

## Course E-Syllabus

1	<b>Course title</b>	Genetics
2	<b>Course number</b>	5501322
3	<b>Credit hours</b>	3
	<b>Contact hours (theory, practical)</b>	3
4	<b>Prerequisites/corequisites</b>	General Biology (2) 5501102
5	<b>Program title</b>	Bachelor in Biological Sciences
6	<b>Program code</b>	5503
7	<b>Awarding institution</b>	The University of Jordan–Aqaba
8	<b>School</b>	Faculty of Basic & Marine Sciences
9	<b>Department</b>	Biology
10	<b>Level of course</b>	Second year
11	<b>Year of study and semester (s)</b>	Summer semester 2019/2020
12	<b>Final Qualification</b>	BSc.
13	<b>Other department (s) involved in teaching the course</b>	non
14	<b>Language of Instruction</b>	English
15	<b>Teaching methodology</b>	<input type="checkbox"/> Blended <input checked="" type="checkbox"/> Online
16	<b>Electronic platform(s)</b>	<input checked="" type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input checked="" type="checkbox"/> Zoom <input type="checkbox"/> Others: <ul style="list-style-type: none"> <li>• Facebook</li> <li>• Messenger</li> <li>• Whatsapp</li> <li>• E-mail (University)</li> <li>• E- Learning website ( University)</li> </ul>
17	<b>Date of production/revision</b>	28/6/2020

## 18. Course Coordinator:

\*\* Instructor : Majduleen Ali Sbaihat.  
\*\* E-mail: [m.sbaihat@ju.edu.jo](mailto:m.sbaihat@ju.edu.jo)  
\*\* Office hours: ( Any time the instructor available.)  
\*\* Office #: Faculty of Marine Sciences – Room # 1  
\*\* Phone Numbers : 032090450 Ext. 35079 & 36024

## 19 Other instructors:

\*\* Instructor : Majduleen Ali Sbaihat.  
\*\* E-mail: [m.sbaihat@ju.edu.jo](mailto:m.sbaihat@ju.edu.jo)  
\*\* Office hours: ( Any time the instructor available.)  
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## 20 Course Description:

As stated in the approved study plan.

The course is designed to cover the basic principles of classical and molecular genetics. Model systems for genetic analysis such as *Drosophila melanogaster* will be covered. The course covers a detailed description of the structure and function of nucleic acids. This include; replication of DNA and regulation with emphasis on genetic diseases, mutations, and genetic engineering and its applications will be emphasized.

## 21 Course aims and outcomes:

A- Aims:

- 1- Distinguish between the following terms: somatic cell and gamete; autosome and sex chromosomes; haploid and diploid.
- 2- Describe the events that characterize each phase of meiosis.
- 3- Describe three events that occur during meiosis I but not mitosis.
- 4- Name and explain the three events that contribute to genetic variation in sexually reproducing organisms.
- 5- Should know the Gregor Mendel's Discoveries: Mendel brought an experimental and quantitative approach to genetics.
- 6- Define the law of segregation; the two alleles for a character are separated during the formation of gametes.
- 7- Define the law of independent assortment, each pair of allele's segregates independently into gametes.
- 8- Should know the laws of probability govern Mendelian inheritance.
- 9- Should know the Mendelian Inheritance in Humans, include: 1- Pedigree analysis reveals Mendelian patterns in human inheritance. 2- Many human disorders follow Mendelian patterns of inheritance. 3- Technology is providing new tools for genetic testing and counselling.
- 10- Describe the contributions of the following people: Griffith; Avery, McCary, and MacLeod; Hershey and Chase; Chargaff; Watson and Crick; Franklin; Meselson and Stahl.
- 11- Describe the structure of DNA.
- 12- Describe the process of DNA replication; include the following terms: antiparallel structure, DNA polymerase, leading strand, lagging strand, Okazaki fragments, DNA ligase, primer, primase, helicase, topoisomerase, single-strand binding proteins.
- 13- Describe the function of telomeres.
- 14- Compare a bacterial chromosome and a eukaryotic chromosome.
- 15- Describe the contributions made by Garrod, Beadle, and Tatum to our understanding of the relationship between genes and enzymes.
- 16- Briefly explain how information flows from gene to protein.
- 17- Compare transcription and translation in bacteria and eukaryotes.
- 18- Explain what it means to say that the genetic code is redundant and unambiguous.
- 19- Include the following terms in a description of transcription: mRNA, RNA polymerase, the promoter, the terminator, the transcription unit, initiation, elongation, termination, and introns.
- 20- Include the following terms in a description of translation: tRNA, wobble, ribosomes, initiation, elongation, and termination.

B- Intended Learning Outcomes (ILOs):

Upon successful completion of this course, students will be able to:

**Learning outcomes:**

• **Knowledge and understanding**

1- Distinguish between the following terms: somatic cell and gamete; autosome and sex chromosomes; haploid and diploid.
2- Describe the events that characterize each phase of meiosis.
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4- Name and explain the three events that contribute to genetic variation in sexually reproducing organisms.
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## 22. Topic Outline and Schedule:

Week	Lecture	Topic	Teaching Methods*/platform	Evaluation Methods**	References
1	1.1	<b>Meiosis and Sexual Life Cycles</b>	Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Homework.	<i>Campbell Biology Book, Eight Edition</i>
	1.2		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	1.3		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	1.4		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	1.5		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Quizzes	<i>Campbell Biology Book, Eight Edition</i>
2	2.1	<b>Mendel and the Gene Idea</b>	Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Homework.	<i>Campbell Biology Book, Eight Edition</i>
	2.2		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	2.3		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	2.4		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	2.5		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Quizzes	<i>Campbell Biology Book, Eight Edition</i>
3	3.1	<b>The Chromosomal Basis of Inheritance</b>	Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Homework.	<i>Campbell Biology Book, Eight Edition</i>
	3.2		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	3.3		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	3.4		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	3.5		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Quizzes	<i>Campbell Biology Book, Eight Edition</i>
4	4.1	<b>The Molecular Basis of Inheritance</b>	Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Homework.	<i>Campbell Biology Book, Eight Edition</i>
	4.2		Synchronous lecturing/meeting	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>

