

## fourth Stage/ Animal tissue culture B483

### Course Description Form

**This course provides students with the skills and knowledge to work in a modern biological research laboratory making use of cell culture techniques. Emphasis is placed on aseptic techniques for animal cell culture, the requirements for cell growth in vitro, mechanisms underlying cellular differentiation, immunohistochemistry and in situ hybridization, and the expression of transfected DNA in cultured animal cells**

1. Educational Institution	College of Science/ University of Basrah
2. Department	Biology
3. Course name/Code 1. Programs included in it	Animal tissue culture B482
4. Programs included in	Bachelor's
5. Attendance Form Available	Weekly
6. Semester/ Year	2021-2022
7. Total of study hours	30 hours
8. The course description was	prepared in 01/09/2021
9. Aims of the Course	

Develop the student's ability to recognize the importance of animal cell culture and its implication in various research fields, identify the methods of culturing, maintaining, and preserving them, as well as know the most important applications in which animal cell culture is used and the factors affecting on it.

## 10. Course outcomes and methods of teaching, learning and assessment

### **a- Knowledge and Understanding goals**

- a.1. Tissue culture is an important tool for the study of the biology of cells from multicellular organisms.
- a.2. It provides an in vitro model of the tissue in a well-defined environment that can be easily manipulated and analyzed.
- a.3. Recognize the types of normal and transformed cell lines
- a.4. To develop the ability of the students to identify the animal cell culture in vitro
- a.5. To Identify the basic equipment and facilities in animal cell culture
- a.6. Identify the basic techniques in animal cell culture.

### **b- Subjective- Specific Skills**

- b.1. Recognize the sources of cell lines .
- b.2. Acquiring the skills of calculating the cytotoxicity and analyzing its results
- b.3. Identity and understanding of Maintaining cell culture methods and how to achieve them.

### **Learning Methods**

1. Explanation and Discussion of the Lectures
2. It is boosting the student to conduct research and reports.
3. Urging the student to make PowerPoint presentations.

### **Evaluating Methods**

- 1- Daily test and reports
- 2- Monthly exams
- 2- Final exams

### **C- Emotional and evolutionary goals**

1. The ability to recognize the importance of animal cell culture in the biology field.
2. Linking knowledge to a healthy reality
- 3-Apply biological and chemical principles and quantitative reasoning to concepts presented in core subject areas in Animal Science such as physiology, nutrition, genetics, and reproduction

## Learning Methods

1. Explanation and Discussion of the Lectures
  2. Boosting the student to conduct research and reports.
  3. The student PowerPoint presentations.
- d- General qualification skills transferred (other skills related to employability and personality development)
1. Developing the mental abilities of the student
  2. Developing the skills
  3. Dealing with field and laboratory

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he has made the most of the available learning opportunities. It must be linked to the description of the program.

### 1. Sequencing of course content

Week	Hours	Unit name	Course Outcomes	Learning method	Evaluation method
1 st week, 2ed, 3ed weeks	2 h.lect.	<b>Theoretical:</b> General introduction, History of Tissue / Cell Culture, Importance of and progress in Animal Cell Culture Technology, initiation of culture, culture condition , Cell Preservation , Cells Morphology in culture, Biology of the Cultured Cell	Knowledge and understanding of lectures	Understand the evolving state of knowledge learn to carry out practical work, in the field and in the laboratory	Daily and monthly tests
4 th week, 5 th and 6th weeks	2 h. lect.	<b>Theoretical:</b> Basic Manipulations of Cultured Cells , Demonstration of sterile method & lab setup , plating cell. The Culture Environment	Knowledge and understanding of lectures	Understand the evolving state of knowledge learn to carry out practical work, in the field and in the laboratory	Daily and monthly tests
7 th week	2 h. lect.	First semester exam	Knowledge and understanding of lectures	Understand the evolving state of knowledge learn to carry out practical work, in the field and in the laboratory	Daily and monthly tests
8th weeks	2 h. lect.	<b>Theoretical:</b> Culture media of animal cells: Serum and Serum Free Media, Cell metabolism and its control in culture media, Culturing and Sub-Culturing of Animal Cells, Monitoring and control of cell culture	Knowledge and understanding of lectures	Understand the evolving state of knowledge learn to carry out practical work, in the field and in the laboratory	Daily and monthly tests
9 th week, and 10th weeks	2 h. lect.	<b>Theoretical:</b> Guidelines for maintaining culture cells, Cell Differentiation & Cell Movement	Knowledge and understanding of lectures	Understand the evolving state of knowledge learn to carry out practical work, in the field and in the laboratory	Daily and monthly tests

<b>11<sup>th</sup> week, and 12<sup>th</sup> weeks</b>	<b>2 h. lect.</b>	<b>Theoretical:</b> Biological contamination of cell cultured , types of contamination	Knowledge and understanding of lectures	Understand the evolving state of knowledge learn to carry out practical work, in the field and in the laboratory	<b>Daily and monthly tests</b>
<b>13<sup>th</sup> week,</b>	<b>2 h. lect.</b>	second semester exam	Knowledge and understanding of lectures	Understand the evolving state of knowledge learn to carry out practical work, in the field and in the laboratory	<b>Daily and monthly tests</b>
<b>14<sup>th</sup> week, and 15<sup>th</sup> weeks</b>	<b>2 h. lect.</b>	<b>Theoretical:</b> Application of cell culture in different biological field	Knowledge and understanding of lectures	Understand the evolving state of knowledge learn to carry out practical work, in the field and in the laboratory	<b>Daily and monthly tests</b>

## 11. Infrastructure

<b>1- Textbooks required for the course</b>	
<b>2 References</b>	* Culture of Animal Cells, A manual of basic technique, 5th Edition by Freshney, R.I. WILEY-LISS, 2005( optional)
<b>Recommended readings</b>	Invitrogen. (2010). Cell Culture Basics Handbook. ThermoFisher Scientific Inc., 1-61. <a href="https://doi.org/10.1093/chemse/bjt099">https://doi.org/10.1093/chemse/bjt099</a>
<b>Electronic website</b>	Cell culture training video <a href="https://www.youtube.com/watch?v=WGKqJRNKADY">https://www.youtube.com/watch?v=WGKqJRNKADY</a>

## 12. Course Development Plan

Course development based on recent versions of books and references..  
The adoption of modern interactive teaching methods.  
Activating alignment programs with international universities to learn about modern curricula and to exchange the experiences.