Umm Al Qura University
College of Applied Medical Sciences
Deanship of Academic Affairs
Laboratory Medicine Department

جامعة أم القرى
كلية العلوم الطبية التطبيقية وكالة
الشئون الأكاديمية قسم
طب المختبرات

Academic Guidelines

For Laboratory Medicine Student Program

(1442-1443)

Vision

To be a department committed for the development and excellence in medical laboratory sciences the fields of practice, research, and ethical values.

Program Mission

Preparing competent and innovative laboratory specialists, equipped with knowledge and diagnostic and research skills to contribute to the development of society.

Program Objectives

The goals of the laboratory medicine programs are to:

1. **Provide high-quality education in which graduates will acquire knowledge, skills, and attitude necessary for being specialists in laboratory medicine.**
2. **Develop competency in biomedical research.**
3. **Engage and respond to current and evolving community health issues with special emphasize on mass gathering.**
4. **To enable students to acquire fundamentals of leadership, entrepreneurship, and laboratory management.**
5. **Further strengthen community interactions and services.**

Program Description

- **Program:** Laboratory Medicine
- **Degree:** Bachelor's degree of Laboratory Medicine
- **Course Duration:** Four academic years plus one year internship (Hospital Laboratory–Based Training)
- **Teaching language:** English

Program Structure

The program gives students a strong foundation in theoretical, practical and research domains. A student undertaking this program must complete a total of **134credit** units which are distributed as:

- 21 cu - University requirements
- 31 cu - College requirements
- 72 cu - Program requirements
- 10 cu Capstone Course/Project

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements (general subjects)	**Required**	**10**	**21**	**15.7**
	Elective	**NA**	**NA**	**NA**
College Requirements (preparatory year)	**Required**	**10**	**31**	**23.1**
	Elective	**NA**	**NA**	**NA**
Program Requirements	**Required**	**19**	**72**	**53.7**
	Elective	**NA**	**NA**	**NA**
Capstone Course/Project	**Required**	**1**	**10**	**7.5**
Field Experience/ Internship	**Required**	**1**	**Full time for one academic year**	**--**
Others				
Total			**134**	**100%**

The program gives students a strong foundation in practical, teaching, research, and management domains. The program takes a total of four years of full-time study plus one year of clinical training (internship). A student undertaking this program must complete a total of 134 credit units which are distributed as 21 credit units University requirements, 31 credit units of college requirements and 72 credit units of the program requirements. In addition, students will have the training skills to support their career and development, such as essay and report writing, presentation skills and statistical know-how enhance performance and professionalism of the students. These essential skills will allow the student to complete two important parts of the program:

The research Project

This will be a project, which will be given to the fourth-year student in the second semester of the academic year (10 credit units). The students will be provided with a list of project titles to choose from after agreement with supervisors in the departments. It is expected that the students will apply the skills and knowledge that gathered such as sampling collection, statistical analysis and data presentation. The students will also be required to present a seminar from the project after submitting their thesis.

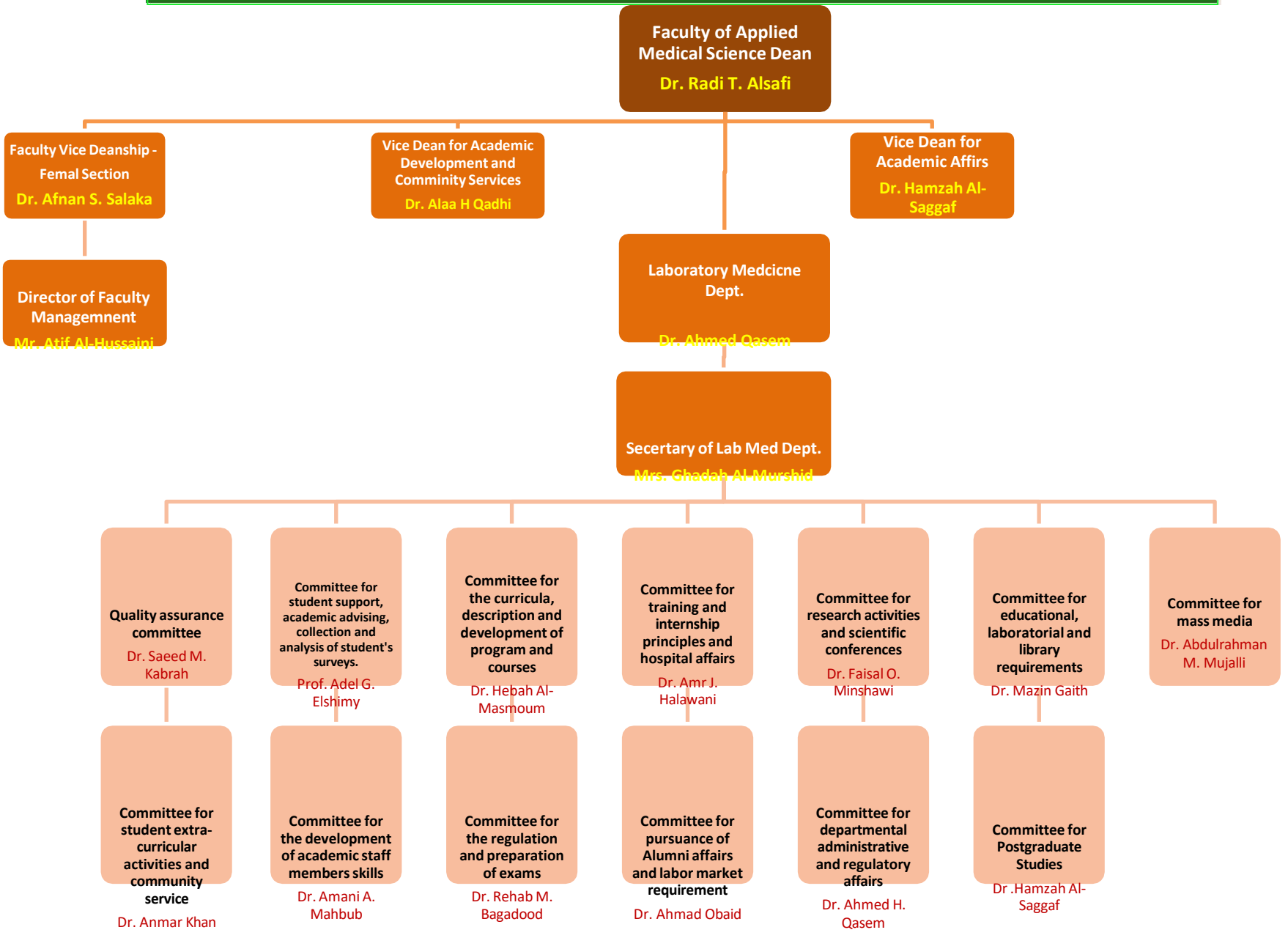
The Internship

- It is a full year professional training in one of the government hospital labs.
- Students will have a wide, deep training in all lab's sections.
- Students are periodically evaluated in accordance with the evaluation forms of the internship booklet.
- Two supervisors will be assigned to the students in each hospital: One from the program and the other from the hosting laboratory.

- Students are expected to show satisfactory progress in the laboratory profession skills, which will be assessed by the two supervisors according to the evaluation forms.

- The assessment will also include a written comprehensive exam that will be arranged by the LM Program and the hosting hospital lab

The Organizational Structure of the Faculty of Applied Medical Science



Study Plan for Laboratory Medicine Program

Program Study Plan

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
Level 1	4810120-2	Principle Biochemistry 1			2	College
	4810110-2	Principle of Human Genetics			2	College
	4800104-3	Learning Study Skills			3	College
	4800150-2	Computer Skills – 1			2	College
	4800170-6	English language			6	College
Level 2	4810121-2	Basic Biochemistry 2			2	College
	4810111-3	Cytology			3	College
	4800131-4	Introduction to Medical Physics			4	College
	4800153-3	Computer Programing Skills			3	College
	4800173-4	Medical English language			4	College
Level 3	605201-2	Quran	R		2	Institution
	102101-2	Prophet's Biography	R		2	Institution
	501101-2	Arabic language I	R		2	Institution
	601101-2	Islamic culture I	R		2	Institution
	1701211– 4	Structural and Morphological Anatomy	R	Cell functions	4	Department
	1701221-1	Basic Laboratory Skills	R		1	Department
	1701231-5	Basic Biochemistry	R		Extended	Department
	1701241-6	Basic Physiology	R		Extended	Department
Level 4	605201-2	Islamic Culture II	R		2	Institution
	605201-2	The Holly Quran II				
	1701251-3	Diagnostic Immunology	R	Basic Laboratory Skills	3	Department
	1701242-2	Basic Nutrition	R		3	Department
	1701261-3	Basic of Microbiology	R		2	Department
	1701231-5	Basic Biochemistry	R		5	Department
	1701241-6	Basic Physiology	R		6	Department
Level 5	605301-2	The Holly Quran III	R		2	Institution
	1701312-8	Diagnostic Histopathology and Cytology	R	Basic Physiology, Basic Laboratory Skills, Anatomy	Extended	Department
	1701332-4	Applied Diagnostic Biochemistry	R		Extended	Department
	1701362-6	Diagnostic Microbiology	R	Basic Biochemistry	Extended	Department
	1701352-5	Diagnostic Hematology	R	Basic of Microbiology	Extended	Department
	1701363-6	Diagnostic Parasitology	R	Basic of Microbiology Diagnostic	Extended	Department

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
				Immunology		
Level 6	605301-3	Islamic Culture III	R		3	Institution
	1701312-8	Diagnostic Histopathology and Cytology	R	Basic Physiology, Basic Laboratory Skills, Anatomy	8	Department
	1701332-4	Applied Diagnostic Biochemistry	R		4	Department
	1701362-6	Diagnostic Microbiology	R	Basic Biochemistry	6	Department
	1701352-5	Diagnostic Hematology	R	Basic Microbiology	5	Department
	1701363-6	Diagnostic Parasitology	R	Basic of Microbiology Diagnostic Immunology	6	Department
Level 7	605401-2	The Holly Quran IV	R		2	Institution
	1701453-3	Blood Bank and Transfusion Medicine	R	Diagnostic Hematology Diagnostic Immunology	3	Department
	1701422-2	Applied Medical Science in Quran and Sunnah	R		2	Department
	1701733-3	Molecular Genetics	R	Basic Biochemistry	3	Department
	1701471-3	Basic Medical Biostatistics	R		3	Department
	1701434-6	Diagnostic Pharmacology and Toxicology	R		Extended	Department
	1701481-10	Research Project of Laboratory Medicine	R	Basic Medical Biostatistics	Extended	Department
Level 8	605401-2	Islamic Culture	R		2	Institution
	1701464-1	Public Health	R		1	Department
	1701423-1	Laboratory Management and Quality Assurance	R		1	Department
	1701434-6	Diagnostic Pharmacology and Toxicology	R		6	Department
	1701481-10	Research Project of Laboratory Medicine	R		10	Department
Level 9	1701500-0	Internship in laboratory medicine	R		--	department

* Include additional levels if needed
** Add a table for each track (if any)

Attendance and apologize for the study

- Students regularly attend lectures and practical lessons denied entry to the final test where if he say the proportion attending a ratio determined by the University Council, but not less than (75%) of lectures and practical lessons specific for each course during the semester, and is a student who was denied entry test because of the absence fails in the decision, and made his estimate deprived (h) or (DN).

- A student may apologize for continuing to study a semester without longer fails in, if you submit an acceptable excuse to the side determined by the University Council, and during a period of time determined by the implementing rules approved by the University Council, and monitors student assessment (p) or (w) calculated this chapter of the time needed to finish the requirements for graduation.

- May be an excuse to withdraw from a course or more in the classroom, according to the rules approved by the Executive Council of the University.

Delay and drop out of the study

- A student may apply for postponement of the study excuse accepted by the determined by the University Council not to exceed a period of postponement two consecutive semesters or three chapters non-consecutive maximum throughout his stay at the university and then folded recorded after that, and the University Council may, if necessary exception to that, nor accounted for the delay within the period required for termination of the graduation requirements.

- If interrupted regular student from school for a semester without requesting postponement folded his registration from the university, but the university board Collapse registered if cut off from the study for less, and for the student enrollee is folded his registration if absent for all final exams for that semester without an acceptable excuse.

- No student is cut off from the study of the classes taught by a visiting another university.

Re-entry

A student can apply for his registration folded re-registered, before dropping out and scored according to the following regulations:

(A) May apply for re-enrollment during the four semesters from the date of enrollment Collapse.
(B) Be approved by the college concerned and the relevant authorities to re-enroll the student.
(C) If ever a student Collapse under four semesters or more he can apply for a new student, University without reference to the previous school record that apply to it all the admission requirements stated at the time, but the exception of the University Council in accordance with the regulations issued by the Board.
(D) May not re-enroll the student more than once, and the University Council At-case of necessity exception to that.
(E) May not be re-registered under the student folded if disconnected academically.

