



Department of BIOLOGY.....

College of Education.....

University of Salahaddin.....

Subject: Genetics.....

Course Book – 3rd year BIOLOGY STUDENT

**Lecturer's Name: Assistant Professor Dr.Nihad
Ahmed Ameen.**

Academic Year: 2020/2021

Course Book

1. Course name	Genetics
2. Lecturer in charge	Dr.Nihad Ahmed Ameen .
3. Department/ College	Biology Dept. College of Education.
4. Contact	e-mail: nihad.ameen@su.edu.krd Tel: (optional) 07507607712
5. Time (in hours) per week	For example Theory: 2 Practical: 9
6. Office hours	13 hours
7. Course code	
8. Teacher's academic profile	<ol style="list-style-type: none"> 1. In 1988 I am accepted as MSc. Student in the biology Department / College of Education. 2. In 1991 i finished my MSc. study. 3. In 1997 i am accepted as PhD. Student in the Biology Department / University of Bagdad/ Education college. 4.In 2002 I finished my PhD. Study and i still working as Assistant Professor in Biology Dept.
9. Keywords	Course Book ,Genetics,Chromosome,Gene,DNA.
<p>10. Course overview:</p> <p>The Science of genetics, while still young in years, has been understood the hereditary nature of plants and species. Since the beginning of agriculture, people have been applying Genetic influence to their crops, increasing their yields. This has carried on to our time, where many agriculturists alter their crops in order to not only increase the number produced, but also to provide traits such as disease and pest resistance, nutritional qualities and characteristics that facilitate harvest pharmaceuticals have also benefited From genetics. Drugs and food additives are synthesized from bacteria and fungi that have Been genetically manipulated to make them producers of such substances. Growth hormones and insulin are among the products of these genetically modified bacteria. Though the field of genetics plays a bigger role in medicine. Doctors recognize that many patients suffer from some sort of genetic disorder and diseases, like Huntington's chorea .It is Estimated that about 3-5 % of the world population suffers from some genetic malady. Some common diseases, such as diabetes, hypertension, Asthma, are known to have a genetic component, meaning that if the parent Has it, then the offspring may be susceptible to that specific</p>	

disease. Advances in the field molecular genetics have not only helped us gain insight in to the nature of previously terminal diseases such as cancer, but also given as Tools to combat many diseases and given us new diagnosis testes. The understanding of genetics not only plays a role in the classroom, but also for Us in our live. It changes the way we think about people with hereditary disorders. Also gives us an opportunity to manufacture crops and create new Drugs. It gives us tools against diseases that might otherwise be terminal. Understanding genetics can give us a better understanding of the human race And also a better understanding of ourselves.

11. Course objective:

1. The genetics explains the principles of Mendel's laws of inheritance of traits for example;
2. Genetics aims to sequencing DNA and cataloguing genes.
3. Understanding of DNA Replication, and the mechanism of gene expression.
4. How the genetic information changed.
5. Genetic & Evolution Levels of Genetic Analysis.
6. The study of population Genetics.
7. Role of genetics in Medicine.

12. Students obligation :

The university student may know his/her duty inside the university, for example 1. Existence at 8.30 in Lecture rooms 2. Be ready to attend at the exact time of examinations. 3. The students may prepare all scientific report of each subject. 4. Attendance in all scientific activities inside his/her college.

