideas and thoughts. • Work independently and as part of a team to finish some assignments. • Communicate results of work to others. • Use of needed precautions when dealing with pathogen infections. • Demonstrate professional attitudes and behaviors towards others. • Propose the smart questions • Understand and dissecting the problem so that it is fully solved understood. • Demonstrate the assertiveness for his decision. • Demonstrate his capability for the responsibility and Accountability • Show Effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, Non-verbal Communication, good listening for the others, Questioning, Good manners, Problem solving, Social Awareness, Self-management, Responsibility and Accountability) • Enhancing the ability of students to use computers and internet. • Interpret the laboratory data • Know how to write a report. • -Interpret the laboratory data • -Know how to write a report | <ul style="list-style-type: none"> • discussion • Homework (preparing a report on some topics related to the course depending on web sites). • Seminars presentation • Practical during carryout the experiments in the lab. | <ul style="list-style-type: none"> • Evaluate the scientific values of reports. • Evaluate the work in team • Evaluation of the role of each student in lab group assignment • Evaluation of students presentations |

2. Assessment Tasks for Students

5. Schedule of Assessment Tasks for Students During the Semester

| Assessment | Assessment task (eg. essay, test, group project, examination etc.) | Week due | Exam duration | Proportion of Final Assessment |
|------------|--|----------|---------------|--------------------------------|
| 1 | Periodical Exam (s) | 4 | 15 min | 10 % |
| 2 | Mid Term Exam (Theoretic) | 8 | 60 min | 20 % |
| 3 | Mid Term Exam (practical) | 9 | 30 min | 10 % |
| 4 | Reports and essay | 11 | -- | 5 % |
| 5 | Final Practical Exam | 15 | 60 min | 15 % |
| 6 | Final Exam | 16 | 120 min | 40 % |

| | |
|--------------------|-------------|
| Total Marks | 100% |
|--------------------|-------------|

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Office hours: 10hrs.

F. Learning Resources and Facilities

1. Learning Resources

| | |
|---------------------------------------|---|
| Required Textbooks | Note Book prepared by Prof. Hamed M. Mutwally Dr Zuhair Y. Alsahaff |
| Essential References Materials | 2. Roitt, I. (2008) <i>Essential Haematology 8th edition.</i> • |
| Electronic Materials | |
| Other Learning Materials | PPT prepared by Dr. Hamed M. Mutwally Dr Zuhair Y. Alsahaff |

2. Facilities Required

| Item | Resources |
|--|--|
| Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) | <ul style="list-style-type: none"> • Class room is already provided with data show • The area of class room is suitable concerning the number of enrolled students (68) and air conditioned |
| Technology Resources (AV, data show, Smart Board, software, etc.) | <ul style="list-style-type: none"> • Digital lab containing 15 computers. |
| Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | <ul style="list-style-type: none"> • Incubators, autoclaves, Centrifuge measuring equipment, water bath, digital balances, pH meters, safety facilities. • Availability of some reference bacterial strains • Different media • All chemicals and reagents that needed |

G. Course Quality Evaluation

| |
|--|
| 1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching <ul style="list-style-type: none"> • Questionaries • Open discussion in the class room at the end of the lectures |
| 2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department <ul style="list-style-type: none"> • Revision of student answer paper by another staff member. • Analysis the grades of students. |
| 3. Processes for Improvement of Teaching |

- Preparing the course as PPT.
- Using scientific movies.
- Periodical revision of course content.

4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)

- After the agreement of Department and Faculty administrations

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Periodical revision by Quality Assurance Units in the Department and institution

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

| | |
|--|-------------------|
| Prepared by faculty staff: Prof. Hamed M. Mutwally Dr Zuhair Y. Alsahaff | Signature: |
| Date Report Completed: November 2019 | |
| Revised by: 1. Dr. Khaled Elbanna 2. Dr. Hussein H. Abulreesh 3. Dr. Shady Elshahawy | Signature: |
| Date: November 2019 | |
| Program Chair Dr. Hussein H. Abulreesh | Signature: |
| Dean | Signature: |
| Date: | |