* May not re-enroll the student, who separated from the university for educational or disciplinary reasons, or who separated from another university for disciplinary reasons, and if it turns out after re-registered that he had previously dismissed for such reasons shall be deemed canceled his registration from the date of re-enrollment.

Graduation

* Graduate student after completing graduation requirements, successfully according to the study plan, but at least for a cumulative GPA acceptable, but the College Board on the recommendation of the concerned department to determine appropriate decisions studied by the student to raise the cumulative GPA, and that in the event of success in courses and fail on average.

Attendance Requirements

In order to be eligible to sit in the final exam, you need a minimum of 75% attendance both in lectures and practical classes. This means that you can only miss three (3) lectures and laboratories during the semester. If you miss more than that you will not be allowed to sit in final examinations. It is important that you should discuss any expected or unexpected absence with your lecturer and laboratory instructor and also refer to the academic office. It

is very difficult to arrange a makeup lab so please make sure you attend all laboratory sessions.

Theoretical Examination: If you miss any theory exam (periodic and or final), or you want to make an appeal for your results, it is your responsibility to follow the following procedure:

1. You must contact the head of the department within 24 hours from the time the examination was held to explain your absence. If he/she is not in the office, you need to leave the message with the secretary with your mobile number.

2. Make-up examination will be allowed under extreme circumstances, and only for those reasons outlined in the University students' handbook.

3. You need to provide documentary evidence of your absence. Examples of documentary evidence include medical doctor's note of a government hospital, official death notice, police report, written note from the Chairman of student activity of the University, etc…

4. You need to submit your request to academic office following laid down procedure for accepting your excuse. Once your request is accepted by the academic office, concerned department can arrange a make-up exam.

5. Make-up exams will be given at department's discretion and convenience after approval from the academic office.

6. Appeals regarding exam results must be addressed to the Vice Dean for Academic Affairs in writing, explaining your complaint within two academic semesters.

7. No exception to these policies and procedures will be made.

Laboratory Medicine Timetable – First Semester 1442 H

2nd Year- Female (Group 1)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Structural and Morphological Anatomy		BREAK TIME	Structural and Morphological Anatomy			
MON	Basic Biochemistry		Laboratory Skills						
TUE			Basic Biochemistry						
WED			Basic Physiology						
THU			Basic Physiology						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable – First Semester 1442 H

2nd Year- Female (Group 2)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Structural and Morphological Anatomy		BREAK TIME	Structural and Morphological Anatomy			
MON	Basic Biochemistry		Laboratory Skills						
TUE			Basic Physiology						
WED			Basic Physiology						
THU			Basic Biochemistry						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable – First Semester 1442 H

2nd Year- Female (Group 3)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Structural and Morphological Anatomy		BREAK TIME	Structural and Morphological Anatomy			
MON	Basic Biochemistry		Laboratory Skills						
TUE	Basic Biochemistry		Basic Physiology						
WED			Basic Physiology						
THU									

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable – First Semester 1442 H

2nd Year- Female (Group 4)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Structural and Morphological Anatomy		BREAK TIME	Structural and Morphological Anatomy			
MON	Basic Biochemistry		Laboratory Skills						
TUE									
WED			Basic Physiology						
THU			Basic Physiology			Basic Biochemistry			

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable – First Semester 1442 H

2nd Year- Female (Group 5)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN	Basic Biochemistry		Structural and Morphological Anatomy		BREAK TIME	Structural and Morphological Anatomy			
MON	Basic Biochemistry		Laboratory Skills						
TUE									
WED			Basic Physiology						
THU			Basic Physiology						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

3rd Year Female (Group1)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN	Diagnostic Microbiology		Diagnostic Parasitology		BREAK TIME				
MON	Diagnostic Hematology		Diagnostic Chemistry						
TUE	Pathology Pre-Lab		Diagnostic Hematology			Diagnostic Chemistry			
WED	Pathology		Diagnostic Parasitology			Pathology			
THU			Diagnostic Microbiology						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

3rd Year Female (Group2)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN	Diagnostic Microbiology		Diagnostic Parasitology		BREAK TIME				
MON	Diagnostic Parasitology		Diagnostic Microbiology			Diagnostic Chemistry			
TUE	Pathology Pre-Lab		Diagnostic Hematology			Diagnostic Chemistry			
WED	Pathology		Pathology						
THU			Diagnostic Hematology						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

3rd Year Female (Group3)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN	Diagnostic Microbiology		Diagnostic Parasitology		BREAK TIME				
MON	Diagnostic Microbiology		Diagnostic Parasitology						
TUE	Pathology Pre-Lab		Diagnostic Hematology			Diagnostic Chemistry			
WED	Pathology		Diagnostic Chemistry			Diagnostic Hematology			
THU			Pathology						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

3rd Year Female (Group 4)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN	Diagnostic Microbiology		Diagnostic Parasitology		BREAK TIME				
MON	Diagnostic Chemistry		Diagnostic Hematology						
TUE	Pathology Pre-Lab		Diagnostic Hematology			Diagnostic Chemistry			
WED	Pathology		Diagnostic Microbiology						
THU			Diagnostic Parasitology			Pathology			

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

4th Year Female (Group 1)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN	Molecular Genetics		Pharmacology and Diagnostic Toxicology		BREAK TIME				
MON	Basics of Modern Blood Banking		Basic Medical Biostatistics			Pharmacology and Diagnostic Toxicology			
TUE	Applied Sciences in Quran and Sonna		Research Methodology			Basics of Modern Blood Banking			
WED									
THU	Molecular Genetics								

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H
4th Year Female (Group 2)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Pharmacology and Diagnostic Toxicology		BREAK TIME				
MON	Basics of Modern Blood Banking		Basic Medical Biostatistics			Pharmacology and Diagnostic Toxicology			
TUE	Applied Sciences in Quran and Sonna		Research Methodology						
WED			Basics of Modern Blood Banking			Molecular Genetics			
THU	Molecular Genetics								

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

4th Year Female (Group 3)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Pharmacology and Diagnostic Toxicology		BREAK TIME	Molecular Genetics			
MON	Basics of Modern Blood Banking		Basic Medical Biostatistics			Pharmacology and Diagnostic Toxicology			
TUE	Applied Sciences in Quran and Sonna		Research Methodology						
WED	Basics of Modern Blood Banking								
THU	Molecular Genetics								

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

4th Year Female (Group 4)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN	Basics of Modern Blood Banking		Pharmacology and Diagnostic Toxicology		BREAK TIME				
MON	Basics of Modern Blood Banking		Basic Medical Biostatistics			Pharmacology and Diagnostic Toxicology			
TUE	Applied Sciences in Quran and Sonna		Research Methodology						
WED	Molecular Genetics								
THU	Molecular Genetics								

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

4th Year Female (Group 5)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Pharmacology and Diagnostic Toxicology		BREAK TIME	Basics of Modern Blood Banking			
MON	Basics of Modern Blood Banking		Basic Medical Biostatistics			Pharmacology and Diagnostic Toxicology			
TUE	Applied Sciences in Quran and Sonna		Research Methodology						
WED									
THU	Molecular Genetics					Molecular Genetics			

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable – First Semester 1442 H

2nd Year Males (Group 1)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Basic Biochemistry		BREAK TIME				
MON						Basic Biochemistry			
TUE									
WED	Basic Physiology		Laboratory Skills			Basic Physiology			
THU	Structural and Morphological Anatomy					Structural and Morphological anatomy			

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable – First Semester 1442 H

2nd Year Males (Group 2)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Basic Biochemistry		BREAK TIME				
MON						Basic Physiology			
TUE									
WED	Basic Physiology		Laboratory Skills			Basic Biochemistry			
THU	Structural and Morphological Anatomy		Structural and Morphological anatomy						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable – First Semester 1442 H

2nd Year Males (Group 3)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Basic Biochemistry		BREAK TIME				
MON	Basic Physiology								
TUE	Basic Biochemistry								
WED	Basic Physiology		Laboratory Skills						
THU	Structural and Morphological Anatomy		Structural and Morphological anatomy						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

4th Year Males (Group 1)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Pharmacology and Diagnostic Toxicology		BREAK TIME	Blood Bank			
MON	Basic Medical Biostatistics		Molecular Genetics			Molecular Genetics			
TUE	Research Methodology								
WED						Pharmacology and Diagnostic Toxicology			
THU	Blood bank		Applied Sciences in Quran and Sonna						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

Laboratory Medicine Timetable First Semester 1442 H

4th Year Males (Group 2)

DAY	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
SUN			Pharmacology and Diagnostic Toxicology		BREAK TIME	Pharmacology and Diagnostic Toxicology			
MON	Basic Medical Biostatistics		Molecular Genetics			Blood Bank			
TUE	Research Methodology								
WED						Molecular Genetics			
THU	Blood Bank		Applied Sciences in Quran and Sonna						

LECTURE

PRACTICAL\LAB

Head of Lab Med Dept.

Dr. Ahmed H. Qasem

Vice Head of Lab Med Dept.

تشكيل منسقي المقررات بقرار مجلس القسم بتاريخ 1443/2/2 هـ الموافق 2021/9/9م

منسق المقرر Course Coordinator	Course Name المقرر
د. محمد احمد العبيدي	التشريح Structural and Morphological Anatomy
د. فيصل عمر منشاوي	مهارات المختبر Laboratory Skills
د. أنمار انور خان	اساسيات الكيمياء الحيوية Basic Biochemistry
د. بدور سعيد رجب	الكيمياء الحيوية التشخيصية Diagnostic Biochemistry
د. احمد عبد الغفور عبيد	علم وظائف ألاعضاء Physiology
د. نعيم فوزي قستي	المناعة التشخيصية Diagnostic immunology
د. زين حبيب الهندي	اساسيات علم الكائنات الدقيقة Basic Microbiology
د. بنان عدنان عطوه	علم الكائنات الدقيقة التشخيصية Diagnostic Microbiology
د. حسين علي المصموم	علم ألامراض Diagnostic Histopathology and Cytology
د. هبه على المصموم	علم أمراض الدم التشخيصي Diagnostic Hematology
د. عمرو جمال حلواني	بنك الدم Blood Bank
د. محمد عثمان الكربي	الطفيليات التشخيصية Diagnostic Parasitology
د. حمزة محمد السقاف	إلحصاء الطبي Medical Biostatistics

منسق المقرر Course Coordinator	المقرر Course Name
د. سعد سعيد الغامدي	إدارة المختبرات Laboratory Management and QA
د. حمزة محمد السقاف	الصحة العامة Public Health
د. عمار عبد هلا عطار	العلوم الطبية في القرآن والسنة Applied Medical science in Quran and Sunna
أ.د. عادل جالل الشيمي	االدوية والسموم Diagnostic Pharmacology and Toxicology
د. فيصل عمر منشاوي	البحث العلمي Research Methodology and Project
د. أفنان محمد شكوري	الوراثة الجزيئية Molecular Genetics
د. أنمار خان	أساسيات علم التغذية Principles of Nutrition sciences

Second Year Subjects

Structural and Morphological Anatomy Course

Course code:	1701211-4
Course title:	**Structural and Morphological Anatomy**
Level/semester:	2nd Year (1st semester)
Credit hours:	**Lecture hours:** 2 hours
	Practical hours: 2 hours
Name of course coordinator	**Dr. Mohamed Ahmed Alobaidy**
Language:	English

Overview

This course is designed to provide the students with the necessary theoretical and practical knowledge about human anatomy. Theoretical lectures include the study of human body structures, their morphology and relations to other structures including their blood supply, nerve supply, functional correlation and the applied anatomical aspects. Practical teaching includes demonstration of models, charts, posters and animations. Microscopic slide sessions under histology will be covered using microscopes and data show of images.

This Course of Structural and Morphological Anatomy consists of Theory lectures, Practical Lectures with lab sessions, tutorials and activity/assignments.

Course Objectives

By the end of this course, students should be able to:

1. 1 Describe the morphology of various body parts, organs and organ systems..
2. Mention the relations of a particular organ or a part of body to the nearby structures.
3. Describe the blood supply, nerve supply and venous drainage for various organs and tissues.
4. Correlate the functions with the morphology of various organ, and organ systems.
5. Describe the histology of important tissues and organs.

