



# Course Specifications

<b>Course Title:</b>	Bacteriology
<b>Course Code:</b>	342 Bio-2
<b>Program:</b>	Biology
<b>Department:</b>	Biology
<b>College:</b>	Sciences and Art College
<b>Institution:</b>	Najran University

## Table of Contents

<b>A. Course Identification</b> .....	<b>3</b>
6. Mode of Instruction (mark all that apply) .....	3
<b>B. Course Objectives and Learning Outcomes</b> .....	<b>4</b>
1. Course Description .....	4
2. Course Main Objective .....	4
3. Course Learning Outcomes .....	4
<b>C. Course Content</b> .....	<b>5</b>
<b>D. Teaching and Assessment</b> .....	<b>5</b>
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods.....	5
2. Assessment Tasks for Students .....	6
<b>E. Student Academic Counseling and Support</b> .....	<b>7</b>
<b>F. Learning Resources and Facilities</b> .....	<b>7</b>
1. Learning Resources .....	7
2. Facilities Required .....	8
<b>G. Course Quality Evaluation</b> .....	<b>8</b>
<b>H. Specification Approval Data</b> .....	<b>8</b>

## A. Course Identification

<b>1. Credit hours:</b> 2 (1+1)
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> level 5 / third year
<b>4. Pre-requisites for this course (if any):</b>
<b>5. Co-requisites for this course (if any):</b>

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	15+30	100%
2	Blended		
3	E-learning		
4	Correspondence		
5	Other		

### 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	30
2	Laboratory/Studio	15
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	45
<b>Other Learning Hours*</b>		
1	Study	17
2	Assignments	3
3	Library	5
4	Projects/Research Essays/Theses	5
5	Others(specify)	5
	<b>Total</b>	35

\*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The aim of the course is to learn the basic information about prokaryotes with particular emphasis on the bacterial cell structure, bacterial nutrition and growth. The course is designed for biology students to understand distribution, morphology and physiology of bacteria. Students will acquire practical skills related to aseptic procedures, bacterial culture, isolation and identification.

### 2. Course Main Objective

On successful completion of the course, the student will be able to:

- To educate the student updated knowledge about bacteria with special emphasis on their virulence determinants.
- To educate the student the methods of control of microorganisms including antimicrobial agents and updated methods of sterilization and disinfection.
- To provide an understanding of fundamental theoretical aspects of bacteriology, including culture techniques, characteristics of selected groups of bacteria.
- To provide a practical experience in techniques for aseptic handling of bacteria this also serves to illustrate aspects of the theory.
- Account for systematics of bacteria and classification of bacteria, especially the methods that are used for classification.
- Account for mechanisms of transmission, virulence, pathogenicity of pathogenic Bacteria and methods for treatment and prevention.

### 3. Course Learning Outcomes

CLOs		AlignedPLOs
1	<b>Knowledge:</b>	
1.1	Illustrate knowledge of morphology, physiology and taxonomy of bacteria	
1.2	Describe the systematic position of bacteria, and overview the role of Bacteria in the environment	
1.3		
1...		
2	<b>Skills :Cognitive</b>	
2.1	Integrate the uses of disinfectant and antiseptics for infection control through good sterilization and safer practices in daily life.	
2.2	Show ability to work independently or in group to perform practical isolation and purification techniques of bacteria from various sources under sterile conditions.	
2.3		
2...		
3	<b>Competence: interpersonal Communication Psychomotor</b>	
3.1	Employ the internet as a source of information regarding bacteria	
3.2	Perform laboratory experiments accurately and precisely with responsible bio-safety measures and precautions when dealing with bacteria	
3.3		
3...		

## C. Course Content

No	List of Topics	Contact Hours
1	Bacterial morphology and structure.	1
2	Nomenclature & Classification of Bacteria	2
	Reproduction of bacteria endospore formation	1
3	Growth & nutrition of bacteria	1
4	Bacterial metabolism.	1
5	Sterilization, disinfection and antiseptics.	2
6	Bacterial toxins & virulence	2
7	Host parasite relationship.	2
8	Antimicrobial agents	1
9	Antibiotic resistance	1
		1
<b>Total</b>		15

No	List of Topics (Practical)	Contact Hours
<b>Practical topics</b>		
1	Biosafety in bacteriology lab	2
2	Sterilization techniques	4
3	Microscopes	2
4	Culture media	4
5	Isolation and enumeration of bacteria from rhizosphere soil (dilution plate method)	4
6	Staining	4
7	Bacterial motility	2
	Antibacterial susceptibility testing	2
	Laboratory diagnosis of infections	2
	Exams & Final practical exam	4
<b>Total</b>		30

