Course E-Syllabus

1	**Course title**	Biotechnology
2	**Course number**	5501426
3	**Credit hours**	Three hours
	Contact hours (theory, practical)	Three hours per week
4	**Prerequisites/corequisites**	5501424
5	**Program title**	Bachelor degree in Biological Sciences
6	**Program code**	550
7	**Awarding institution**	The University of Jordan-Aqaba
8	**School**	Basic and Marine Sciences
9	**Department**	Marine Biology
10	**Level of course**	Forth year
11	**Year of study and semester (s)**	Second Semester 2018/2019
12	**Final Qualification**	B.Sc.
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……
17	**Date of production/revision**	

18 Course Coordinator:

Dr. Zeinab H. Arabeyyat
Office number: 342
Office hours: 10:00 – 11:00 am (Sun, Tue, Thu)
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19 Other instructors:

N/A

20 Course Description:

As stated in the approved study plan.
This course covers an introduction to the basics of biotechnology. The course will introduce students to various biotechnology applications in the environment and obtain useful products from biosystems. Students examine progress in discovery of drugs, enzymes and industrial substances from organisms, technologies for the conservation of biodiversity and the environment, advanced approaches in aquaculture of food and non food marine organisms.

21 Course aims and outcomes:

A- Aims:
To become familiar with the basics of Biotechnology and its different applications. Alongside with a general focusing on safety, moral and ethics issues related to Biotechnology.

B- Intended Learning Outcomes (ILOs):
Upon successful completion of this course, students will be able to:

- ✓ **(Knowledge and understanding)**

At the end of this module, students will be able to describe the basics of biotechnology and various biotechnology applications in the environment and obtain useful products from biosystems.

- ✓ **Cognitive skills (Thinking and analysis)**

The thinking skills will be developed by repetition of long and hard terms in Biotechnology. To make this happen, the first step is to bring the skill to a conscious level where the student is deliberately thinking about improving this skill.

By participating in new activities, students can stretch their brains. In other words, the more a student practices or rehearses a new activity, the greater the number of neurons that get involved and the active space in the brain devoted to this new activity. The brain then expands to accommodate the assignment. Moreover, immediate feedback provides these types of close proximity associations. Good brain training needs to facilitate immediate feedback of two types – positive feedback and corrective feedback. One-on-one training makes this possible. With these techniques, learning is made possible on many levels. The classroom is a place where students not only learn new information, but learn how to be better learners as well.

22. Topic Outline and Schedule:

Week	Lecture	Topic	Teaching Methods*/platform	Evaluation Methods**	References
1 & 2	5-6	The nature of biotechnology	Synchronous lecturing	Direct questions, Quizzes, and Homework	Smith, 2009. Ratledge and Kristiansen, 2006.
3 & 4	5-6	Biomass: a biotechnology substrate?	Synchronous lecturing	Direct questions, Quizzes, and Homework	Smith, 2009. Ratledge and Kristiansen, 2006.
5 & 6	5-6	Genetics and biotechnology	Synchronous lecturing	Direct questions, and Homework	Smith, 2009. Ratledge and Kristiansen, 2006.
7 &8	5-6	Genetics and biotechnology (PCR and RT-PCR applications)	Asynchronous lecture/zoom and Moodle	Direct questions, and Homework	Smith, 2009. Ratledge and Kristiansen, 2006.

9 & 10	6	Environmental Biotechnology	Asynchronous lecture/zoom and Moodle	Direct questions, Quizzes, and Homework	Smith, 2009. Ratledge and Kristiansen, 2006.
11	3	Plant and Forest Biotechnology	Asynchronous lecture/zoom and Moodle	Direct questions, Quizzes, and Homework	Smith, 2009. Ratledge and Kristiansen, 2006.
12	3	Nanotechnology	Asynchronous lecture/zoom and Moodle	Direct questions, and Homework	Smith, 2009. Ratledge and Kristiansen, 2006.
13	2	Safety, Moral and Ethical Issues in Biotechnology	Asynchronous lecture/zoom and Moodle	Direct questions.	Smith, 2009. Ratledge and Kristiansen, 2006.

- 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	The nature of biotechnology, Biomass: a biotechnology substrate?, Environmental Biotechnology, and Plant and Forest Biotechnology.	-	Paper test in the class. Using Google forms and Messenger after the Covid-19 pandemic.
Homework Assignment	30	The nature of biotechnology, Biomass: a biotechnology substrate?, Genetics and biotechnology (PCR and RT-PCR applications), Environmental Biotechnology, Plant and Forest Biotechnology, and Nanotechnology.	-	E-Learning and Email
Open book exam	10	Genetics and biotechnology (PCR and RT-PCR applications)	-	Zoom, E-Learning and Email
Final Exam	50	Genetics and biotechnology, Genetics and biotechnology (PCR and RT-PCR applications),	-	Google forms and zoom

		Environmental Biotechnology, Plant and Forest Biotechnology, Safety, Moral and Ethical Issues in Biotechnology.		

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

Computer and internet connection are required for watching lectures, reading the module documents and reviewing related eBooks, applying for online test, answering and submitting homework.

25 Course Policies:

A- Attendance policies:

- **I strongly recommend students attend every lecture. Missing any lecture will put them at a distinct disadvantage when test taken.**
- **Any student with four or more unexcused absences from lab can be legally dropped from the course.**

B- Absences from exams and handing in assignments on time:

The only valid excuses for missing an exam are death in the family, illness, or accident. In this case, student must provide evidence of some kind and 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:

- **Students are not expected to talk loudly while the lecturer is lecturing,**
- **After two warning, the Student will be automatically removed from the class or the online lecture.**
- **Any act of cheating, or academic misconduct is subject to penalties.**
- **The minimum penalty for any students caught cheating will receive a zero on that test.**

E- Grading policy:

Type	**Grading**
Homework Assignment:	**30%**
Quizzes:	**10%**
Summary report:	**10%**
Final Exam:	**50%**
Total	**100%**

Exams: The examinations consist of any combination of multiple choice, and true or false questions.

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

Library sources are available and internet.

26 References:

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

- ✓ **Smith, J.E. (2009). Biotechnology. 5th ed. New York. Cambridge University press.**
- ✓ **Ratledge, C and Kristiansen, B (2006). Basic Biotechnology, 3rd ed. Cambridge University Press.**
- ✓ **Other readings (Will be provided as PDF).**

B- Recommended books, materials and media:
Electronic online-free books.
YouTube.
Moodle.

27 Additional information:

N/A

Name of Course Coordinator: -- **Dr. Zeinab H. Arabeyyat** --Signature: ---------- Date: ---------

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

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

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

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