Course Descriptions

W. #	Lectures Topics	Date
1	Introduction to human anatomy	
2	The skeletal system and Osteology	
3	The muscular system	
4	The nervous system	
5	Integumentary system	
6	The cardiovascular system	
7	The gastrointestinal system	
8	Midterm	
9	The respiratory system	
10	The urinary system (Renal system)	
11	The male genital system	
12	The female genital system	
13	The endocrine system	
14	The Eye, Ear and anatomy of other special sense organs	
15	The Hematopoietic System	
	End of Semester	

No	List of Topics (Practicals+Tutorials)
1	Introduction to Histology
2	Histology of Specialised connective tissue and Osteology
3	Muscle tissue
4	Nervous tissue
5	Histology of skin and appendages
6	Blood vessels and lymphatics
7	Histology of Gastrointestinal tract and Histology of the hepatobiliary system
8	Midterm
9	The respiratory system
10	The renal system

11	The male genital system
12	The female genital system
13	The endocrine system
14	Special senses
15	Blood cells
Total	

Evaluation:

Schedule of Assessment Tasks for Students During the Semester			
Assessments	**Assessment task**	**Week due**	**Proportion of final assessment**
1	Mid Term Exam	W8	20
2	Activity/Assignments	W1 to W15	10
3	Practical Exam	16	20
4	Final Theory Exam	W17-W18	50
5	TOTAL		100%

Basic Laboratory Skills Course

Course code :	**1701221-1**
Course title:	**Basic Laboratory Skills**
Level/semester:	2nd Year (First Semester)
Credit hours:	**Theoretical:** 1
	Practical: Not applicable
Language:	English
Name of course coordinator	**Dr. Faisal O. Minshawi**

Course overview

This course introduces various disciplines of laboratory medicine to students and stresses on the role of the medical laboratory professional. It provides awareness about importance of handling clinical specimens, commonly used laboratory techniques, laboratory safety, quality control and quality assurance, ethical practices and cooperation with other laboratory staff

Course Objectives

By the end of this course, students will be able to:

This course imparts knowledge about basic laboratory skills required in each discipline of laboratory medicine.

The main purpose of this course is to acquaint the students with:

1. The role of laboratory and medical laboratory professionals in hospital laboratory services and research centers
2. The organizational structure of a standard hospital clinical laboratory and its functions
3. The basic laboratory skills of common laboratory diagnostic tests and use of instruments in major testing disciplines
4. The laboratory safety and safe laboratory practices in handling toxic chemicals and hazardous substances including pathogens
5. List the biological safety cabinets and describe the biosafety levels

6. The importance of quality control and quality assurance in a clinical laboratory

7. The application of computer software related to laboratory testing and laboratory information system in documenting patient information and test results.

8. Perform calculations to obtain the result will convey clinical information to the doctor.

9. Classify the clinical waste category and how-to disposable each type.

10. Understand the meaning of commonly used word components and medical terms in laboratory

11. The role of phlebotomy and of the importance of a good and correctly drawn specimen.

12. The Variety of laboratory test and the types of sample done in the lab

Course Descriptions

W. #	Lectures Topics	Date
1	Course objectives, description and contents	
2	Role of laboratory and medical laboratory professional	
3	Laboratory safety – general safety, chemical hazards, fire safety and laboratory accidents	
4	Laboratory safety – general safety, chemical hazards, fire safety and laboratory accidents	
5	Biosafety	
6	Medical Terminology	
7	Quality management, quality assurance and quality control in a clinical laboratory	
8	Midterm	
9	Laboratory Mathematics	
10	Laboratory Mathematics	
11	Introduction to Phlebotomy and Venepuncture producer	
12	Blood collection tubes and specimen types	
13	Clinical Waste management	
14	Role of the Laboratory Information System (LIS) in documenting patient information and test ordering/resulting	
15	Hospital visit	
16	**End of Semester**	

Evaluation

Schedule of Assessment Tasks for Students During the Semester			
Assessments	**Assessment task**	**Week due**	**Proportion of Final Assessment**
1	Midterm	8 weeks	30%
2	Assignment (Hospital visit report	At the end of each semester	10%
3	Final written examination	17/18th Week	60 %
4	Total		100 %

Learning Resources: Required Text(s)

Laboratory Skills for Science and Medicine: An Introduction (2007). M. Lintern. (Editor). Published by Radcliffe Publications Ltd, Oxon. indexed; illustrated. ISBN 1-84619-016-9

Basic Clinical Laboratory Techniques (2011). Barbara H. Estridge and Anna P.Reynolds. Published by Delmar Cengage

Basic Biochemistry Course

Course code	**(1701231-5)**
Course title	**Basic Biochemistry**
Level / semester	2nd year (First and Second Semester)
Credit hours	Theoretical: 3
	Practical: 2
Language	English
Name of course coordinator	**Dr: Anmar Khan**
Instructors	**Dr. Mazen Ghaith** dr.mazen.ghaith@gmail.com **Dr; Abdullah Aldairi** afdairi@uqu.edu.sa

Overview

The course is 5 CH theoretical and highlights the structure and metabolic basis of carbohydrates lipids and proteins in both health and diseases. Students will study digestion and absorption of carbohydrates lipids and protein. Also, the student will understand normal metabolism of carbohydrates, lipids and protein, as well as, inborn errors of amino acid and the effect of any abnormality to the medical status and metabolic diseases disorders throughout the following learning outcomes of carbohydrates protein and lipids metabolism. Finally, the organ integration, feeding cycle and cell membrane function will discuss in detail.

Course Objectives

By the end of this course, the students will be able to:

1) Provide the candidate with a recent knowledge in modern basic metabolic biochemistry and molecular biology.
2) Learning outcome for students must emphasize the metabolic basis of carbohydrates proteins and lipids in both health and diseases, and correlate the impact of any abnormality to the medical status and metabolic diseases disorders including analytical and critical thinking, throughout the following learning outcomes:
3) The student will understand the normal metabolic pathways of large molecules and metabolism of small molecules (carbohydrates proteins and lipids), beside study generation and storage of energy, bioenergetics and oxidative phosphorylation.
4) Moreover, students should have the knowledge about inborn errors of amino acid, organ integration, as well as, the hormonal and non-hormonal controls of these major metabolic pathways and correlate the impact of any abnormality to the medical status.

Course Descriptive, 1st Semester

W. #	Lectures Topics	Laboratory Topics
1	Introduction and course overview	Practical course introduction.
2	Structural representation of sugars	Lab safety and regulation.
3	Carbohydrates Metabolism-Digestion and Absorption	Basic biochemical techniques, instrumentation, and result units
4	Glucose Oxidation (Glycolysis)	Types of Specimen.
5	Oxidative decarboxylation of Pyruvate, Tricarboxylic acid cycle (Krebs´ cycle)	Automatic pipette (Types and pipette calibration)
6	Pentose phosphate pathway and Fructose Metabolism	Spectrophotometer: Principles and methodology
7	Gluconeogenesis, Cori and Alanine cycle	Standard curve and determination of unknown sample concentration
8	Midterm	Midterm
9	Glycogen metabolism	Distribution and estimation of Glucose-6-Phosphatase
10	Electron transport chain (respiratory chain)	Estimation of glucose-6-P

		dehydrogenase
11	Introduction to Lipid metabolism	Revision
12	Lipids Metabolism-Digestion and absorption	Glycogen estimation
13	Cholesterol metabolism	Extraction and identification of cytochrome cyt-P450
14	Lipolysis Oxidation of fatty acids	Revision
15	Ketone body metabolism and ketoacidosis	Tutorial
16	**Practical Exam.**	
17/18	**Final Exam**	

Course Descriptive, 2nd Semester

W. #	Lectures Topics	Laboratory Topics
1	Fatty Acids Biosynthesis	Dilution, Serial dilutions, Parallel dilution
2	Fatty Acids Biosynthesis	Estimation of cholesterol
3	Lipids Transport - Lipoprotein metabolism	Estimation of triglycerides
4	Introduction of Protein metabolism	Estimation of total protein
5	Protein metabolism Digestion and Absorption	Estimation of ALT
6	Amino Acids Metabolism	Revision
7	Urea cycle and hyperammonaemia	Estimation of urea level
8	Midterm	Midterm Exam
9	Inborn Error of Glycine Amino Acid	Estimation of blood creatinine
10	Inborn Error of Some Individual Amino Acids Methionine,Phenylalanine c. Tyrosine	Distribution and significant importance of blood total CK level
11	Inborn Error of Some Individual Amino Acids, Tryptophane, Cystein, Cystine Alanine, Serine, Valine, Leucine and Isoleucin	Estimation of blood total CK level
12	Metabolism of organ integration	Estimation of blood glucose

13	Fasting cycle	The phospholipid composition of biological membrane
14	Feeding cycle	Methods of estimation phospholipid
15	Plasma membrane structure and transport	Revision
16	**Practical Exam.**	
17/18	**Final Exam**	

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid term	8	20%
2	Presentation or assignment	12-14	5%
3	Practical Exam	16	20%
4	Final written Exam	17	55%
5	Total		100

Learning Resources: Required Text(s)

1. **Harpers Illustrated Biochemistry** 29th Edition (LANGE Basic Science. Amazon.com, 2012
2. **Marks' Basic Medical Biochemistry:** A Clinical Approach (Point (Lippincott Williams & Wilkins) by Alisa Peet MD, Michael A. Lieberman PhD and Allan Marks MD (2012)
3. **Biochemistry (Lippincott's Illustrated Reviews Series)** by Richard A. Harvey PhD and Denise R. Ferrier (2010)
4. **Textbook of Biochemistry with Clinical Correlations**, Thomas M. Devlin, Amazon.com. (2010)

Basic Physiology Course

Course code	**(1701241-6)**
Course title	**Basic Physiology**
Level / semester	2nd year (Full Year)
Credit hours	6
Language	English
Name of course coordinator and Instructors	**Dr. Dr. Ahmad Obaid** **Basem A. Refaat barefaat@uqu.edu.sa** **Dr. Wesam Farrash** **Dr Abdulrahman Mijaly**

Overview:

This course is intended for the 2nd year students of Laboratory Medicine Department and aims to provide essential information related to human physiology and the integrations between systems in homoeostasis and their relevance to the profession of Laboratory technologist.

Course Objectives:

By the end of this course, students should be able to:
At the completion of this physiology course, students are expected to be able to:

1. Recognize the role and basic underlying principles of the different body systems in regulating the internal environment.
2. Explain how different body systems achieve their functions and how these functions are regulated and interrelated.
3. Explain the composition of and the regulation of the body fluid and acid base balance.
4. To recognize the different components of the blood systems, the origin of blood cells and their functions, the regulation of erythropoiesis process, basics of blood ABO system, blood clotting and the intrinsic and extrinsic pathways, and the functions of the different white blood cells.
5. Understand the basic functions and the main mechanisms for the regulation of the nervous, neuromuscular and cardiovascular systems.
6. Explain the regulation and functions of the digestive system in regards of digestion, motility and intestinal peristalsis, regulation of liver functions, absorption and transportation of the nutrients and defecation.

7. Explain the regulation and functions of the endocrine system and the patho-physiology of endocrine diseases with emphasis on the normal and abnormal biochemical laboratory values.

8. Explain the regulation and function of the reproductive system with emphasis on normal and abnormal reproductive endocrinology, sperm and oocyte formation and maturation, normal pregnancy, sex determination and infertility.

9. Explain the regulation and functions of the respiratory system with emphasis on the mechanisms of ventilation and gas exchange, the different pulmonary functions tests, and the normal and abnormal value of blood gases and the role of respiratory system in acid-base balance.

10. Explain the regulation and functions of the renal system with emphasis on the structure of the nephron, the regulation of renal functions including filtration, absorption and secretion, and the normal and abnormal renal function tests.

11. List the normal values of important physiological parameters as applied to Laboratory Medicine and interpret such values when given.

