

**TISHK INTERNATIONAL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**Department of MEDICAL ANALYSIS,**  
**-2022 Fall**  
**Course Information for MA 311 MICROBIAL PHYSIOLOGY**

<b>Course Name:</b> MICROBIAL PHYSIOLOGY					
<b>Code</b> MA 311	<b>Regular Semester</b> 5	<b>Theoretical</b> 2	<b>Practical</b> 2	<b>Credits</b> 3	<b>ECTS</b> 4
<b>Name of Lecturer(s)- Academic Title:</b> Heshu Jalal - asst. lecturer					
<b>Teaching Assistant:</b> ..					
<b>Course Language:</b> -					
<b>Course Type:</b> Main					
<b>Office Hours</b> 2					
<b>Contact Email:</b> Heshu.jalal@tiu.edu.iq Tel:750523333					
<b>Teacher's academic profile:</b> MSc Medical microbiology BSc Medical microbiology					
<b>Course Objectives:</b> The biochemical reactions that together enable bacteria to live, grow, multiply and survive. Metabolism describes the total chemical reactions that take place in a cell. Physiology describes the role of metabolic reactions in the life processes of a bacterium. Bacteria are prokaryotes, lacking the complicated cellular organization found in higher organisms; they have no nuclear envelope and no specialized organelles. Yet they engage in all the basic life processes—transport of materials into and out of the cell, anabolism and catabolism of complex organic molecules, and the maintenance of structural integrity					
<b>Course Description (Course overview):</b> Microbial Physiology, is an advanced microbiology course designed for students majoring in biology or other equivalent majors. Microbial physiology is a study to understand cell structure, growth factors, metabolism, and genetic compositions of microorganisms and to comprehend the interrelatedness of microbiology, biochemistry, and genetics in the context of functional bacterial cells. This course provides a survey of microbial physiology with emphasis on bacteria metabolism, regulation, cellular structure, ecology, and adaptation to extreme environments.					

**COURSE CONTENT**

Week	Hour	Date	Topic
1	2	6-10/2/2022	Introduction to microbial physiology
2	2	13-17/2/2022	Introduction to microbial physiology Cont.
3	2	20-24/2/2022	Sources of Metabolic Energy in Microorganisms
4	2	27/2-3/3/2022	Interactions of Microbial Communities
5	2	6-10/3/2022	Microbial Stress Responses
6	2	27-31/3/2022	Review
7	2	3-7/4/2022	cont.
8	2	10-14/4/2022	Midterm Exam
9	2	17-21/4/2022	Cultivation of Microorganisms in Lab
10	2	24-28/4/2022	Biofilm Formation
11	2	8-12/5/2022	Genetic Change in Microorganisms
12	2	15-19/5/2022	Antibiotic Resistance Mechanisms
13	2	22-26/5/2022	Preservation of Perishable Products
14	2	29/5-2/6/2022	Review

15	2	5-9/6/2022	Final Exam
16	2	12-16/6/2022	Final Exam

**COURSE/STUDENT LEARNING OUTCOMES**

- 1 Nutritional classification
- 2 Transport of nutrients
- 3 Biosynthesis of cell structures from glucose
- 4 Microbial Photosynthesis
- 5 Central catabolic pathways

**COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES**

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced )

**Program Learning Outcomes**

**Cont.**

1	Evaluate clinical laboratory data by interpreting laboratory results and relating the data to various disease states.	P
2	apply principles of evidence-based medicine to determine clinical diagnoses.	A
3	apply the basic principles of gross and microscopic anatomy, physiology, biochemistry, immunology, microbiology/virology.	A
4	formulate and implement acceptable treatment modalities to various disease states.	A
5	use technology effectively in the delivery of instruction, assessment, and professional development.	A
6	exhibit essential employability qualities by demonstrating laboratory safety, analyzing laboratory results, and displaying professional conduct.	A
7	exhibit organizational skills, accountability, and ethical behavior.	A
8	apply skills needed in operating laboratory equipment for testing, assessing quality assurance for lab equipment, and adhering to standard safety practices in the laboratory environment.	A
9	apply problem-solving and decision-making skills.	A
10	apply and promote health policies and regulatory standards in the field career.	A
11	develop research in the field of medical analysis using qualitative and quantitative methods.	A

**Prerequisites (Course Reading List and References):**

Madigan M.T., Bender K.S., Buckley D.H., Sattley W.M. and Stahl D.A. (2017) Brock Biology of Microorganisms, 15th Edn.,(Global edn) Pearson Education, p.1056

**Student's obligation (Special Requirements):**

Attendance 85% and Lectures Notes

**Course Book/Textbook:**

Madigan M.T., Bender K.S., Buckley D.H., Sattley W.M. and Stahl D.A. (2017) Brock Biology of Microorganisms, 15th Edn.,(Global edn) Pearson Education, p.1056

**Other Course Materials/References:**

Lecture Notes

**Teaching Methods (Forms of Teaching):**

Lectures, Presentation, Seminar, Assignments, , ,

**COURSE EVALUATION CRITERIA**

Method	Quantity	Percentage (%)
Attendance	1	10
Quiz	2	5
Homework	1	5
Midterm Exam	1	30
Practical Exam	1	5
Final Exam	1	40
<b>Total</b>		<b>100</b>

**Examinations:** Essay Questions, True-False, Fill in the Blanks, Multiple Choices, Short Answers, Matching, , ,

**Extra Notes:**