



## Course Specifications

<b>Course Title:</b>	Microbial diagnosis
<b>Course Code:</b>	MBIO 320
<b>Program:</b>	Microbiology (B. Sc.)
<b>Department:</b>	Department of Botany and Microbiology
<b>College:</b>	College of Science
<b>Institution:</b>	King Saud University

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## A. Course Identification

<b>1. Credit hours:</b> 2(1+0+2)
<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 checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 5 <sup>th</sup> Level
<b>4. Pre-requisites for this course (if any):</b> 140 MBIO
<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	30	100
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

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

No	Activity	Contact Hours
1	Lecture	15
2	Laboratory/Studio	30
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	30

## B. Course Objectives and Learning Outcomes

### 1. Course Description

Modern techniques in collecting samples and methods of transporting and preserving them. Various media that used for microbial identification and isolation. Microbial diagnosis by physical and biochemical methods. Methods for extracting nucleic acids from medical samples. Molecular and serological methods for microbial disease diagnosis.

## 2. Course Main Objective

- The student should be able to recognize sample collecting methods, transport and preserve them.
- The student should be able to list various media used for microbial identification and isolation.
- The student should be able to identify physical and biochemical methods for Microbial diagnosis.
- The student should be able to explain methods for extracting nucleic acids from the medical sample.
- The student should be able to illustrate molecular and serological methods for microbial disease diagnosis.

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge and Understanding</b>	
1.1	At the end of the course, the student will be able to recognize the techniques used in collecting samples, methods of samples transportation and preservation until microbial diagnosis.	K4
1.2	At the end of the course, the student will be able to list different methods used for conventional, molecular and serological diagnosis including their principles and applications.	K4
2	<b>Skills :</b>	
2.1	At the end of the course, the student will be able to compare between the principles and applications for different methods used for microbial diagnosis.	S2
2.2	At the end of the course, the student will be able to explain the principle, steps, components, and applications of PCR	S2
3	<b>Values:</b>	
3.1	At the end of the course, the student will be able to work independently and as a part of team.	V1

## C. Course Content

No	List of Topics	Contact Hours
1	Specimens collection, transport and processing	4(2+0+4)
2	Culture based methods and biochemical reactions for diagnosis	4(2+0+4)
3	Serological diagnosis for different pathogens.	4(2+0+4)
4	Molecular methods used for pathogens diagnosis	4(2+0+4)
5	Diagnosis of bacterial and fungal diseases	8(4+0+8)
6	Diagnosis of viral infections	2(1+0+2)
7	Diagnosis some selected microbial examples such as viruses, bacteria and fungi.	4(1+0+4)
<b>Total</b>		<b>30</b>

## D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	<b>Knowledge and Understanding</b>		
1.1	At the end of the course, the student will be able to recognize the techniques used in collecting samples, methods of samples transportation and preservation until microbial diagnosis.	Lectures, laboratory practices, preparing of lab reports, assignments, activities and homework.	Final theoretical, midterm and Practical exams, quizzes, and Performance-based assessment using rubrics.
1.2	At the end of the course, the student will be able to list different methods used for conventional, molecular and serological diagnosis including their principles and applications.		
2.0	<b>Skills</b>		
2.1	At the end of the course, the student will be able to compare between the principles and applications for different methods used for microbial diagnosis.	Lectures, laboratory practices, open discussion, preparing of lab reports, assignments, activities and homework.	Final theoretical, midterm and Practical exams, quizzes, and Performance-based assessment using rubrics.
2.2	At the end of the course, the student will be able to explain the principle, steps, components, and applications of PCR		
3.0	<b>Values</b>		
3.1	At the end of the course, the student will be able to work independently and as a part of team.	Laboratory practices, preparing of lab reports, activities and homework., Group discussion	Performance-based assessment using rubrics.

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	1st midterm exam	5 <sup>th</sup>	10%
2	2nd midterm exam	9 <sup>th</sup>	10%
3	Practical exam and Lab reports	15 <sup>th</sup>	30%
4	Tasks	During semester	10%
5	Final exam	16 <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:**

- Email, blackboard and faculty personal website
- Office hours
- Practical support

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<b>Bailey &amp; Scott's Diagnostic Microbiology 15<sup>th</sup> edition (2022)</b>
<b>Essential References Materials</b>	
<b>Electronic Materials</b>	Journal of general Microbiology The journal of General and Applied Microbiology The society for General Microbiology Journals
<b>Other Learning Materials</b>	

### 2. Facilities Required

<b>Item</b>	<b>Resources</b>
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Smart board classes (30 students per class) Lab. (25 students per lab) Blackboard
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Computer Printer Projector Smart Board Internet access
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Chemicals Disinfectant chemicals Cultural Media Protective gears Petri dishes Incubators Microscope slides

### G. Course Quality Evaluation

<b>Evaluation Areas/Issues</b>	<b>Evaluators</b>	<b>Evaluation Methods</b>
Effectiveness of teaching & assessment, learning resources	Students External stakeholders (alumni, employers) graduates	Student's questionnaires and Reports
Achievement of students and learning outcomes	Teaching staff and students	Course evaluation surveys, practical and theoretical exams, reports, Quizzes
Quality of learning resources	Student, Teaching staff, internal and external auditors	Course Survey and visits


Evaluation Areas/Issues	Evaluators	Evaluation Methods
Curriculum and learning resources	students	Courses evaluation surveys
Availability of Facilities and Equipment	Students and teaching staff	Student and teaching staff questionnaires.

**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	Academic Accreditation and Evaluation Committee 
Reference No.	Update-1443
Date	16/10/1443 H