Course Descriptions, 1st Semester

W. #	Lectures Topics	Laboratory Topics
1	Introduction to Human Physiology	Safety precaution & blood collection
2	Body fluid and Acid-Base balance	Identify the hematocrit percentage of the human blood sample and use it for the calculation of intra – vascular volume
3.	Body fluid and Acid-base balance	Estimate hemoglobin concentration by using sahli"s hemoglobinometer by using human blood sample
4	Physiology of Blood and Immunology	How to do blood film
5	Physiology of Blood and Immunology	Determine blood group from your own blood
6	Cardiovascular Physiology	Examination of peripheral pulse
7	Cardiovascular Physiology	Measurement of arterial blood pressure
8	Midterm	Midterm
9	Physiology of Respiration	Arterial blood gas analysis
10	Physiology of Respiration	Toxic and diseases affect the Neuro-muscular junction
11	Physiology of Respiration	Observe the effect of salivary amylase on

		carbohydrate digestion
12	Neurophysiology	Observe the effect of lipase on lipid digestion
13	Neurophysiology	Detection of occult blood in stool sample
14	Neuro-muscular Physiology	Bilirubin and Jaundice: Causes and types
15	Neuro-muscular Physiology	Revision
16	**Practical Exam.**	
17/18	**Final Exam**	

Course Descriptions, 2nd Semester

W. #	Lectures Topics	Laboratory Topics
1	Introduction to Endocrine physiology	Hormone measurement: Basics and concepts
2	Anterior pituitary glands	Basics of growth hormone measurement
3	Posterior pituitary gland	Determine fasting (FBS) and random (RBS) blood sugar levels
4	Thyroid gland & Ca^{+2} homeostasis	The hormonal regulation of calcium, phosphate and bone: the role of parathyroid, calcitonin and Vitamin D
5	Glucose homeostasis	Importance of Vitamin D in bones and other systems (measure serum vitamin D/and or Ca+2)
6	Adrenal gland	The normal characteristics of semen analysis according to WHO
7	Male reproduction	Perform pregnancy test on a urine sample from a pregnant woman
8	Midterm	Midterm
9	Female reproduction	Physical characteristics of urine samples from healthy person (e.g. Specific gravity, color, odor)
10	Urine formation, Introduction to Renal physiology	Characteristics of normal chemical composition of urine in human (pH, glucose, albumin, Na, K)

11	Factors affecting renal blood flow	Normal and abnormal microscopic appearance of a given sample of a normal and abnormal human urine (e.g. renal failure)
12	Renal function tests	Performance of renal function tests: A-serum Urea by spectrophotometer
13	Renal handling of acid-base balance	Neural synapses
14	Introduction to CNS	Neuro-receptors: Vibration, heat and pain
15	Autonomic nervous system	Examine superficial and Pupillary reflexes in a human subject
16	**Practical Exam.**	
17/18	**Final Exam**	

Evaluation:

Schedule of Assessment Tasks for Students During the Semester			
Assessments	Assessment task	Week due	Proportion of Final Assessment
1	Midterm	8	30%
2	Final practical exam	16th Week	20%
3	Final written examination	17/18th Week	50 %
4	Total		100 %

Learning Resources: Required Text(s)

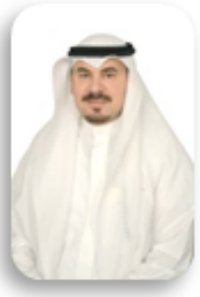
1. Essential References

Medical Physiology by Guyton, A. C. Textbook of physiology by Tortora GR & Grabowski SR

2- Recommended Books and Reference Material (Journals, Reports, etc)

- Concise Human physiology By M.Y.Sukkar et al.
- American Physiology Society http://physiologyonline.physiology.org/
- The Journal of Physiology http://jp.physoc.org/
- BMC Physiology http://www.biomedcentral.com/bmcphysiol

Diagnostic Immunology Course

Course code	**1701251-3**		
Course title:	**Diagnostic Immunology**		
Level/semester	2nd year / 2nd semesters		
Credit hours:	3 CU (3 hours)		
	Theoretical lectures / Tuesday & Thursday:10 am:12 pm (for female students) and Thursday:10 am:12 pm (for male students) **Laboratory lectures**/ each group (4 groups for female and 2 groups of male students) has a separate lab lecture time		
Course Coordinator	Dr. Naeem Questy qusty_n@hotmail.com 		
Instructors	**Name**	**Contact #**	**E. mail**
	Dr. Faisal Minshawi	Ext. 4230	
	Dr. Akhmed Aslam	Ext. 4291	Akhmed_aslam@hotmail.co.uk 
	Dr. Rehab Bagadood		rmbagadood@uqu.edu.sa

Overview:

This course is offered to the students of 2nd year Laboratory Medicine in the second semester. The course is of three credit hours: two hours of lectures and one hour of practical per week. The course is completed in one semester, which is of 15 weeks duration.

The course imparts an understanding of the principal functions of different immune cells and chemical mediators of both the innate and acquired immune system, with the ability to differentiate between them, and then apply this knowledge in the laboratory.

Course Objectives:

By the end of this course, the successful student will be able to:

1. Identify the basic components of the immune system.
2. Review and discuss how different components of the immune system work and interact with each other.
3. Recognize failures of the immune system that can lead to disease.
4. Understand the principle of different lab tests used to evaluate the immune function.
5. Perform basic laboratory techniques used to diagnose immunological disorders

*Course **Descriptions***

W. #	Lectures Topics	Laboratory Topics
1	Introduction to basic immunology and role of immunology lab in the medical field.	Introduction to Immunology lab and Laboratory safety measures
2	Innate immunity and cellular response	Antigen-antibody interactions
3	Inflammatory response and lab evaluation of the innate immune system	Monoclonal antibodies and Monoclonal antibody technology
4	Complement system	Immuno-agglutination tests
5	Complement system	Immuno-agglutination tests
6	Adaptive immune system and lymphocyte development	Immuno-agglutination tests
7	Humoral immune response (B cells) and its Laboratory evaluation	Immuno-precipitation
8	Midterm	Midterm
9	Human Leukocyte Antigen (HLA) and its clinical application	Immuno-precipitation
10	Human Leukocyte Antigen (HLA) and its clinical application	Labeled immunoassay
11	Cell mediated immune response and its Laboratory evaluation	Labeled immunoassay
12	Cell mediated immune response and its Laboratory evaluation	Serological diagnosis of viral hepatitis
13	Integration between innate and adaptive immune system	The most common immunological tests
14	Case studies	The most common immunological tests
15	Revision	Serum protein electrophoresis
16	**Practical Exam**	
17/18	**Final Exam**	

Evaluation:

Schedule of Assessment Tasks for Students During the Semester			
Assessment	**Assessment task**	**Week due**	**Proportion of Final Assessment**
1	Continuous lab evaluation and Lab portfolio	Every Week	15 %
2	Midterm	9th Week	20%
3	Reading Assessment Test (RAT)	10th Week	10%
4	Practical exams	16th Week	15%
5	Final written examination	17/18th Week	40 %

Learning Resources:

1. Required Text(s)

- Abo-Elabbas et al (2010): Cellular and molecular Immunology. Published by Saunders; 6th edition. ISBN:9 78-l-4160-3123-9 / International Edition ISBN: 978-0-8089-2411-l

2. Essential References

- Hana Zein: Immunology: Theoretical & practical concepts in laboratory medicine Published by Saunders. ISBN 0-7216-5002-3
- Mary Louise Turgeon: Immunology & Serology in Laboratory Medicine Published by F.A. Davis Company, Philadelphia, 3rd edition. ISBN 978-0-8036-1814-5

Basic of Microbiology Course

Course code:	1701261-3
Course title:	**Basic of Microbiology**
Level/semester:	2nd Year (Second Semester)
Credit hours:	**Theoretical:** 2
	Practical: 1
Language:	English
Nameof course coordinator:	Dr. Zein Alhindi

Overview:

This course is offered to the students of year 2, level 4 of Laboratory Medicine program. The course is of 3 credit hours: 2-hour lecture and 2 hours practical per week. The course is of 15 weeks' duration and completes in one semester.

The course is designed to provide students with an understanding at a basic level of the structure, replication and growth of microorganisms across two domains of life: prokaryotes, and eukaryotes. It introduces the methods used to enumerate, isolate, purify and characterize microorganisms.

Students are introduced to principles of standard microscopic and identification techniques used in the diagnosis of microbial agents. Further, they learn various methods and its application for sterilization, disinfection and prevention of diseases caused by microorganism. In addition, students will be conversant and perform basic microbiological techniques.

Students will also learn about major groups of antimicrobial agents and their mechanisms of action to kill microorganisms. The course will also introduce bacterial genetics and processes and mechanisms of transfer of genetic information among the organisms. In addition, students will be conversant with clinically important fungi, infections caused by them and diagnostic tools for their identification.

Course Objectives:

The main objectives of the course are that after successful completion of this course students will be able to describe the concepts and techniques in basic bacteriology and mycology. The course will acquaint the students with:

1. Classification, cell structure and general properties of prokaryotes and eukaryotes
2. Methods and applications of sterilization, disinfection and prevention of diseases
3. Modes of growth and factors that limit microbial growth and survival
4. Methods for studying microbial populations and different approaches to culture microorganisms
5. Bacterial genetics and mechanisms of DNA transfer
6. Major groups of antimicrobial agents, their mechanisms of action, antimicrobial susceptibility tests and mechanisms of resistance
7. Performing various microbiological and quality control methods used in the identification of bacteria
8. Recognition of important pathogenic microorganisms of major bacterial and fungal diseases
9. Clinically important fungi, their pathogenesis, human infections caused by them, and various diagnostic tests used for the identification of fungal causative agents

***Course Description*:**

No	Topics to be Covered	Practical
1	Introduction to microbiology	Laboratory safety measures, quality control and light microscopy
2	Bacterial classification and bacterial cell structure	Introduction to bacteriology laboratory and study of bacterial morphology
3	Sterilization and disinfection	Sterilization and disinfection
4	4. Bacterial growth, nutrition and metabolism	Culture media preparation and viable bacterial cell count
5	Identification of bacteria-I	Isolation technique: isolation of pure culture and study of colony morphology
6	Identification of bacteria -II	Microscopic examination of microbes: Gram staining and motility test
7	Identification of bacteria-III	Biochemical tests used in bacterial identification
8	Bacterial genetics, main bacterial diseases and their causative agents	Review of bacterial identification I, II and III
9	Antimicrobial agents I	Antibiotic susceptibility tests
10	Antimicrobial agents-II	Study of morphology of fungi
11	Introduction to diagnostic mycology	Laboratory examination of molds - I

		(Culture- Macroscopic examination)
12	Superficial and cutaneous mycoses	Laboratory examination of molds- II (culture – Microscopic examination)
13	Subcutaneous mycoses	Laboratory examination of yeast– candida and cryptococcus (colony morphology, gram stain, India ink preparation)
14	Systemic mycoses	Tease mount for microscopic examination of fungal growth
15	Opportunistic mycoses	Review of fungal identification
16	**Practical Exam**	
17	**Final Exam**	

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-tern written examination	8	20%
2	Oral presentation	10-11	10%
3	Practical examination	16	20%
4	Final written examination	17	50%
5	Total		100%

A. Required textbooks:

1. Prescott's Principles of Microbiology (2008). Joanne Willey, Chris Woolverton, Linda Sherwood. McGraw-Hill Higher Education, ISBN-10: 125900953X, ISBN-13: 978-1259009532.

2. Basic Microbiology (1997). Wesley A. Volk and Jay C. Brown. 8th edition. Benjamin Cummings, USA.

B. Reference Books:

1. Field's virology: Volume I and II (with CD-ROM) (2009). Bernard N. Fields. 4th revised edition. Lippincott Williams and Wilkins, USA.

Principles of Nutrition sciences

Course code	**701242-2**
Course title	**Principles of Nutrition sciences**
Level / semester	The second year -
Credit hours	Theoretical: 2
Language	English
Name of course coordinator	**Dr. Anmar Khan**

1. Course Overview

This course introduces the student to the basic human nutrition, general concepts of nutrition, food component (protein, carbohydrates, fats, energy balance, vitamins, minerals and water) and study the main sources, daily requirements, physiological functions, deficiency symptoms for all nutrients and the relationship between human health and nutrition.

2. Course Objective

By the end of this course, the student should be able to:

1- This course will allow students to know the differences between food, nutrition and nutrients

2- This course will allow students to demonstrate and estimate the daily requirements of nutrients.

3- This course will allow students to known what malnutrition is.

4- This course will allow students to known what the relationship between human health and nutrition is.

5- Understand the food component and know the description of meals.

6- Recognize the sources of each nutrient.

7- Know the factors that affect human nutrition.

8- Know the methods on nutritional assessment.

9- Know the relationship between nutrition and several diseases (liver, kidneys.

