

Course E-Syllabus

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| 1 | Course title | Biotechnology |
| 2 | Course number | 5501426 |
| 3 | Credit hours | 3 |
| | Contact hours (theory, practical) | 3 |
| 4 | Prerequisites/corequisites | 5501424 |
| 5 | Program title | Bachelor degree in Biological Sciences |
| 6 | Program code | 5503 |
| 7 | Awarding institution | The University of Jordan-Aqaba |
| 8 | School | Basic & Marine Sciences |
| 9 | Department | Marine Biology |
| 10 | Level of course | Fourth year |
| 11 | Year of study and semester (s) | First semester 2020/2021 |
| 12 | Final Qualification | BSc. |
| 13 | Other department (s) involved in teaching the course | non |
| 14 | Language of Instruction | English |
| 15 | Teaching methodology | <input type="checkbox"/> Blended <input checked="" type="checkbox"/> Online |
| 16 | Electronic platform(s) | <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"> • Facebook • Messenger • Whatsapp • E-mail (University) • E- Learning website (University) |
| 17 | Date of production/revision | 4/10/2020 |

18. Course Coordinator:

** Instructor : Majduleen Ali Sbaihat.
** E-mail: m.sbaihat@ju.edu.jo
** Office hours: 10:00 – 11:00 Am (Mon. & Tues.)
(Any time the instructor available Online .)
** Office #: Faculty of Marine Sciences – Room # 1
** Phone Numbers : 032090450 Ext. 35079 & 36024

19 Other instructors:

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

N/A

20 Course Description:

As stated in the approved study plan.

The course introduces both principles and application of recombinant DNA technology to microbes, animals and plants in the hope of using genetically engineered products to clear the environment and improve human health prospects. This would be achieved through tackling the history of biotechnology, basic principles of recombinant DNA technology, common methods of applications of animals, human, and medical biotechnology. Common methods of applications of plant biotechnology. Methods of applications of microbial and environmental biotechnology. Ethical issues of biotechnology and patenting. Current societal issues in biotechnology and bioethics.

21 Course aims and outcomes:

A- Aims:

1. Having the students acquire basic concepts in biotechnology.
2. Familiarize the students with the basic principles and applications of recombinant DNA technology.
3. Familiarize the students with the fields of biotechnology (microbial, plant, animals, human, and medical biotechnology).
4. Introduce the students to the applications of microbial and environmental biotechnology.
5. Introduce the students to ethical issues related to biotechnology.
6. Introduce the students to patents, with focus on medical patents.
7. Familiarize the students with the current societal issues in biotechnology and bioethics.

B- Intended Learning Outcomes (ILOs):

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

Learning outcomes:**• Knowledge and understanding**

1. Demonstrate knowledge and understanding in biotechnology.
2. Describe the molecular and cellular basis of biotechnology.
3. Discuss the main techniques of molecular analysis and genetic modification.
4. Describe the theory, practice and potential of specific biotechnologies.
5. Demonstrate an appreciation of biotechnology in industry and business.
6. Describe and begin to evaluate aspects of current research and applications in biotechnology.

22. Topic Outline and Schedule:

| Week | Lecture | Topic | Teaching Methods*/platform | Evaluation Methods** | References |
|------|---------|---|---|---|---|
| 1 | 1.1 | Ch. 1: Introduction to Biotechnology | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| | 1.2 | | A Synchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 1.3 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 1.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| 2 | 2.1 | Ch. 2: An Introduction to Genes AND Genome | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| | 2.2 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 2.3 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 2.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| 3 | 3.1 | Ch. 3: Recombinant DNA Technology and Genomics | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| | 3.2 | | A Synchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 3.3 | | A Synchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 3.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| 4 | 4.1 | Ch. 4: Protein as Products | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| | 4.2 | | A Synchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |

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| 5 | 4.3 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 4.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| | <i>Midterm Exam</i> | | | | |
| | 5.1 | Ch. 5: Microbial Biotechnology | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| 6 | 5.2 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 5.3 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 5.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| | 6.1 | Ch. 9: Bioremediation | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| 7 | 6.2 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 6.3 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 6.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| | 7.1 | Ch. 6: Plant Biotechnology | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| 8 | 7.2 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 7.3 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 7.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| | 8.1 | Ch. 7: Animal Biotechnology | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| | 8.2 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |

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| 9 | 8.3 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 8.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| | 9.1 | Ch. 11: Medical Biotechnology | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| | 9.2 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 9.3 | | A Synchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 9.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| 10 | 10.1 | Ch. 13: Ethics and Biotechnology | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion. Homework. | <i>Thieman, W. Introduction to Biotechnology, 2014, Third Edition</i> |
| | 10.2 | | A Synchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 10.3 | | A Synchronous lecturing/meeting (online / zoom) | Questions, Discussion. | |
| | 10.4 | | ASynchronous lecturing/meeting (online / zoom) | Questions, Discussion, Quizzes | |
| | <i>Final Exam</i> | | | | |

- 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:

| Evaluation Activity | Mark | Topic(s) | Period (Week) | Platform |
|------------------------|------|-------------------------|---------------|-------------------------------------|
| Quizzes | 10 | Ch.: 1, 3, 5,7, 9 | | Microsoft Form |
| Homework & Assignments | 10 | Ch.: 2, 4, 6, 11, 13 | | E-Learning (University Website) |
| Midterm Exam | 30 | Ch.: 1, 2, 3, 4 | | At University Campus , Face to Face |
| Final Exam | 50 | Ch.: 5, 6, 7, 9, 11, 13 | | At University Campus , Face to Face |
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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, and 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 | 10% |
| Home work / Assignments | 10 % |
| Midterm Exam | 30 % |
| 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:

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

"Introduction to Biotechnology, 3ed Edition" by Thieman, W.J and Palladino M.A., Pearsom Education, ©2014. ISBN: 0-321-76611-3

B- Recommended books, materials and media:

Articles, Videos, and other material will be provided to students through the online portal (E-Learning).

27 Additional information:

N/A

Name of Course Coordinator: **Ins. Majduleen Sbaihat** Signature: ----- Date: **4/10/2020**

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

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

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

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