



## Course Specifications

<b>Course Title:</b>	<b>Microbial Ecology</b>
<b>Course Code:</b>	<b>2012206-2</b>
<b>Program:</b>	<b>Bachelor in Microbiology</b>
<b>Department:</b>	<b>Biology department</b>
<b>College:</b>	<b>College of Sciences</b>
<b>Institution:</b>	<b>Taif University</b>

**Table of Contents**

- A. Course Identification..... 3**
  - 6. Mode of Instruction (mark all that apply) ..... 3
- B. Course Objectives and Learning Outcomes..... 3**
  - 1. Course Description ..... 3
  - 2. Course Main Objective..... 3
  - 3. Course Learning Outcomes ..... 3
- C. Course Content ..... 4**
- D. Teaching and Assessment ..... 4**
  - 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods ..... 4
  - 2. Assessment Tasks for Students ..... 5
- E. Student Academic Counseling and Support ..... 5**
- F. Learning Resources and Facilities..... 5**
  - 1. Learning Resources ..... 5
  - 2. Facilities Required..... 5
- G. Course Quality Evaluation ..... 6**
- H. Specification Approval Data ..... 6**

## A. Course Identification

<b>1. Credit hours:</b> 2hrs
<b>2. Course type</b> <b>a.</b> University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/> <b>b.</b> Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> Level 6/ 2 <sup>nd</sup> year
<b>4. Pre-requisites for this course (if any):</b> General Ecology (2012101-3)
<b>5. Co-requisites for this course (if any):</b> None

## 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	5 hrs/Week	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

## 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	20
2	Laboratory/Studio	30
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	<b>50</b>

## B. Course Objectives and Learning Outcomes

<b>1. Course Description:</b> The course content will be included the environment microorganisms in natural life cycles and overlapping of microbes with the rest of the biosphere and environment. Also, the interactions between microbes and the surrounding environment (water pollution, waste recycling, cracker of chemicals and petroleum) using non harmful bacteria and fungi will be also studied.
<b>2. Course Main Objective:</b> This course investigates the microorganisms in biosphere, their as bio-fertilizers and biocontrol and their use in recycling and removing of various pollutions.

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge and Understanding:</b>	
1.1	Illustrate the microorganisms in biosphere	K2

CLOs		Aligned PLOs
<b>2</b>	<b>Skills:</b>	
2.1	Apply microorganisms as bio-fertilizers and biocontrol	S1
2.2	Utilize the microorganisms in recycling and removing of various pollutions	S3
<b>3</b>	<b>Values:</b>	
3.1	Demonstrate personal organization and leadership to work individually or in group.	V1
3.2	Formulate plans for academic and/or professional self-development	V2

### C. Course Content

No	List of Topics	Contact Hours
1	<b>Chapter 1:</b> History of the evolution and the importance of the microbes.	2L + 3P
2	<b>Chapter 2:</b> The proliferation of different microbes in different environmental circles.	2L + 3P
3	<b>Chapter 3:</b> Overlapping, interaction and activities between the microbes.	2L + 3P
4	<b>Chapter 4:</b> Determine the number of microbes, biomass and activities.	2L + 3P
5	<b>Chapter 5:</b> Study the microbial communities.	4L + 6P
6	<b>Chapter 6:</b> Relationship of microbes and other living organisms (plant, animal and human).	4L + 6P
7	<b>Chapter 7:</b> Biodegradation of chemicals such as pesticides, organic carbon and petroleum by using non-harmful bacteria and fungi.	4L + 6P
<b>Total</b>		20L+30P

### D. Teaching and Assessment

#### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and Understanding:</b>		
1.1	Illustrate the microorganisms in biosphere	Lectures Concept maps	Paper-based exams
<b>2.0</b>	<b>Skills:</b>		
2.1	Apply microorganisms as bio-fertilizers and biocontrol	Lectures	Paper-based exams
2.2	Utilize the microorganisms in recycling and removing of various pollutions	Interactive learning Brain storming	Practical exam
<b>3.0</b>	<b>Values:</b>		
3.1	Demonstrate personal organization and leadership to work individually or in group.	Open discussion Small group activities	Assignments

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.2	Formulate plans for academic and/or professional self-development	Open discussion Small group activities	Assignments

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments and activities: 1- Written Assignment Power-point presentation	Variable	10
2	Midterm Exam	5 <sup>th</sup>	20
3	Periodic Exam	7 <sup>th</sup>	10
4	Practical Reports	Continuous	15
5	Final Practical Exam	11 <sup>th</sup>	5
6	Final Exam	12 <sup>th</sup>	40

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

6 hours per week for academic advice and consultations.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ol style="list-style-type: none"> <li>Andrews J.H. and Hirano S.S. (2012). Microbial Ecology of Leaves (Brock Springer Series in Contemporary Bioscience). Springer; Softcover reprint of the original 1st ed. 499 pp.</li> <li>كتاب بيئة الأحياء الدقيقة – الدار العربية للنشر والتوزيع – ٢٠٠٨</li> </ol>
<b>Essential References Materials</b>	Larry L. Barton, Diana E. Northup. (2011). Microbial Ecology. Wiley-Blackwell.
<b>Electronic Materials</b>	Blackboard website Website of Saudi digital Library
<b>Other Learning Materials</b>	Computer-based programs and professional software.

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Classrooms for 40 students\lecture. - Microbiology Lab for 20 students\ lab activity.
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	- Data Show projectors.

Item	Resources
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	- Disinfectants - Culture media - Antibiotics and antiseptics - Different Kits for isolation of microorganism from different ecology.

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Indirect
Quality of learning resources	Peer Reviewer Students	Direct Indirect
Extent of achieving the course learning outcomes	Peer Reviewer Students	Direct Indirect

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

Council / Committee	Biology Department
Reference No.	Committee number 14 - Academic Year 1442-1443H
Date	22\5\2022G – 21\10\1443H

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