Course Description

No	List of Topics	Contact Hours
1	**Title:** - Introduction - Aim of the course – Definition of course outline and Description of course plane - Determine course requirements	2
2	**Title: Concepts of nutrition science** Food-Nutrition - approaches to health - health goals – importance of balanced diet - functions of nutrients in food - energy source. - Factors affect daily requirements. - Signs of good nutrition	2
3	**Title: Carbohydrates** Classification of carbohydrates – monosaccharide – disaccharides – polysaccharides - physiological functions of carbohydrates. Daily need - dietary sources – starches – sugars - digestion - absorption - metabolism.	2
4	**Title: Protein** Nature of protein - classification of protein - essential amino acids – nonessential amino acids – nitrogen balance. Functions of protein - daily need - dietary sources - deficiency symptoms – digestion – absorption - metabolism	2
5	**Title: Fats** Classification of lipids, physiological functions of lipids, daily need – dietary sources - digestion – absorption - and metabolism.	2
6	**Title: Energy Balance** Energy for fuel - energy for storage - human energy system – energy balance and recommendations for dietary energy intake.	2
7	**Title: Water** Water in human body – water source - Important of water – water balance – Requirement of water.	2
8	**Title: Vitamins** **Fat-soluble** vitamins (vitamin A, vitamin D, vitamin E and vitamin K) study the main sources - daily requirements - physiological functions – deficiency symptoms and toxicity of vitamins. **Water soluble vitamins** - vitamin C, vitamin B1, vitamin B2, niacin, requirements, physiological functions, deficiency symptoms and toxicity of vitamin.	2
9	**Title: minerals** Trace Elements (iron, zinc, copper, iodine, manganese, fluoride, selenium, chromium, molybdenum and cobalt) study the main sources, daily	2

	requirements, physiological functions, deficiency symptoms and toxicity of Minerals. **Major minerals Calcium. Phosphorus** – **Magnesium – Potassium – Sodium – Chloride - Sulfate** study the main sources, daily requirements, physiological functions, deficiency symptoms and toxicity of Minerals.	
10	**Title: Diet therapy for obese patients**	2
11	**Title: Diet therapy in G.I.T diseases**	2
12	**Title: Diet therapy** in diabetic patients	2
13	**Title: Diet therapy** in cardiovascular diseases	2
14	**Title: Diet therapy** in renal diseases	2
15	**Revision**.	**2**

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-term exam	8th week	30%
2	Coursework-active participation, attendance, group project	All weeks	15%
3	Final written Exam	17th week	55%
4	Total		100 %

Learning Resources: Required Text(s)

Mahan K. L. and Stump S.E. Nutrition and Diet Therapy. 11th. Ed. Pub. by Elsevier, USA, 2004.
Mahan K. L. and Stump S.E. Food and Nutrition Therapy. 12th. Ed. Pub. By

Saunders, an imprint of Elsevier, Canada, 2008

Third Year Subjects

Applied Diagnostic Biochemistry

Course code	1701332-4
Course title	**Applied Diagnostic Biochemistry**
Level / semester	The third year - Full Year
Credit hours	Theoretical: 2
	Practical:2
Language	English
Name of course coordinator	**Dr. Bodoor Ragab**
Instructors	**Dr. Ahmed qasem** aaqasem@uqu.edu.sa **Dr. Anmar Khan** anmar_k@hotmail.com **Dr. Samah Amehmadi** ; sjamehmadi@uqu.edu.sa  

Overview

The course is designed to extend the theoretical (2 CH) and practical (2CH), knowledge in the fields of clinical biochemistry. The course discusses properly the lab cycle, preanalytical- analytic and post-analytic errors. The course is providing advice and interpretation of analytical results of acid base balance, electrolytes and plasma

proteins. The course has a good idea about the clinical enzymology and criteria of enzymes have diagnostic important and the important enzymes in the diagnostic biochemistry. Through this course, you will gain a core knowledge and understanding of the normal physiology and pathophysiology of the kidney, liver function tests and correlate with clinical symptoms with case studies. Also, the practical course provides deep information which correlate with the practical theories.

Course Objectives

1. The students to the will have a good knowledge about the importance of diagnostic chemistry which used to measure chemical change in the body.
2. Also, student will have a good information for diagnosis, and prognosis of liver, kidney disease, plasma proteins, electrolytes and acid base balance disorders as well as tumor markers, endocrine disorders, in addition to body fluid.
3. Therefore, the student like any skilled worker must understand thoroughly the tools of the trade: equipment, reagent, principle, and calculations involved in the assays. As well as important of diagnostic chemistry

Course Descriptions, 1st semester

W. #	Lectures Topics	Laboratory Topics
1	Introduction to diagnostic biochemistry and general principle of biochemical investigation	Introduction to diagnostic clinical chemistry laboratory important.
2	Lab testing cycle	Urine analysis (Physical) Examination
3	Analytical and post analytical Variables (Quality Assessment)	Urine Analysis (chemical & microscopic) Examination
4	Analytical Technique, Spectrophotometer	Collection of blood samples
5	Photometric technique	Handling of blood samples
6	Immunochemical techniques	Analytical technique (Spectrophotometer Principles& Components)
7	Chromatography	Application of Spectrophotometer Endpoint calorimetric (Albumin) and factors effect on albumin blood level
8	Midterm.	Midterm exam

9	Electrochemical techniques, ISEs and Automation	Application of Spectrophotometer Enzymatic Endpoint Spectrophotometer (Uric acid), and interpretation
10	Electrophoresis	Automation, principles, types and clinical application
11	Plasma protein and disorders	Automation, clinical application
12	Liver function Tests	Liver functions Estimation of GGT or ALP d interpretation
13	Jaundice & Neonatal Hyperbilirubinemia	Estimation of total & direct bilirubin, interpretation in different types of jaundice
14	Cardiac markers and lipoproteins	Estimation total plasma proteins
15	Revision and presentation	Revision
16	**Practical Exam.**	
17/18	**Final Exam**	

Course Descriptions, 2nd semester

W. #	Lectures Topics	Laboratory Topics
1	Kidney Functions Tests:	Introduction and practical course overview
2	Kidney Function Tests	Estimation of urea and interpretation
3	Electrolytes disorders	Estimation of creatinine and urea/ creatinine ratio with interpretation
4	Acid Base Balance in health and diseases-1	Sampling collection for electrolytes and blood gas estimation
5	Acid Base Balance in health and diseases (disorders)-2	Determination of HA1C
6	Blood glucose regulation and Diabetes Mellitus	Glucose tolerance test and interpretation
7	Lab diagnosis of Diabetes	Revision
8	Med term	Midterm Exam
9	Assessment of endocrinal disorders (pituitary disorders) and Thyroid dysfunction	Methods of measurement and interpretation of Thyroid Profile ELISA and (T4)
10	Adrenal dysfunction (cortisol and adrenaline)	Methods of measurement and interpretation of Thyroid Profile (TSH)
11	Bone Metabolism Disorders	Estimation and interpretation of albumin in transudate and exudate
12	Malignancy disorders & diagnosis, Tumor markers	Assessment of cardiovascular disorders

		Estimation of LDH and or LDL, interpretation
13	- Body Fluid	Bone metabolic disorders: Estimation of total calcium
14	Pancreatic dysfunction	Practical- Tumor marker
15	Revision and presentation	Revision
16	**Practical Exam.**	

Evaluation:

Schedule of Assessment Tasks for Students During the Semester			
Assessments	**Assessment task**	**Week due**	**Proportion of Final Assessment**
1	Midterm	8	20 %
2	Presentation and class discussion	At the end of each semester	10 %
3	Final practical exam	16th Week	20 %
4	Final written examination	17/18th Week	50 %
5	Total		100 %

Learning Resources: Required Text(s)

1. **Essentials of Medical Biochemistry**: With Clinical Cases by N. V. Bhagavan and Chung-Eun Ha (2011)
2. **Clinical Chemistry: Techniques, Principles,** Correlations (Bishop, Clinical Chemistry) by Michael L. Bishop, Edward P. Fody and Larry E. Schoeff (2009)
3. **Lecture Notes: Clinical Biochemistry** by Geoffrey Beckett, Simon W. Walker, Peter Rae and Peter Ashby (2010**)**

Diagnostic Microbiology Course

Course code:	1701362-6
Course title:	**Diagnostic Microbiology**
Level/semester:	3nd Year (Full Year)
Credit hours:	**Theoretical:** 4
	Practical: 2
Language:	English
Name of course coordinators	**Dr: Banan Atwah:** baatwah@uqu.edu.sa
Name of course Instructors	Dr Ahmed Ashshi aashshi@yahoo.com   Dr. Radi Alsafi Radi.assafi@gmail.com **Dr: Saad El-Ghamdy** **Dr. Ahmmed Kabrah** amkabrah@uqu.edu.sa

Overview

This course aims to provide knowledge, skills and competence to the students in the reliable performance of diagnostic microbiological tests by utilizing routine and automated techniques. In addition, students are trained to develop the ability to interpret laboratory generated results and hence contribute to the laboratory diagnosis of a disease.

This course is offered to the students of 3rd year Laboratory Medicine at level 5 and 6. The course is of six credit hours (3 credit hours, each level): 2 hours' lecture and 2 hours practical per week in each level. The course is completed in two levels (5 and 6); each level is of 15 weeks' duration. The course consists of diagnostic bacteriology and basics and diagnostic virology.

At level 5, the course consists of diagnostic bacteriology and at level 6 basic and diagnostic virology. For both levels, a series of lectures and hands on practicals are undertaken. The oral presentations by the students on given scientific topics is also part of the course

Course Objectives

The main objectives of the course are that after successful completion of this course students will be able to describe the concepts and techniques in diagnostic microbiology to detect, identify and report an infectious agent of the disease. This course will acquaint the students with:

1. Clinically important bacteria and viruses and human infections caused by them.
2. The mode of infection, pathogenesis and pathology of bacterial and viral infections.
3. Various diagnostic techniques including automation system used for the identification of causative agents from clinical specimens.
4. The knowledge for appropriate selection of clinical specimens and subsequent methods for the diagnosis of microbial diseases.
5. The difference between normal bacterial flora and pathogens from clinical specimens.
6. The interpretation of antimicrobial susceptibility results of an organism and its correlation with bacterial infection.
7. Understanding and analysis of clinical based scenarios for the laboratory diagnosis of bacterial and viral infections.
8. The importance of infection control and to know general measures to be taken for thecontrol of microbial infections.

Course Descriptions, First semester

No	Topics to be Covered	Practical
1	Introduction to diagnostic microbiology	Collection of clinical samples for microbiological analysis
2	The normal flora of the human body and genus staphylococcus	Study of normal flora of body sites (e.g., nose, throat and skin)
3	Genus streptococcus and enterococcus	Identification of *Staphylococcus* species
4	Neisseriae	Identification of *Streptococcus* and *Enterococcus* species
5	Genus corynebacterium and bacillus	Identification of *Neisseria* species
6	Genus clostridium	Study of *Corynebacterium* and *Bacillus* species
7	Parvobacteria	Study of *Clostridium* species
8	Enterobacteriaceae-I (lactose fermenters)	Identification of *Haemophilus* and *Brucella* species
9	Enterobacteriaceae-II (non-lactose fermenters)	Identification of Enterobacteriaceae (lactose fermenters)
10	Pseudomonas and vibrios	Identification of Enterobacteriaceae (non-lactose fermenters)

11	Campylobacter and helicobacter	Identification of *Pseudomonas* species
12	Mycobacterium	Identification of *Vibrio* species
13	Spirochetes	Identification of *Campylobacter* and *Helicobacter* species
14	Chlamydiae	Study of *Mycobacterium*
15	Mycoplasma	Study of *Spirochaetes*, *Chlamydiae* and *Mycoplasma*
16		**Practical Exam**
17	**Final Exam**	

Course Descriptions, Second Semester

WK	Lecture Title	Practical Title
1	General properties and classification of viruses	Laboratory safety measures and quality control in virology laboratory
2	Viral replication	Demonstration of laboratory safety cabinets
3	Interaction between viruses and host cells	Demonstration of electron and inverted microscopes
4	Host response to viral infections and immunity	Laboratory diagnosis of viral infections I
5	Laboratory diagnosis of viral diseases	Laboratory diagnosis of viral infections II
6	Introduction to diagnostic virology	Demonstration of tissue culture I
7	Hepatitis viruses	Demonstration of tissue culture II
8	Herpes viruses	Latex agglutination test
9	Respiratory viruses I: orthomyxo and paramyxo viruses	Hemagglutination test (direct and indirect)
10	Respiratory viruses II: Rhino viruses	Immunofluorescence tests (direct and indirect)
11	Reoviridae and adenoviruses	Enzyme Linked immunosorbent assay (ELISA-I)
12	Picornaviridae	Enzyme linked immunosorbent assay (ELISA-II)
13	Papovaviruses	Enzyme linked immunosorbent assay (ELISA-III)
14	Retroviruses and human immunodeficiency virus	Molecular diagnosis of viral infections
15	Haemorrhagic fever viruses	Blotting techniques
16		**Practical Exam**
17	**Final Exam**	

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-tern written examination	8	20%
2	Oral presentation	10-11	10%
3	Practical examination	16	20%
4	Final written examination	17	50%
			100%

Learning Resources:

Required text Books:

1. Textbook of Diagnostic Microbiology (2019). Connie R. Mahon and Donald C. Lehman. 6th edition. Elsevier Saunders. St. Louis, Missouri. ISBN-978-0-323-61317-0 (printed hard cover), ISBN, 9780323482127 (ebook).

