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| **1** | **Course title** | Special Topics 1 |
| **2** | **Course number** | **5501491** |
| **3** | **Credit hours** | 1 |
| **Contact hours (theory, practical)** | 2 day per week |
| **4** | **Prerequisites/corequisites** | **None**  |
| **5** | **Program title** | Bachelor in Biological Sciences |
| **6** | **Program code** | 5503 |
| **7** | **Awarding institution** | The University of Jordan-Aqaba |
| **8** | **School** | Faculty of Basic & Marine Sciences |
| **9** | **Department** | Costal Environment |
| **10** | **Level of course**  | Fourth year |
| **11** | **Year of study and semester (s)** | Summer semester 2019/2020 |
| **12** | **Final Qualification** | BSc. In Biological Sciences  |
| **13** | **Other department (s) involved in teaching the course** | None |
| **14** | **Language of Instruction** | English |
| **15** | **Teaching methodology** | ☐Blended ☑Online |
| **16** | **Electronic platform(s)** | **☑Moodle ☐Microsoft Teams ☐Skype ☑Zoom****☐Others:*** **Facebook**
* **Messenger**
* **Whatsapp**
* **E-mail (University)**
* **E- Learning website ( University)**
 |
| **17** | **Date of production/revision** | **June /2020** |

**18. Course Coordinator:**

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| \*\* Instructor : Majduleen Ali Sbaihat.\*\* E-mail: 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:**

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| None |

**20. Course Description:**

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| **The student will be given specialized topics in the field of genetics; the course also includes training the student on skills and methods: collecting scientific information (primary data) on a specific topic, writing a scientific report, and making a scientific presentation.**  |

**21. Course aims and outcomes:**

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| 1. Aims:
2. Study the molecular basis of inheritance.
3. Describe the contributions of the following scientists in genetic field: Griffith; Avery, McCary, and MacLeod; Hershey and Chase; Chargaff; Watson and Crick; Franklin; Meselson and Stahl.
4. Describe the structure of DNA.
5. 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.
6. Describe the function of telomeres.
7. Compare a bacterial chromosome and a eukaryotic chromosome.
8. Understanding of the relationship between genes and enzymes.
9. Explain how information flows from gene to protein.
10. Compare transcription and translation in bacteria and eukaryotes.
11. Explain what it means to say that the genetic code is redundant and unambiguous.
12. Description of transcription process: mRNA, RNA polymerase, the promoter, the terminator, the transcription unit, initiation, elongation, termination, and introns.
13. Description of translation process: tRNA, wobble, ribosomes, initiation, elongation, and termination.
14. Training the student on a skill about how collect scientific information, write scientific report, make scientific presentation.
 |

B- Intended Learning Outcomes (ILOs):

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

**Learning outcomes:**

* **Knowledge and understanding**

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| 1. Describe the contributions of the following scientists in genetic field: Griffith; Avery, McCary, and MacLeod; Hershey and Chase; Chargaff; Watson and Crick; Franklin; Meselson and Stahl.
 |
| 1. Describe the structure of DNA.
 |
| 1. 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.
 |
| 1. Describe the function of telomeres.
 |
| 1. Compare a bacterial chromosome and a eukaryotic chromosome.
 |
| 1. Describe the contributions made by Garrod, Beadle, and Tatum to our understanding of the relationship between genes and enzymes.
 |
| 1. Briefly explain how information flows from gene to protein.
 |
| 1. Compare transcription and translation in bacteria and eukaryotes.
 |
| 1. Explain what it means to say that the genetic code is redundant and unambiguous.
 |
| 1. Ability to describe and explain the transcription process: mRNA, RNA polymerase, the promoter, the terminator, the transcription unit, initiation, elongation, termination, and introns.
 |
| 1. Ability to describe and explain the translation process: tRNA, wobble, ribosomes, initiation, elongation, and termination.
 |
| 1. Ability to collect scientific information, write scientific report, make scientific presentation.
 |