13. Forms of teaching:

1. Using Data show 2. PowerPoint 3. White Board 4. Books.

<p>14. Assessment scheme: The Assessment schema of genetics include the following : Two monthly Examinations out of 85% +5% for daily quizzes+5% for scientific reports +5% for presence of the students, the total mark is equal to 100%.</p>	
<p>15. Student learning outcome:</p> <ol style="list-style-type: none"> 1. Clarify the Basic goal of teaching the subject of genetics like how the inheritance of traits occur from parents to their offspring in human& plants. 2. The contents of genetics is suitable for graduate a Lecturer for intermediate & Secondary School and to work in medical Libraries also in researches centres of biology &Agriculture. 	
<p>16. Course Reading List and References:</p> <p>▪Key references ;</p> <ol style="list-style-type: none"> 1. Benjamin,A.P.(2012).Genetics, a conceptual approach.2nd ed.W,H.Freeman and Company. New York. 2. Robert,J.B.(2013).Genetics, analysis and principles.2ⁿ ed.McGraw-Hill Companies, Inc, New YORK. 3. American society of Genetics journal. 	
17. The Topics -Theory lectures	Lecturer's name
<p>1.Redheads :The genetics of Hair Color .(1.2.2020) 2hrs</p> <p>2.Inheritanc pattern of the Widos peak trait &straight Hairline allele.(8.2.2020).(2hrs).</p> <p>3.Interaction Between Genes &Environment .(15.2.2020).(2hrs).</p> <p>4.What are freckles ?(22.2.2020)(2hrs). Discuss the factores which affected the formation Of freckles like Genetic predisposition &Sun Exposure.</p> <p>5.Genetic of Twins birth .(29.2.2020) (2hrs). Discuss the causes of Twins birth &types of Twins Also the genes which increases womans chance Having Twins.</p> <p>6.Polygenic Inheritance .(5.3.2020).(2hrs). Discuss how some trait inherited via by two or more genes.</p>	<p>Assistant Professor Dr.Nihad Ahmed Ameen</p>

<p>7. Population Genetics.(24.3.2020) (2hrs). Discuss The calculation method of Allele&Genotype frequencies .</p> <p>8. Autosomal Dominant Disorders Inheritance patterns.(1.4.2020) (2hrs).</p> <p>9. Autosomal Recessive Disorders Inheritance Patterns.(8.4.2020).(2hrs)</p> <p>10. Sex-Linked disease Inheritance patterns . (15.4.2020).(2hrs).</p> <p>11. The nature of Transposable Elements. (22.4.2020).(2hrs).</p> <p>12. The Denaturation & Renaturation of DNA. (29.4.2020) .(2hrs).</p> <p>13. Genetic Diseases and Faulty DNA Repair. Discuss Defects in DNA Repair are the Underlying cause of several genetic disease. Many of these are characterized by a Predisposition to cancer .(6.5.2020).(2hrs).</p> <p>14. DNA Fingerprinting .(13.5.2020).(2hrs).</p> <p>15. Y-Linked Dominant Traits .(20.5.2020).(2hrs). Y-Linked traits appear only in males and are Passed from a father to all his sons .</p>	
<p>18. Examinations: 1. Compositional: _____ Q1: Why was Mendel's approach to the study of heredity so</p>	<p>Lecturer's name ex: (3-4 hrs)</p>

successful?

Answer: because the pea plant which used by Mendel is

- 1. easy to cultivate**
- 2. Peas grow rapidly, completing an entire generation in a single growing season.**
- 3. Pea plants also Produce many offspring.**
- 4. Peas has a large number of varieties.**

Q2: What the difference between somatic mutations and germ line mutations?

Answer: Somatic mutations arise in somatic tissues, which do not produce gametes, the mutation is passed on the daughter cells, while Germ-Line mutations arise in cells that ultimately produce gametes and can be passed to future generations.

Q3: What are the reasons of occurring of apoptosis?

Answer: Apoptosis occurs to eliminate dangerous cells that have escaped normal control. It is responsible for the disappearance of tadpoles tail during metamorphosis.

2. True or false type of exams:

Q1. answer with true or false;

- a) A normal Human male has XXY genotype. F**
- b) A normal Human male has XYY genotype. F**
- c) A normal Human male has XYYY genotype. F**
- d) A normal Human male has XY genotype. T**

3. Multiple choices:

Choose the correct answer.

-) The haploid human gametes has;

- a) 23 pairs of chromosomes**
- b) 22 pairs of chromosomes**
- c) 21 pairs of chromosomes**
- d) Only 23 individual chromosome**

The correct answer is "D"