2. Medical Microbiology with student consult (2015). Patrick R. Murray., Ken S. Rosenthal., Michael A. Pfaller. 8th edition. Elsevier. U.S.A. ISBN-10: 0323299563, ISBN-13: 978- 0323299565

Reference Books:

1. District Laboratory Practice in Tropical Countries – Part 2. (2006). Monica Cheesbrough. 2nd edition. Cambridge University Press. United Kingdom

Diagnostic Histopathology and Cytology

Course code and number:	1701312-8
Course title:	**Pathology and Histo-Cyto techniques**
Level/semester:	3rd year (Full year)
Credit hours:	8 hours /week
Course coordinator:	**Dr. Hussain Almasmoum** haamasmoum@uqu.edu.sa 
Instructor:	
	Dr. Amany Mahbub, a.mahbub@hotmail.com  **Dr. Mohamad Shahid** drshahidkbn@yahoo.com
	Dr. Alaa Saleh: amsaleh@uqu.edu.sa
	Dr. Eisha Tbssm aishatbssm@yahoo.co.in
Office Hours:	6 hours (Tuesday and Wednesday)

Overview

General Pathology:
This course is intended to cover the general principles, terminology, diagnostic procedures, and basic concepts of pathology, (identifying pathological processes at the cellular and gross anatomical level and correlating these with the clinical symptoms and signs).

The course will introduce the concepts of cell injury and the changes from normal structure and function in the human body, as occurs in disease.

The various pathological processes comprising of topics in cellular adaptations, cell injury, inflammation and tissue repair, hemodynamic disorders, neoplasia, nutritional and environmental disorders, diabetes and atherosclerosis will be studied.

Histotechnology:

This course is designed to provide the students with the necessary theoretical and practical knowledge about histopathology specimens collection, receipt, handling, storage, fixation, and processing along with preparation and staining of slides, troubleshooting steps, quality control and safety.

The course includes:

1. The practical training about tissue processing and preparation of slides, which includes gross examination and fixation of specimens, decalcification, embedding, microtomy and frozen section technique.
2. The study of principles of routine staining as well as special stains for different constituents in tissues and their practical training
3. Basic principles and theoretical knowledge about special ancillary techniques like immunohistochemistry along with practical training
4. Theory about Newer techniques in histotechniques like tissue microarrays
5. Laboratory safety and handling of biomedical waste
6. Quality control, Archiving and retrieval of specimens, blocks and slides.

Objectives

Upon the completion of the course, the student should be able to:

1. Describe the basic mechanisms of various cellular derangements seen in the disease processes
2. Describe the aetiology, pathogenesis, morphology, clinical manifestations, sequelae and prognosis of a few important diseases
3. Explain the gross and microscopic changes due to various pathological processes
4. Perform the basic techniques necessary for the histopathology specimen processing and the production of quality slides that helps in rendering the diagnosis for a disease.
5. Describe the principles of routine staining and special staining techniques
6. Describe the basic principles of special techniques like immunohistochemistry and tissue microarrays.

Course Description, First and second semester

W. #	Lectures Topics	Laboratory Topics
1	Introduction to Pathology, Cellular adaptations	Introduction to histotechnology, lab safety, specimen reception, handling and archiving or storage of specimens, quality control
2	Cell injury, Cell death, Cellular Accumulations and Pathological Calcification	Examination and grossing of specimens, Fixatives and fixation techniques
3	Inflammation: Acute and Chronic type, Chemical mediators.	Principles of Tissue processing and Decalcification
4	Inflammation: Morphology, Outcome, Clinical Manifestation, Granulomatous inflammation	Principles of Tissue Embedding
5	Healing and Repair 1	Theory of Microtomy and Frozen section
6	Healing and Repair 2	Principles and theory of staining
7	Hemodynamic disorders: Hyperaemia, Congestion, Thrombosis	Principles of Hematoxylin and Eosin Stain
8	Hemodynamic disorders: Embolism, infarction, haemorrhage and shock	Special stains for Carbohydrates
9	Neoplasia 1	Special stains for Connective Tissue (Collagen)
10	Neoplasia 2	Special stains for Connective Tissue (Elastic fibres)
11	Neoplasia 3	Special stains for Connective Tissue (Reticulin fibres)
12	Genetic Diseases	Special stains for pigments
13	Genetic Diseases	Principles of immunohistochemistry and staining
14	Diabetes mellitus	Newer techniques like tissue microarrays
15	Atherosclerosis and Blood vessel diseases	Frozen section demonstration
16	**Final part 1- lab Exam**	
17/18	**Final Exam**	

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid Term Exam	8th-9th	20
2	Assignments and oral presentation	15th	10
3	Practical Exam (Histotechnology)	16th	20
4	Final theory exam	17th-18th	50
	TOTAL		100

Learning Resources: Required Text(s)

1. Robbin's Basic Pathology. 10th Edition (2017). Elsevier, Rubins Pathology. Seventh edition.
2. Harsh Mohans Text book of Pathology Robbins Pathologic Basis of Disease.
3. Carson, Freida L.(2014) Histotechnology: A Self-Instructional Text. 4th ed. ASCP Press.
4. Bancroft, John D. (2013) Bancroft's Theory and Practice of Histological Techniques. 7th ed. Churchill Livingstone Elsevier

Diagnostic Hematology Course

Course code and number:	1701352-5
Course title:	**Diagnostic Hematology**
Level/semester:	3rd year / 1st and 2nd semester
Credit hours:	5CU (5 hours)
	Theoretical lectures / Sunday :8 am:10 pm
Course Coordinator	**Dr Heba Almasmoum**; Assistant professor of hematology hamasmoum@uqu.edu.sa
Instructor:	**Dr. Ahmad Arbaeen** Assistant professor of hematology ahmadarbaeen@gmail.com 
	Dr. Amal Ezzat: Associate professor of hematology. damalezzat@yahoo.com
Office Hours:	Monday: **From 08:00 am to 10:00 am.**

Overview:

Students will be learn about blood cells & its cellular components in normal and pathological disorders.

Objectives:

By the end of this course, students will able to:

1. Describe the anatomy and physiology of normal hemopoiesis.
2. Describe the structure of hemoglobin and processes involved in iron metabolism.
3. Classify the different types of anaemia.
4. Describe the abnormalities that occur in hemoglobinopathies.
5. Discuss the metabolism of vitamin B12 and folate and their role in hemopoiesis.
6. Describe the red cell enzyme pathways and the red cell membrane defects.
7. Identify and discuss the various forms of hemolysis and their causes.
8. Discuss the importance and role of quality control/management in a routine Hematology laboratory.
9. Discuss the diagnosis and classification of acute and chronic leukemias.
10. Describe and discuss the diagnosis of myeloproliferative and lymphoproliferative disorders.
11. Discuss the nature of events contributing to normal and abnormal hemostasis including acquired and inherited defects.
12. Discuss antithrombotic therapy currently available in clinical practice.
13. Examine, report and interpret the morphological features seen in the peripheral blood in the microscopic examination of blood disorders.
14. Recommend and undertake a range of laboratory tests, and interpret their results to assist in the diagnosis of haematological disorders.

Course Description:

No	Topics to be Covered
1	Hematopoiesis and Erythropoiesis
2	Record Organization and General Principles.
3	Introduction to anemias
4	Approach to diagnosis of anemias
5	Hypochromic anemia (Iron deficiency)
6	Hypochromic anemia (other than iron deficiency) and Iron overload
7	Hypochromic anemia (other than iron deficiency) and Iron overload
8	Med term Exam
9	Megaloblastic anemia
10	Megaloblastic anemia(continuation) and other macrocytic anemia
11	Aplastic anemia and other BM failure
12	Congenital haemolytic anemia
13	Hemoglobinopathies
14	Acquired haemolytic anemia
15	Practical Exam
16, 17	**Final Exam**

2nd Semester

Week	Date	Lecture Title	Practical(Dr. Sameh, Miss/ shefaa Hegazy)
1		WBCs and their benign disorders	WBCs count & Differential count
2		WBCs and their benign disorders	Differential count
3		leukemia Classification& Acute Lymphoblastic Leukemia	ALL morphology
4		Acute myeloid leukemia	AML morphology
5		Myelodysplastic syndrome	Flow cytometry in leukemias
			MDS morphology
6		Chronic leukemias&CLL	Flow cytometry in leukemias
			Lymphocytosis, CLL
7		Chronic myeloid leukemia	CML morphology&NAP score
8		Myeloproliferative disorders	Other MPN morphology
9		Lymphoma& Multiple myeloma	Plasma cell morphology
10		Bone marrow transplantation	
11		Thrombopoiesis& Coagulation cascade	Cytogenetics in hematologic malignancies
12		Approach to bleeding patient	Platelet count and morphology
13		Inherited coagulation disorders	B.T
14		Thrombocytopenia	PT&PTT
15		DIC and Thrombophilia	Q.C in hematology
16			**Practical Examination**
17		**Final Comprehensive Exam**	

Evaluation:

Schedule of Assessment Tasks for Students During the Semester			
Assessment	**Assessment task**	**Week due**	**Proportion of Final Assessment**
1	Class activity	Every Week	10 %
2	Midterm	Week 8	20 %
3	Practical Examination	15th Week	20 %
4	Final Examination	17th Week	50%

Learning Resources: Required Text (s)

1. Essential hematology A.V. Hoffbrand, J.E. Pettit, edition 5th 2017
2. Practical hematology John V. Dacie, S.M. Lewis
3. Post-Graduate Hematology. VA Hoffbrand, Blackwell
4. Clinical Hematology Atlas. Hoffbrand, Pettit.Sandoz

Diagnostic Parasitology Course

Course code	1701363-6		
Course title:	**Diagnostic Parasitology**		
Level/semester	3rd year / 1st and 2nd semesters		
Credit hours:	6CU (6 hours)		
	Theoretical lectures / Wednesday :10 am:12 pm **Laboratory lectures**/ Monday (8:10) AM		
	Name	**Contact #**	**C. mail**
Course Coordinator	Dr.Mohamed Al-Kurbi	Ext. 4232	 dr.kurbi@hotmail.com
Instructors	Dr. Raafat A. Hassanein	Ext. 4252	 rayoussef@uqu.edu.sa
	Dr. Zein Alhindi		
	Dr. Banan Atwah		

Overview:

The course includes a brief description of different parasitic infections in term of site of affection; distribution, functional morphology, life cycle, modes of infection, pathogenesis and clinical picture. The course is designed to be thought in 60 hours of formal lectures covering all major parasitic infections and 60 hours of practical sessions to cover the main morphological features of the medically important parasites and the demonstration of their diagnostic stages

Course Objectives:

By the end of this course, students will be able to:

1. This course is designed to give third year laboratory medicine students basic knowledge about medically important parasitic diseases and the demonstration of their diagnostic stages.
2. In addition, examine specimens for parasites, apply different laboratory diagnostic techniques in parasitology and properly interpret the obtained results..

Course Descriptions, First semester:

W. #	Lectures Topics	Laboratory Topics
1	Introduction to Parasitology	Introduction
2	Introduction to Platyhelminths & Liver and Lung Flukes	Introduction to Parasitology Laboratory
3	Intestinal Flukes	Study of Intestinal, Liver and Lung Flukes
4	Blood Flukes	Study of Schistosomes
5	Intestinal Cestodes	Indirect Hemagglutination Assay for Schistosomiasis
6	Intestinal Cestodes (Cont.)	Study of Cestodes
7	Tissue Cestodes	Stool analysis (Direct smear – wet mount)
8	Introduction to Nematodes & Enterobiasis	Stool Analysis (Sedimentation Technique)
9	Enterobiasis (cont.) & Ascariasis	Stool Analysis (Floatation Technique)
10	Hookworms & Trichuriasis	*Enterobius sp.* and Scotch Tape Technique
11	Capillariasis Strongyloidiasis & Dracunculiasis	Study of Intestinal Nematodes
12	Blood & Tissue Nematodes	Kato-Katz Thick Fecal Smear
13	Blood & Tissue Nematodes (cont.)	Study of Blood & Tissue Nematodes
14	Visceral & Cutaneous Larva Migrans	Slides Revision
15	**Practical Exam.**	
16		
17/18	**Final Exam**	

Course Descriptions, Second Semester:

W	Lectures Topics	Laboratory Topics
1	Introduction to Protozoa & Amoebiasis	Introduction to Protozoology
2	Amoebiasis (Cont.) &	Study of Intestinal Amoebae
3	Pathogenic Free Living Amoebae & Balantidiasis	Study of Intestinal & Urogenital Flagellates
4	Giardiasis & Trichomoniasis	Stool Ova and Parasites (O&P) Exam
5	Intestinal Sporozoa: Cryptosporidiosis, Cyclosporiasis	Modified Ziehel-Neelsen Technique
6	Tissue protozoa (Toxoplasmosis)	Study of Intestinal Sporozoa
7	Blood and Tissue Flagellates (Cutaneous & Mucocutaneous Leishmaniasis)	Serological Techniques in Parasitology & Immuno-diagnosis of Toxoplasmosis
8	Blood and Tissue Flagellates (Visceral Leishmaniasis)	Molecular Techniques in Parasitology (PCR)
9	Blood and Tissue Flagellates (Trypanosomiasis)	Study of Blood & Tissue Flagellates
10	Malaria	Thick & Thin Blood Films Techniques
11	Malaria (Cont.)	Study of *Plasmodium* spp. & Estimation of Parasitaemia level
12	Babesiosis	Quantitative Buffy Coat Technique (QBC)
13	Scabies & Myiasis	Slides Revision
14	Assignment's evaluation	Assignment's evaluation
15	Revision	Revision

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	9	25%
2	Semester assignment	14	10%
3	Practical exam & Lab note	16	25%
4	Final written exam	17	40%

Learning Resources:

1. Required Text(s)

Diagnostic Medical Parasitology, Lynne Garcia. Pub by ASM Press; 6th edition (2016). ISBN: 978-1555819002.

