



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Course Name:
Genetics for
Dentistry
students

1	Course title	Genetics
2	Course number	0544315
3	Credit hours (theory, practical)	1
	Contact hours (theory, practical)	9/week
4	Prerequisites/corequisites	
5	Program title	DDS
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Faculty of Medicine
9	Department	Dept. of Pathology, Microbiology, & Forensic Medicine
10	Level of course	Undergraduate
11	Year of study and semester (s)	3rd year. 2nd semester
12	Final Qualification	DDS
13	Other department (s) involved in teaching the course	NA
14	Language of Instruction	English
15	Date of production/revision	24/11/16

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Name: Dr. Mazin Al-Salihi
Office Number: Faculty of Medicine 2, 103
Office Phone: 23412
E-mail: m.alsalihi@ju.edu.jo
Office hours: Sunday 8am-10am, 11am-noon
Monday 8am-9am, noon-1pm
Tuesday 8am-10am, 11am-noon
Wednesday 8am-9am

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

NA

18. Course Description:

As stated in the approved study plan.

This is a one-credit hour course for third-year dentistry students. The course is designed to introduce students to the basics of genetics in relation to various genetic disorders.

19. Course aims and outcomes:

A- Aims:

The major aims of the course are 1) to give an overview of cell biology in relation to DNA replications, transcription and their regulatory processes 2) introduce students to the basis of genetic variation and the molecular techniques required to detect these variations 3) teach students the basics of inheritance and their relation to selected genetic diseases 4) teach students the process of linking a gene to a specific disease 5) introduce the concept of multifactorial disease and finally 6) introduce the concepts of genetic screening and gene therapy

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to ...

A. Knowledge and Understanding:

- A1- Recognize the basic features of DNA/RNA structures and understand how genetic information flows from DNA into RNA and then into functional proteins.
- A2- Know the composition of the human genome
- A3- Learn the main steps and reactions involved in RNA transcription.
- A4- Understand the mechanisms of regulating gene expression at the transcriptional level in prokaryotes and eukaryotes
- A5- Learn the main steps and reactions involved in protein translation.
- A6- Understand the concept and uses of gel electrophoresis and Southern blotting.
- A7- Understand the basics of restriction digestion and its use in restriction fragment length polymorphism (RFLP), recombinant DNA technology, and DNA cloning.
- A8- Recognize the type of DNA mutations.
- A9- Know the different tools in measuring gene expression at the RNA level starting with single genes (Northern blotting) to high-throughput technologies (DNA microarrays).
- A10- Understand the concept of DNA sequencing and polymerase chain reaction (PCR), and their clinical applications.
- A11- Differentiate between the main patterns of single-gene inheritance.
- A12- Understand the basic principles of mitochondrial inheritance.
- A13- Understand the basic principles of imprinting and trinucleotide repeat expansions and their clinical implications.
- A14- Recognize the main features of chromosome structure.
- A15- Recognize the main types of chromosomal aberrations.
- A16- Understand the principles, mechanisms and classification of congenital anomalies
- A17- Understand the basic principles of chromosomal disorders.
- A18- Focus on biochemical genetics and disorders of metabolism.
- A19- Know how to draw a family pedigree with comprehensive information.
- A20- Understand the basic principles of multifactorial inheritance.
- A21- Understand the concept of genome-wide association studies (GWAS)
- A22- Learn the basics of multifactorial inheritance
- A23- Understand how to use twin studies to identify genetic vs environmental effects on disease
- A24- Learn common examples of multifactorial diseases
- A25- Understand the function and regulation of cancer-related genes including oncogenes, tumor suppressors, and regulators of apoptosis thereby understanding the molecular basis of oncogenesis.
- A26- Understand the contribution of genetics and genomics to precision medicine.

B. Intellectual Analytical and Cognitive Skills:

- B1- Get familiar with basic tools and techniques involved in genetic engineering.
- B2- Differentiate between the different mutations and genetic aberrations and their effect on human disease.
- B3- Interpret data of recombinant DNA technologies.
- B4- Know how to perform gene mutation/disease association studies.
- B5- Recognize the presence of a genetic disease based on learned characteristics of these diseases in patients.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Overview of cell biology & short history	1-2	Dr. Mazin Al-Salihi	A1-5	Midterm exam, Quiz, Final exam	Medical Genetics, (Jorde, Carey, Bamshad) 5th Edition
Genetic variation, mutational, non-mutational, and their detection	3		A6-10, B1		
Single gene disorders	4-5		A11-13, B2		
Clinical cytogenetics	6-7		A14-17, B2		
Biochemical genetics	8-9		A18, B2		
Disease-Gene identification	10		A19-21, B2-3		
Multifactorial inheritance and common diseases	11-12		A22-24, B4-5		
Molecular/Genetic Basis of Cancer	13-14		A25, B1-5		
Genetic testing and gene therapy	15-16		A26, B1-5		

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following <u>teaching and learning methods</u> :
Lectures, Discussions, Quiz, Learning through examination

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following <u>assessment methods and requirements</u> :
Midterm exam, Quiz, Final exam

23. Course Policies:

A- Attendance policies: Standard university attendance policy
B- Absences from exams and handing in assignments on time: Exam absence is handled by the excuses committee
C- Health and safety procedures: NA
D- Honesty policy regarding cheating, plagiarism, misbehavior: Cheating is not tolerated and university policy is enforced.
E- Grading policy:

Curve based on standard deviation and faculty policy regarding percentage of students per grade and grade cutoffs

F- Available university services that support achievement in the course:

academic faculty member website contains course material & announcements

24. Required equipment:

NA

25. References:

A- Required book (s), assigned reading and audio-visuals:

Medical Genetics, (Jorde, Carey, Bamshad) 5th Edition

B- Recommended books, materials, and media:

Presentation slides act as a visual study aid.

26. Additional information:

Expected workload:

On average you should expect to spend between 2 and 3 hours per week on this course.

Name of Course Coordinator: Dr. Mazin Al-Salihi Signature: MA Date: 27/11/2016

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File