Course Descriptor

BIOL 281: Microbiology Lab

ACADEMIC YEAR	**2021-2022**	**SEMESTER**	**Spring**
Course Code & Title	**BIOL 281**	**Course Title**	Microbiology Lab
Credit hours	**1**	**Level of study**	Diploma/Undergraduate
College / Centre	CAHS		
Co- requisites	Microbiology	**Pre-requisites**	Biology 1

1. COURSE OUTLINE

This course seeks to provide students with an understanding of important scientific concepts, laboratory techniques, an ability to think critically, and an understanding of the importance of microbiology to society in general. This course prepares students to pursue advanced and professional degrees successfully and enter the workforce with the tools to continue life-long advancement, and to contribute to our ever-expanding understanding of biological processes. Numerous laboratory methods will be utilized in demonstrations and student experiments. Students will exercise critical thinking for interpreting laboratory results.

2. AIMS

[This course aims at introducing the students to practical skills essential to students studying microbiology and industrial Microbiology. Students learn how to culture bacteria and test for antibiotic resistance, how to stain and observe bacteria under the light microscope, how to grow and count bacteria. At the end of the course, the students should feel comfortable to work with the equipment's and tools in the biology laboratory and perform experiments independently. The course will also highlight the importance of laboratory health and safety.

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS (Indicative)

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
1. **1.** Develop and demonstrate basic skills required for microbiology lab.	Lectures, presentation and demonstration	in-class tests, quizzes
2. **2.** Acquire a good working knowledge on the principles, tools and methods of Microbiology.	Lectures, presentation and demonstration	Quiz and written examination
3. **3.** Develop skills in the preparation and	Lectures, presentation and demonstration	in-class tests, quizzes

utilization of appropriate culture media used to isolate, culture, observe and identify microorganisms.		
4. **4.** Acquire the knowledge of the diversity of microorganisms and their similarities and differences to one another	Lectures, presentation and demonstration	in-class tests, quizzes, lab report
5. Apply safety rules when doing microbiological experiments, sterilization and disinfection.	Lecture, presentations and lab work	Quiz and written examination

4. ASSESSMENT WEIGHTING

Assessment	**Percentage of final mark (%)**
Quizzes (Two)	20
Lab reports	20
Mid-Term Examination	20
Final Examination	40

5. ACHIEVING A PASS

Students will achieve 1 credit hours for this course by passing **ALL** of the course assessments *(*quizzes , Midterm examinations and final examinations*)*and achieving a **minimum overall score of 50.**

6. COURSE CONTENT (Indicative)

WEEK	**LECTURE TOPIC**	**TIME (HOURS)**
1	Introduction to the course: (aims of the course, textbooks, and exam),	3

6. COURSE CONTENT (Indicative)

WEEK	LECTURE TOPIC	TIME (HOURS)
		3
2	Safety in microbiology laboratory: safety rules	3
		3
3	Basic techniques Microscopy and Sterilization techniques: dry heat sterilization and moist heat sterilization	3
4	Bacterial staining- Simple staining	3
	Gram staining of bacteria	3
5	Preparation of culture media	3
6	**Midterm exam**	3
7	Pure culture techniques: streak plate technique,	3
		3
8	Pour plate technique and spread plate technique	3
9	Lactophenol cotton blue staining for fungi	3
10	Hanging drop technique: motility test for the bacteria	3
15	Final Examination	
	TOTAL HOURS	**45**
1 - 15	Plus **RECOMMENDED INDEPENDENT STUDY HOURS**	**15**
	TOTAL COURSE HOURS	**60**

7. RECOMMENDED READING

1. A' Sharqiyah University Biology Lab Manual.

2. Michael R. Green, Joseph Sambrook, Molecular Cloning: A Laboratory Manual, 4th edition,

Publisher: Cold Spring Harbor Laboratory Press ISBN 978-1-936113-42-2

Library + online resources:

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http://www.bioedonline.org/

Moodle