2. Essential References

- Medical Parasitology. A Practical Approch, Elizabeth A. Zeibig. Pub by Saunders; 1st edition (January 15, 1997). ISBN-10: 0721651879, ISBN-13: 978-0721651873.
- Atlas of Human Parasitology, Lawrence Ash, Thomas Orihel. Pub by American Society for Clinical Pathology; 5th Edition (January 31, 2007). ISBN-10: 0891891676, ISBN-13: 978-

Fourth Year Subjects

Blood Bank and Transfusion Medicine

Course code	1701453-3
Course title	**Blood Bank and Transfusion Medicine**
Level/semester	4th year / 1st semester
Credit hours	3 (2 hours lecture + 1 hours practical)
Course Coordinator	Dr. Amr Halawani
Course Instructor	**Dr. Saeed Kabrah:** Assistant Professor of Blood Bank s.m.kabrah@hotmail.com 
Instructor (Data for female students)	**Dr. Aml Ezzat:** Associate professor of hematology. damalezzat@yahoo.com
Office Hours	4 hours for each staff member/ week

Overview:

This course has been designed to encompass the theoretical and practical aspects of the blood banking and transfusion technology. The study focus on red cell antigens and the corresponding antibodies and their clinical importance, donor selection & blood donation, blood storage and component preparation, blood typing, unit testing and antibody identification.

Objectives:

By the end of this course, students will able to:

1. Describe the genetic and chemical consideration of different blood groups (ABO, Rh, Lewis, and others)
2. Tell the clinical importance of different blood group antigen ad antibodies
3. List correctly different disorders require treatment with blood or blood components
4. Evaluate volunteers for blood donation for their eligibility.
5. Explain the principle and application of plasmapheresis and cell apheresis.
6. List the essential tests should be done for both donors and recipients.
7. Discuss component preparation, appropriate use, shelf life, and storage requirements.
8. Explain the pathophysiology of compilations of blood transfusion and how to avoid and treat in practical life.
9. Perform basic tests in blood bank e.g. blood grouping, antibody identification, cross matching, Coomb's test……

Course Descriptions:

W. #	Lectures Topics	Laboratory Topics	Quiz	Date
1	ABO blood grouping	Preparation of red cell suspension		
2	ABO blood grouping	ABO forward and reverse typing & Du antigen detection		
3	RH system	ABO discrepancies		
4	RH system	Direct Anti-globulin test		
5	Other blood group antigens	Indirect anti globulin test		
6	Other blood group antigens	Antibody screening		
7	Blood donation	Antibody identification		
8	autologus transfusion	Antibody identification	Mid term	
9	Apharesis	Rh antibody titration		
10	Storage of blood	Antigen phenol-typing		
11	Blood products	Cross matching		
12	Blood products	Adsorption Technique		
13	Complications of blood transfusion	Illution Technique		
14	Complications of blood transfusion	Quality control in blood banking		
15	Hemolytic disease of the newborn			
16	**Practical Exam.**			
17/18	**Final Exam**			

Evaluation:

Schedule of Assessment Tasks for Students During the Semester			
Assessments	**Assessment task**	**Week due**	**Proportion of Final Assessment**
1	**Practical continuous evaluation**	**Every Week**	**10 %**
2	**Midterm**	**8 weeks**	**20%**
3	**Delivery of the assignment 1**	**7th week**	**5 %**
4	**Delivery of the assignment 2**	**10th week**	**5 %**
5	**Case studies and writing lab reports**	**All through the practice sessions**	**10%**
6	**Final practical exam**	**16th Week**	**10%**
7	**Final written examination**	**17/18th Week**	**40 %**

Learning Resources: Required Text(s)

1. **Technical Manual by American Association of Blood Bankers.**

   Modern Blood Banking &Transfusion Practices by Denise M. Harming

2. Essential References

- Text Book of Blood Banking & Transfusion Medicine by Sally V. Rudman.
- Text Book of Transfusion Medicine by Mollison.

Basic Medical Biostatistics

Course code	**1701471-3**
Course title	**Basic Medical Biostatistics**
Level / semester	**4th year – 1st semester**
Credit hours	Theoretical: Three hours/week
Language	English
Name of course coordinator	**Dr. Hamza Assaggaf:** hmsaggaf@uqu.edu.sa

Overview:

This course provides principles of biostatistics as related to medical sciences. Sampling techniques, sampling distributions, estimation of parameters, probability, and probability distribution with emphasis on the normal are covered. Tests of hypotheses, measures of association are also covered. The course provides students with an introduction to the population(s) that the health system aim to serve. By way of background, a brief review of the world population in historical perspective is provided.

Course Objectives:

By the end of this course, the students will be able to:

An introduction to the major processes that determine population growth and composition is given. Issues that are central in rapid rates of population growth and very low rates of population growth are discussed. An introduction to the world context of population growth is aimed at helping the students understand the demographic processes and issues that deserve appreciation in the context of the Kingdom of Saudi Arabia (KSA) and her future growth. In all, to provide students with statistical analysis that would help them to understand the idea behind and go to perform research, and how and what are the suitable statistical analysis to apply. Also,

hoe to describe the results and give conclusion and recommendation for the general audience.

Course Description:

No	Topics to be Covered
1	Definition of medical statistics.
2	Measures of central tendency (arithmetic mean, mode, median).
3	Measures of dispersion (range, mean deviation, variance, stander deviation).
4	Normal distribution curve, empirical rule, confidence limit.
5	Probability, variable.
6	Sampling.
7	Screening.
8	Epidemiological studies (descriptive, analytic, experimental/cross sectional, longitudinal …. etc.).
9	Relative risk, Attributable risk, Odd's ratio.
10	Presentation of data.
11	Statistical significance.
12	How can you deal with SPSS program?
13	Fertility rates.
14	Mortality rates.
15	Morbidity rates
16, 17	**Final Exam**

Evaluation:

Schedule of Assessment Tasks for Students During the Semester			
Assessment	**Assessment task**	**Week due**	**Proportion of Final Assessment**
1	**Class activity**	**Every Week**	**15 %**
2	**Midterm**	**Week 8**	**25 %**
3	**Final examination**	**17th Week**	**60%**

Learning Resources: Required Text(s):

- Medical Statistics at a Glance.
- Practical Biostatistics in Translational Healthcare by Allen M. Khakshooy, Francessco Chiappelli.
- Essentials of Biostatistics in Public Health by Lisa M. Sulliuan

Diagnostic Pharmacology and Toxicology

Course code and number:	**1701434-6**
Course title:	**Diagnostic Pharmacology and Toxicology**
Level/semester:	4th year, First Semester
Credit hours:	6 CU (4 Theoretical and 2 Practical)
Instructors:	**1. Dr. Adel El-Shemi** (Associate Professor of Pharmacology and Toxicology, Faculty of Applied Medical Sciences, UQU). E-mail: agshemi@uqu.edu.sa, Mobile: 0509655135.  2. **Dr. Mona Al-Hammadi** (Assistant Professor of Pharmacology and Toxicology, Faculty of Applied Medical Sciences, UQU). mshammadi@uqu.edu.sa .
Instructors Office Hours:	Sunday: **From 01:00 pm to 03:00 pm.** Monday: **From 012:00 pm to 02:00 pm.** Monday: **From 01:00 pm to 03:00 pm.**

Overview:

This course is designed to introduce the 4th year Laboratory medicine students to the basic and clinical aspects of diagnostic Pharmacology & Toxicology..

Objectives:

By the end of this course, students will able to:

- Recognize the different branches of Pharmacology and Toxicology Sciences.
- Understand the integrated role of Lab. Medicine in the field of Diagnostic Pharmacology & Toxicology.
- Appraise the correct principles of Laboratory Medicine in the diagnosing of poisoning conditions and drug intoxications.
- Participate in proper selection of therapeutic drugs and their safe/effective dosage regimen, especially in treatment of infectious diseases and haematological disorders.
- Develop the ability to work independently and positively participate in interactive sessions

Course Description, 1st Semester:

W. #	Lectures Topics	Laboratory Topics
1	Course Overview & Introduction	Lab Safety
2	Pharmacodynamics	Introduction and Terminology
3	Pharmacokinetics	Drug Dosage Forms
4	Antibacterial Drugs and role of Lab Medicine in selection of appropriate antimicrobial therapy and detection of antimicrobial drug resistance	Routes of Drug Administration
5	. Antibacterial Drugs and role of Lab Medicine in selection of appropriate antimicrobial therapy and detection of antimicrobial drug resistance	Animal Experimentation: Reason & Application
6	Antibacterial Drugs and role of Lab Medicine in selection of appropriate antimicrobial therapy and detection of antimicrobial drug resistance	Animal Experimentation: Reason & Application
7	Anti-TB drugs and role of Lab Medicine in detection of drug resistance.	Handling of Experimental Animals.
8	Antiviral Drugs	Dose Response Curve: Drugs Acting On Skeletal Muscle
9	Anti-Fungal Drug/ Anti- protozoa / anti-parasitic drugs	Dose Response Curve: Drugs Acting On Skeletal Muscle
10	Anti- protozoa / anti-parasitic drugs	Drug Dose Response Curve: Drugs Acting On Smooth Muscle
11	Pharmacology of Blood & Hematological disorders and role of Lab Medicine	Drug Dose Response Curve: Drugs Acting On Smooth Muscle

12	Pharmacology of Anti-hyperlipidemic drugs and role of Lab Medicine	Rational use and misuse of antibacterial drugs, and the role of
13	Therapeutic Drug Monitoring and Role of Lab Medicine	Rational use and misuse of antibacterial drugs, and the role of
14	Therapeutic Drug Monitoring and Role of Lab Medicine	Therapeutic Drug Monitoring
15	Revision	Revision And Lab Reports Correction
16	**Lab Exam**	
17/18	**Final Exam**	

Course Description, 2nd Semester:

Lectures Topics	**Laboratory Topics**
1. Course Overview & Introduction	Introduction and Toxicological Terminology
2. General Classification of Poisons & Toxins	Laboratory methods and equipment commonly used in Diagnostic Toxicology
3. General aspects of diagnosis & management of drug poisoning and intoxicant substances	Laboratory methods and equipment commonly used in Diagnostic Toxicology
4. General aspects of diagnosis & management of drug poisoning and intoxicant substances	TDM in the field of Toxicology & Forensic Medicine
5.Sampling and Analytical Toxicology	TDM in the field of Toxicology & Forensic Medicine
6. Sampling and Analytical Toxicology	Effects of drugs on rabbit's eye
7.Role of TDM in Diagnostic Toxicology	Effects of CNS stimulants on mice
8.Role of TDM in Diagnostic Toxicology	Effects of CNS tranquilizers and hypnotics on mice
9. Drug Abuse & Addiction and diagnostic role of lab. Medicine	Organophosphorus poisoning
10.Drug Abuse & Addiction and diagnostic role of lab. Medicine	Opioids Poisoning
11. Environmental Toxicology and diagnostic role of lab. Medicine	Opioids Poisoning
12.Heavy Metals Intoxication and diagnostic role of lab. Medicine	Cyanide poisoning
13.Heavy Metals Intoxication and diagnostic role of lab. Medicine	Paracetamol poisoning
14.Gas poisoning and diagnostic role of lab. Medicine	Salicylate poisoning
15. Revision	Carbon monoxide gas poisoning

Evaluation:

#	Assessment task*	Week Due/semester	% of Total Assessment Score/semester
1	**Mid-term exam**	**End of week 8/semester**	**20 %**
2	**Curricular activities**	**Described below**	**5 %**
3	**Practical Exam**	**Week 15/semester**	**20 %**
4	**Final Theoretical Exam**	**End of week 15/semester**	**55 %(50%)**
5	**Total**		**100 %**

Learning Resources: Required Text(s):

- A textbook of modern toxicology Textbook (4th Edition) by Ernest Hodgson(2010)
- Clinical Toxicology: Principles and Mechanisms by Frank A. Barile (Last Addition): Pub by CRC Press.(2nd edition-2010)
- BASIC AND CLINICAL PHARMACOLOGY, *Bertram G. Katzung*, (Last addition): Pub by McGraw-Hill Medical Publishing Division, New York. (12th edition-2012)

Genetics and Molecular Biology

Course code number:	**1701333-3**
Course title:	**Genetics**
Level/semester:	4th year, First Semester
Credit hours:	3 CU (2 Theoretical and 2 Practical)
Course coordinator	**Dr. Afnan Shakory**: Assistant Professor of Geneticsand Molecular Biology
Instructors:	**Dr. Afnan Salaka**: Assistant Professor of Genetics and Molecular Biology: afnan.salaka@hotmail.com

Overview

This course will be delivered to the senior students (4th year) in Laboratory Medicine in the first semester. The course is of three credit hours: two hours of theoretical lectures and one hour of practical session per week. The course is completed in one semester, which is of 15 weeks duration.