			(online / zoom)		<i>Edition</i>
	4.3		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	4.4		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	4.5		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Quizzes	<i>Campbell Biology Book, Eight Edition</i>
5	5.1	<b>From Gene to Protein</b>	Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Homework.	<i>Campbell Biology Book, Eight Edition</i>
	5.2		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	5.3		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	5.4		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	5.5		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Quizzes	<i>Campbell Biology Book, Eight Edition</i>
6	6.1	<b>Regulation of Gene Expression</b>	Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Homework.	<i>Campbell Biology Book, Eight Edition</i>
	6.2		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	6.3		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	6.4		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	6.5		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Quizzes	<i>Campbell Biology Book, Eight Edition</i>
7	7.1	<b>Viruses</b>	Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Homework.	<i>Campbell Biology Book, Eight Edition</i>
	7.2		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	7.3		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	7.4		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion.	<i>Campbell Biology Book, Eight Edition</i>
	7.5		Synchronous lecturing/meeting (online / zoom)	Questions, Discussion. Quizzes	<i>Campbell Biology Book, Eight Edition</i>
8	8.1	<b>Final Exam</b>	On-Campus Exam	On-Campus Exam	On-Campus Exam
	8.2				

- Teaching methods include: Synchronous lecturing/meeting; Asynchronous lecturing/meeting
- Evaluation methods include: Homework, Quiz, Exam, pre-lab quiz...etc

### 23 Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

<b>Evaluation Activity</b>	<b>Mark</b>	<b>Topic(s)</b>	<b>Period (Week)</b>	<b>Platform</b>
<b>Quiz - 1</b>	<b>5</b>	<b>Meiosis and Sexual Life Cycles</b>	<b>2</b>	<b>Microsoft Form</b>
<b>Quiz - 2</b>	<b>5</b>	<b>Mendel and the Gene Idea</b>	<b>4</b>	<b>Microsoft Form</b>
<b>Quiz - 3</b>	<b>5</b>	<b>The Molecular Basis of Inheritance</b>	<b>5</b>	<b>Microsoft Form</b>
<b>Homework - 1</b>	<b>5</b>	<b>Meiosis and Sexual Life Cycles</b>	<b>1</b>	<b>E-Learning ( University Website)</b>
<b>Homework - 2</b>	<b>5</b>	<b>Mendel and the Gene Idea</b>	<b>3</b>	<b>E-Learning ( University Website)</b>
<b>Homework - 3</b>	<b>5</b>	<b>The Molecular Basis of Inheritance</b>	<b>5</b>	<b>E-Learning ( University Website)</b>
<b>Homework - 4</b>	<b>5</b>	<b>From Gene to Protein</b>	<b>6</b>	<b>E-Learning ( University Website)</b>
<b>Presentation &amp; Participation</b>	<b>15</b>	<b>Any topic related to course material</b>	<b>Through semester</b>	<b>Online ( Zoom)</b>
<b>Final Exam</b>	<b>50</b>	<b>All course material</b>	<b>16-25/8/2020</b>	<b>Online ( Microsoft Form)</b>

### 24 Course Requirements (e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):

Students should have a computer, internet connection, webcam, account on a specific software/platform...etc.

## 25 Course Policies:

A- Attendance policies:

**1- I strongly recommend you attend every lecture. Missing any lecture will put you at a distinct disadvantage when test taken.**

**2- Any student with seven or more unexcused absences from lecture can be legally dropped from the course.**

B- Absences from exams and submitting assignments on time:

**The only valid excuses for missing an exam are: death in the family, illness, or accident. In this case you must provide evidence of some kind and you must report me within 3 days.**

C- Health and safety procedures:

**Students who miss the exam due to illness or other excuse must notify me within the first week after the exam, so make up arrangements can be Made.**

D- Honesty policy regarding cheating, plagiarism, misbehavior:

**1. Students are not expected to talk in class while the instructor is lecturing**

**2. After two warning of taking or any other classroom disruption, the Student will be automatically removed from the class.**

**3. Any act of cheating, or academic misconduct is subject to penalties.**

**4. The minimum penalty for any students caught cheating will receive a zero on that test.**

E- Grading policy:

Type	Grading
Quizzes	15%
Home work / Assignments	20 %
Presentation / Participation	15 %
Final Exam:	50 %
<b>Total</b>	<b>100%</b>

**Exams:** The examinations will consist of any combination of Multiple choice, short answer, fill in the blank, matching, identification of figures or essay questions.

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

**Library sources are available, internet, laboratory facilities.**



**26 References:**

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

**Textbook:** Gardner, E.J., Simmons, M. J., and Snustad, D. P. **PRINCIPLES OF GENETICS.** New York, John Wiley & Sons, Ltd. 1998.

**Supplementary reading:** Campbell Biology Book, Eight Edition

**NOTE:** You need to buy the book to get the **Access Code** on your own textbook to register.

B- Recommended books, materials and media:

**27 Additional information:**

Name of Course Coordinator: **Ins. Majduleen Sbaihat** Signature: ----- Date: **28/6/2020**

Head of Curriculum Committee/Department: ----- Signature: -----

Head of Department: **Dr. Zeinab H. Arabeyyat** Signature: **Dr. Zeinab H. Arabeyyat**

Head of Curriculum Committee/Faculty: ----- Signature: -----

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