**22. Topic Outline and Schedule:**

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| **Week** | **Lecture** | **Topic** | **Teaching Methods\*/platform** | **Evaluation Methods\*\*** | **References** |
| 1 | 1.1 | **The Molecular Basis of Inheritance** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 1.2 | **The Contributions of Scientists in the Genetic Feild** |  **Synchronous lecturing/meeting****(online / zoom)** |  **Questions,****Discussion.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 2 | 2.1 | **The Structure of DNA** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 2.2 | **DNA Replication Process** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
|  | 3.1 | **Regulation of Gene Expression** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.****Homework.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 3.2 | **Understanding of the Relationship between Genes and Enzymes.** |  **Synchronous lecturing/meeting****(online / zoom)** |  **Questions,****Discussion.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 4.1 | **Transcription of DNA Sequence** |  **Synchronous lecturing/meeting****(online / zoom)** |  **Questions,****Discussion.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 4.2 | **Translation of mRNA Sequence** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 5 | 5.1 | **Type of Mutation** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.****Homework.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 5.2 | **Explain the Genetic Code is Redundant** |  **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.****Quiz.** | *PRINCIPLES OF GENETICS. New York, 1998***.***Campbell Biology Book, Eight Edition* |
| 6.1 | **عطلة عيد الأضحى المبارك** |
| 6.2 | **How Search and Collect Scientific Information (Primary data)?** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.** | *Research Methods for Business Students, 5th edition, 2009.* |
| 7.1 | **How Write Scientific Report?** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.** | *Research Methods for Business Students, 5th edition, 2009.* |
|  | 7.2 | **How Make Scientific Presentation?** | **Synchronous lecturing/meeting****(online / zoom)** | **Questions,****Discussion.** | *Research Methods for Business Students, 5th edition, 2009.* |
| 8 | 8.1 | **Final Exam** |  On-Campus Exam |  On-Campus Exam | On-Campus Exam |

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

**23. Evaluation Methods:**

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

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| **Evaluation Activity** | **Mark** | **Topic(s)** | **Period (Week)** | **Platform** |
| **Quiz**  | **15** | **DNA Replication** | **6** | **Microsoft Form** |
| **Homework - 1** | **5** | **Transcription and Translation of DNA** | **4** | **E-Learning****( University Website)** |
| **Homework - 2** | **5** | **Type of Mutation** | **5** | **E-Learning****( University Website)** |
| **Scientific Report** | **10** | **Any topic related to course material** | **7** | **E-Learning****( University Website)** |
| **Presentation & Participation** | **15** | **Any topic related to course material** | **Through semester** | **Online ( Zoom)** |
|  |  |  |  |  |

 **Final Exam** **50** **All material given to student 16-25/8/2020**  **On-Campus Exam**   |

**2424. Course Requirements (e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc):**

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

**25. Course Policies:**

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| 1. 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.** 1. 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.** 1. 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.**1. Honesty policy regarding cheating, plagiarism, misbehavior:
2. **Students are not expected to talk in class while the instructor is lecturing**
3. **After two warning of taking or any other classroom disruption, the Student will be automatically removed from the class.**
4. **Any act of cheating, or academic misconduct is subject to penalties.**
5. **The minimum penalty for any students caught cheating will receive a zero on that test.**
6. Grading policy:

**Type Grading**Quizzes 15%Home work / Assignments 10 %Scientific Report 10 %Presentation / Participation 15 %Final Exam 50 %**Total 100%****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:**

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| A- Required book(s), assigned reading and audio-visuals:**(1) Textbook**: **Gardner, E.J., Simmons, M. J., and Snustad, D. P. PRINCIPLES OF GENETICS. New York, John Wiley & Sons, Ltd. 1998.****Supplementary reading: (2) Campbell Biology Book, Eight Edition** **NOTE:** You need to buy the book to get the **Access Code** on your own textbook to register.**(3) Research Methods for Business Students, Mark Saunders, Philip Lewis, and Adrian Thornhill, 5th edition, 2009.**  B- Recommended books, materials and media: |

**27. Additional information:**

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

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

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

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

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