Molecular genetics is one of the most rapidly advancing fields of medicine. Every medical scientist who practices in the 21st century must have an in-depth knowledge of the principles of Human genetics and their application to a wide variety of clinical

***Course Objectives*:**

The successful student after finishing this course will be able to:

1) Define the levels of genetic materials and identify abnormalities in each level.
2) Understand the cytogenetic and molecular technologies that is the basis of current approaches to the diagnosis and management of genetic diseases.

3) Apply these scientific principles and knowledge in the practice, including the effective diagnosis, treatment and prevention of genetics disease.
4) Acquire an attitude of lifelong self-learning and problem-solving skills, critical thinking particularly necessary in such a rapidly expanding field.
5) Identify the common genetic problems in the local population and strategies for management and prevention.
6) Identify the genetics services available in the community.

Course Description

No-W	Topics
1	Introduction to Molecular Genetics
2	Basics of Medical Genetics
3	Genomic variations
4	Chromosomal abnormalities
5	Routine cytogenetics (Karyotyping and banding)
6	Molecular cytogenetics (Florescent In situ Hybridization and Comparative
7	Mendel diseases and mode of inheritance
8	Complex disorder
9	Molecular techniques
10	Molecular techniques
11	Genetic testing and counselling
12	Precision medicine
13	Case study sessions
14	Case study sessions
15	Case study sessions
Total	

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Week 8	25%
2	Problem based learning reports	Week 3,7, 10 and 14	10%
3	Assignment	Week 15	5%
4	Practical Exam (oral exam)	Week 16	5%
5	Final Exam	Week 17 or 18	55%

Learning Resources: Required Text(s):

1- Emery's Elements of Medical Genetic, Peter D Turnpenny and Sian Ellard, 15th Edition
2- Human Molecular Genetics, Tom Strachan and Andrew Read, 4th edition
3- Genetics and Genomics in Medicine, Tom Starchan, Judith Goodship and Patrick Chinnery, 2015

Research Project of Laboratory Medicine

Course code:	1701481-10
Course title:	**Research Project of Laboratory Medicine**
Level/semester:	4th Year (Full Year)
Credit hours:	**Theoretical:** 2
	Practical: 8
Language:	English
Name of course coordinators	**Dr. Faisal Minshawi**

Overview:

This course will provide an opportunity for undergraduates to establish or advance their understanding of research through critical exploration of research language, ethics, and approaches. The course introduces the language of research, ethical principles and challenges, and the elements of the research process within a range of research methods. Students will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in forming their understanding of their work, social, local and global environment

***Course Objectives*:**

The aim of the course is to provide comprehensive understanding of the diverse research methods used in the medical sciences field. The course will provide students with relevant knowledge of major research methods, their respective uses and usefulness, and their relevance for the study of contemporary Medical Sciences research issues. By studying this course students will be also able to:

- Define research theories and appropriate research design.
- Apply appropriate research methodology for different types of research.
- Recognize and apply different research reading strategies for different source of information.
- Utilise different search engines for finding and reviewing the literature.
- Define and differentiate between good and bad research articles
- Understand the importance of research integrity and ethics.
- Integrate research ethics into the research process and practice.

- Perform continues text citation and referencing using different referencing software.
- Generate a plagiarism report and check the similarity of the written report with the published literature.
- Assess and criticize published research article that uses primary research methods in the field.
- Critically appraise and evaluate range of research methods and approaches to solve research problems.
- Analyse and interpret research data using different statistical analysis software
- Demonstrate confidence and effective presentation skills
- Work effectively and responsibly in peer relationship as research group or individually as a member in the research group, and exercise leadership when appropriate.

***Course Description*:**

1st semester

No	Topics to be Covered
1	Introduction to clinical research
2	Types of research and general guidelines
3	Literature Search
4	Text citation and referencing
5	Use of references software
6	Academic writing
7	How to write your research title, abstract and introduction?
8	Midterm
9	Literature review
10	Critical reading of a research article
11	Journal club

12	Journal club group evaluation
13	Research ethics
14	Plagiarism
15	Referencing

2nd Semester

No	Topics to be Covered
1	Materials and methods
2	Results interpretation
3	Discussion, Conclusion, Referencing and Appendices.
4	Oral presentation skills
5	Creating a research Poster
6	How to prepare yourself for the discussion/viva voce
7	Practical work and writing up the research project
8	Midterm
9	Practical work and writing up the research project
10	Practical work and writing up the research project
11	Practical work and writing up the research project
12	Practical work and writing up the research project
13	Practical work and writing up the research project
14	Practical work and writing up the research project
15	Practical work and writing up the research project

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Activity session 1 **Journal club**	Week 13-1st semester	5%
2	. Activity session 2 **Scientific Poster**	Week 13-2nd semester	10%
3	1st Semester final written exam.	Week 17-1st semester	15%
4	Research supervisor evaluation	Week 12- 2nd semester	35%
5	Writing originality/ plagiarism check	Week 13- 2nd semester	5%
6	Oral presentation/viva examination	Week 14-2nd semester	30%
	Total		100%

Learning Resources:

- Flick, U (2011) *Introducing Research Methodology: A beginner's guide to doing a research project*. SAGE publications.
- Kumar, R (2010) *Research Methodology: a step-by-step guide for beginners*, 3rd edn, Sage Publications.
- Bell, J (2010) *Doing Your Research Project: a guide for first-time researches in education, health and social science*, 5th edn, Open University Press.
- Journal of Research Methods & Methodological Issues, ISSN 1556-6757
- Health Services and Outcomes Research Methodology, ISSN: 1387-3741 (print version), ISSN: 1572-9400 (electronic version)
- BMC Medical Research Methodology
- Medical Care Journal
- Kviz, Frederick J. Health Surveys. Encyclopaedia of Health Services Research, Ross M. Mullner, Editor. Thousand Oaks, CA: Sage, 2008.
- Marshall, Catherine and Gretchen B. Rossman. Designing Qualitative Research (Second Edition). Thousand Oaks, CA: Sage, 1994.
- McDowell I, and Newell C. 1996. Measuring Health: A Guide to Rating Scales and Questionnaires. New York: OxfordUniversity Press.(update recent edition)

Lab Management and Quality Assurance

Course code	1701423-1
Course title:	**Lab. Management and Quality Assurance**
Level/semester	4rd year / 2nd semesters
Credit hours:	1CU (1 hours)
	Theoretical lectures / Thursday :1 pm: 2 pm
Course Coordinator	**Dr. Saad Alghamdi –** ssalghamdi@uqu.edu.sa **Contact:** Ext. 4054 

Overview:

The lab management and quality course introduce laboratory students with the basic concepts and principles for managing laboratory departments as a health service organization, in addition to the quality management and performance improvement strategies related to health services rendered in the laboratory department. Students will be able to understand Laboratory Quality Management System in order to be active members in the process of improving the management and quality of health care services in laboratory departments

Course Objectives:

To introduce the students of laboratory medicine department with the required principles and concepts regarding health services management and quality, in addition to the special circumstances for managing and improving the quality of health services offered in the laboratory department as one type of health service organizations.

By the end of this course, students will be able to be active members of the quality management teams, quality improvement teams and/or managerial positions in laboratory departments.

Course Descriptions

W. #	Lectures Topics
1	**Orientation lecture**
2	Rationale for QM/PI activities
3	Definitions (CQ, CA, CQI, TQM)
4	Definitions (CQ, CA, CQI, TQM)
5	Dimensions of HC quality
6	Dimensions of HC quality
7	Approaches for quality assessment
8	Approaches for quality assessment
9	what is management and what is a health service organization?
10	what are the skills needed for an effective manager?
11	Basic organizational concepts
12	leadership& supervision in health care
13	Laboratory staffing measures
14	Process variation& statistical process control
15	Laboratory department quality indicators and Accreditation

Evaluation:

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Curricular activity	2	5%
2	Curricular activity	5	5%
3	Mid-term	8-10	25%
4	Curricular activity	13	10%
5	Theoretical final exam	17-18	55%

Learning Resources:

- Brown JA. The health care quality handbook, a professional resource and study guide. 28rd ed. CA: JB Quality Solutions, Inc., 2018:1533
- Juran JM, Godfrey AB. Juran's quality handbook. 5th ed. NY: McGraw-Hill, 1999: 1730

Lynne Garcia. Clinical Laboratory Management. 2nd ed. American Society for Microbiology

Public Health

Course code	1701464-1
Course title	**Public Health**
Level / semester	4th Year (Second term)
Credit hours	**Theoretical: One hour**
	Practical: NA
Language	English
Name of course coordinator	**Dr. Hamza Assaggaf:** hmsaggaf@uqu.edu.sa
Course objectives	By the end of this course, the students will be able to: • Identify the nature, health effects and sources of environmental risks. • Acquire knowledge about major air pollutants, allergens, carcinogens, chemical poisons, and various physical factors which may cause health hazards. • Possess epidemiological knowledge about a main parasitic infestation of medical importance predisposed by various environmental factors and study of various vectors responsible for transmission of their causative agents. • Learn about the global importance of certain zoonotic diseases, their impact on human health, economy, socioeconomic status, and control of zoonotic diseases. • Define health related activities relevant to prevention and control of these risks. • Explain method of water purification system. • Acquire knowledge about health hazards among hospital workers.

Course contents	-We should know the environment, Air and ventilation, Air and ventilation, Air pollution. - Water, sanitation. - Food sanitation, Milk sanitation, Meat sanitation. - Refuse disposal, Sewage disposal. - Hospital waste. - Health hazards among hospital workers. - Environmental physical hazards. - Some chemical hazards. - Hospital acquired infection (Nosocomial infection).

Course Descriptions

W. #	Lectures Topics	Laboratory Topics	Quiz	Date
1	What is the environment-Air and ventilation-Major climate changes (Changes of atmospheric temperature, Humidity of air, Cooling power of air)-?	None		
2	Air pollution (Sources, Impact, Control)-Enhanced Greenhouse Effect.	None		
3	- Water Sanitation(Sources of water, Water pollution, Diseases transmitted by water)-Steps of large scales water purification-Water Quality	None		
4	- Food Sanitation (Items of food-control program)-	None		
5	Milk Sanitation (Diseases transmitted by milk-How to get save milk)-Meat Sanitation (Diseases transmitted by meat-How to get save meat-Preservation of meat).	None		
6	Refuse Disposal-	None		
7	Sewage Disposal (definition, types, hazards, method of disposal).	None		

8	-Hospital Waste (classification, waste management).	None	Mid term	
9	- Environmental Physical Hazards (Noise, Heat)	None		
10	Radiation. -	None		
11	- Some Chemical Hazards (concentrated acids & alkalis,solvents) .	None		
12	Health hazards among hospital workers. - Physical hazards: Noise, vibration, thermal, radiation. - Chemical hazards: Cleaning compounds and disinfectant, cytotoxic, ethylene oxide, formaldehyde, solvents. - Biological hazards: Aids, hepatitis B & C, cytomegalovirus, rubella, tuberculosis. - Ergonomic. - Psychosocial hazards.	None		
13	Nosocomial infection (Hospital Acquired Infection)	None		
17/18	**Final Exam**			

Evaluation:

Schedule of Assessment Tasks for Students During the Semester			
Assessment	**Assessment task**	**Week due**	**Proportion of Final Assessment**
1	Laboratory reports	Every Week	10 %
2	**Midterm**	8 week	30%
3	Assignment		10 %
4	Final written examination	17/18th Week	50 %