

Credit hours: 3 (3 Theory)



Zarqa University
Faculty of Allied Medical Sciences
Department of Medical Technology
Human Genetics (0701234)

Course description:

The course deals with the study of human genetics principles and applications, including various human genetics diseases.

Aims of the course:

1. Students should have a mechanistic understanding of segregation, independent assortment, linkage and crossing over and how these influence patterns of inheritance
2. Students should have an understanding of the basic modes of Mendelian inheritance: dominance/recessiveness, incomplete dominance, sex -linkage, and epistasis. They should be able to discern these modes from distributions of phenotypes resulting from crosses and from pedigrees
3. To make students aware of the power of DNA technology. Basic concepts of DNA manipulations will be taught and examples of how these manipulations can be used in medicine and industry will be given.
4. To prepare students for more advanced course work in cell and molecular biology
5. To help students become familiar with the language of genetics and the terminology of molecular biology

Intended Learning Outcomes: (ILOs)

A. Knowledge and Understanding

Examine basic principles of human genetics and evaluate the various aspects of genetic testing and reporting.

A2. Contemporary Trends, Problems and Research:

Students will examine the basic theoretical principles of population genetics, and their application to the study of variation and evolution in natural populations.

A3. Professional Responsibility:

Students will be able to solve a periodic take-home problem set assignments about genetic disorders

B. Subject-specific skills

The student will use problem solving skills and critical thinking to explore the positive and negative aspects of expanding knowledge in genetics.

Application of Methods and Tools: Lecture, selected videos, demonstration and discussion, laboratory practice, case studies, problem solving.

C. Critical-Thinking Skills

Students are encouraged to develop their critical thinking and communication skills.

D. General and Transferable Skills (other skills relevant to employability and personal development)

The course will also provide a discussion of teamwork, leadership, and interpersonal skills needed by health care professionals.

Course structures:

Week	Credit Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1		A,B,C,D	Introduction , basic of cell molecular biology and genetics(cell types & structure, cell cycle & cell division, nucleic acids structure and function, chromosomes structure and function, concept of genes and alleles	Lectures using power point presentation	
2, 3		A,B,C,D	Principles and patterns of inheritance (Mendelian and non-Mendelian, single gene and multiple gene inheritance, multifactorial inheritance and environmental factors)	1. Lectures using power point presentations 2. Home assignments 3. Oral presentation of certain topics by small groups 4. Encourage students to read from text books	
			First exam		

4,5,6		A,B,C,D	Clinical genetics (single gene disorders, chromosomal abnormalities, cancer genetics, genetic counseling)	1. Lectures using power point presentations 2. Home assignments 3. Oral presentation of certain topics by small groups 4. Encourage students to read from text books	
			Second exam		
7		A,B,C,D	Molecular diagnostic and Cytogenetics (analysis of chromosomal abnormalities and gene disorders, prenatal diagnostic, FISH technique, PCR and DNA sequencing and forensic medicine.	Lecture Laboratory practice Case studies	
			Final exam		

References:

a. Main Textbook:

human Genetics, Ricki Lewis (last edition)

b. Supplementary Textbook(s):

Emery's Elements of Medical Genetics, Peter Turnpenny and Sian Ellard (12th edition, 13th 2007)

Assessment Methods:

Methods	Grade
First exam	20
Second exam	20
Final exam	50
Participation and quizzes	10
(including lab)	