## D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1	<b>Knowledge:</b>		
1.1	Illustrate knowledge of morphology, physiology and taxonomy of bacteria	Theoretical & lab exams (Mid + Quizzes+ final exam) and lab reports	Theoretical Exam – Practical Exam-

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Describe the systematic position of bacteria, and overview the role of Bacteria in the environment	Theoretical & lab exams (Mid + Quizzes+ final exam) and lab reports	Theoretical Exam – Practical Exam-
1.3		Theoretical & lab exams (Mid + Quizzes+ final exam) and lab reports	Theoretical Exam – Practical Exam-
<b>2</b>	<b>Skills : Cognitive</b>		
2.1	Integrate the uses of disinfectant and antiseptics for infection control through good sterilization and safer practices in daily life.	Exams, quizzes, Homework oral question and exams, Tutorial discussion, interpretation of videos / pictures and slides	Exams – discussion laboratory reports
2.2	Show ability to work independently or in group to perform practical isolation and purification techniques of bacteria from various sources under sterile conditions.	Individual and group reports, open class discussion.	laboratory performance and reports
		Perform laboratory experiments accurately and precisely	laboratory performance and reports
<b>3</b>	<b>Competence: Interpersonal Communication Psychomotor</b>		
3.1	Employ the internet as a source of information regarding bacteria	Quizzes, Homework & group reports, oral discussions.	Research reports - presentations
3.2	Perform laboratory experiments accurately and precisely with responsible bio-safety measures and precautions when dealing with bacteria	Orientation and demonstration	Laboratory work
...			

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quizzes, Class activities including (participation in open discussions, speech, oral presentations, group reports, essays) and attendance.	continuous	10%
2	Major exam (multiple choice- short assay- labeling – drawing- memorizing – discussion- solving problems).	5 <sup>th</sup> week	10%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
3	Laboratory activities (log book- student work - working in groups).	continuous	5%
4	Practical mid exam (examining slides- interpretation – diagramming).	6 <sup>th</sup> week	10%
5	Final practical exam (examining slides- interpretation – diagramming).	14 <sup>th</sup> week	15%
6	Final exam (multiple choice- short assay- labeling – drawing- memorizing – discussion- solving problems).	15-16 <sup>th</sup> week	50%

\*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 :**

- Six office hours per week are offered to support students individually.
- Reachable via email.
- Personal web pages of academic members staff in university website.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ol style="list-style-type: none"> <li>1. Stuart Hogg. 2005. Essential of Microbiology, ISBN 0 471 49753 3 (hbk), John Wiley &amp; Sons Ltd</li> <li>2. John Lammert (2006). Techniques for Microbiology. Spiralbound, 240 pages ISBN: 9780132240116</li> <li>3. Gerard J. Tortora, Berdell R. Funke and Christine L. Case. (2012). Microbiology, An Introduction, 12th Edition.</li> <li>4. Michael T. Madigan, John M. Martinko, Kelly S. Bender, Daniel H. Buckley, David A. Stahl and Thomas Brock. (2014). Brock Biology of Microorganims, 14th Edition.</li> <li>5. George Wistreich (2006). Microbiology Perspectives, A Photographic Survey of the Microbial World, 2nd Edition.</li> </ol>
<b>Essential References Materials</b>	<ol style="list-style-type: none"> <li>1. Brown Pub 1997 -Cappuccinos JG and Sherman N. Microbiology (A Laboratory Manual) 8th edition Pearson Pub 2008.</li> <li>2. Todar's Online Textbook of Bacteriology</li> </ol>
<b>Electronic Materials</b>	<ol style="list-style-type: none"> <li>1. Journal of Applied Microbiology and Biotechnology; ISSN: 0175-7598</li> <li>2. <a href="http://www.textbookofbacteriology.net/kt_toc.html">http://www.textbookofbacteriology.net/kt_toc.html</a></li> <li>3. <a href="http://www.textbookofbacteriology.net/">http://www.textbookofbacteriology.net/</a></li> </ol>
<b>Other Learning Materials</b>	<p>Lab. Notes:            Will be distributed to the students by the lecturer            Equipped laboratory with the necessary apparatus and chemicals</p>

## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room ( 8 x 15m ) equipped with about 20 student seats, Lab. ( 8 x 15 m ) equipped with about 20 student seats.
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	White Board, computer, Data Show, Overhead projector and laptop.
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Library, and Seminar Room and Wi-Fi internet connections Well-equipped laboratory with dissecting microscopes and stereo microscopes. - Permanent slides - Slides and covers - Fresh specimens - Preserved specimens - Chemical reagents

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Feedback on effectiveness of teaching	Students	Indirect (by questionnaire)
Extent of achievement of course learning outcomes	Course coordinator	Direct
Quality of learning resources	Internal Audit Committee	Indirect (by questionnaire)

**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	Internal Audit Committee
Reference No.	
Date	