



Course Specifications

Course Title:	Training in Medical Microbiology Laboratories
Course Code:	493 MBIO
Program:	Microbiology (B. Sc.)
Department:	Botany and Microbiology
College:	Science
Institution:	King Saud University

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A. Course Identification

1. Credit hours: 6(0+0+12)
2. Course type
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"/>
3. Level/year at which this course is offered: ninth level
4. Pre-requisites for this course (if any): After 90 Credits-450 MBIO- 460 MBIO
5. Co-requisites for this course (if any): MBIO 140

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	90	100%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	-
2	Laboratory/Studio	90
3	Tutorial	-
4	Others (specify)	-
	Total	90

B. Course Objectives and Learning Outcomes

1. Course Description

During this course the students practice the various microbiological techniques for their applications in clinical and diagnostic laboratories in hospitals. Learn the techniques for examination of clinical specimens including skin, dental, respiratory tract, gastrointestinal tract, urine, and blood; to isolate and identify pathogens including bacteria, fungi and viruses employing classical and cutting edge microbiological techniques. They spend some time as trainees in clinical laboratories in hospitals. At the end of the course they will prepare and present their findings as a report. Their progress will be evaluated by a faculty member.

2. Course Main Objective

To gain experience and skills in clinical microbiology at an advanced level.

To impart knowledge and inculcate technical skills in basic microbiological concepts and their applications in clinical microbiology towards diagnosis of pathogens associated with clinical symptoms

3. Course Learning Outcomes :

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	At end of the course, the student will be able to recognize practical competence with diverse microbiological methods for use in clinical and diagnostic laboratories in hospitals and research and development organizations.	K1
1.2	At end of the course, the student will be able to recognize the techniques for examining clinical specimens and isolating and identifying pathogens using both traditional and cutting-edge microbiological techniques.	K2
1.3	At end of the course, the student will be able to understand the important and advanced techniques used in the most advanced and applied biological fields.	K4
2	Skills :	
2.1	At end of the course, the student will be able to analyze and discuss microbiological analytical data	S2
2.2	At end of the course, the student will be able to interpret some findings of the microbiology and biology for microorganisms with common microbe used in pharmaceutical applications.	S2
2.3	At end of the course, the student will be able to practice different research skills through live experiments and exposure to contemporary research problems.	S1
3	Values:	
3.1	At end of the course, the student will be able to ability to work in team group	V1
3.2	At end of the course, the student will be able to demonstrate the policy and legislation of microbiology and ethics	V2

C. Course Content

No	List of Topics	Contact Hours
1	Introductory lectures: Fundamentals of Medical microbiology, Types of medical specimens Microbial analysis of hospital samples: Infection and Immunity	6(0+0+12)
2	Microbial analysis of bacterial human Pathogens, Samples and Associated Diseases	12(0+0+24)
3	Phoenix Automated identification and Susceptibility testing for bacteria	24(0+0+48)
4	Collection methods, diagnosis of Fungal Pathogens, Parasitic Infections	12(0+0+24)
5	Viral Pathogens and Associated Diseases: sensitive methods for sampling, storage and retrieval of viral pathogens	12(0+0+24)
6	Diagnosis, Treatment and Control of infectious diseases	12(0+0+24)
7	Immunological and serological techniques	12(0+0+24)
Total		90

D. Teaching and Assessment

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

Cod e	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	At end of the course, the student will be able to recognize practical competence with diverse microbiological methods for use in clinical and diagnostic laboratories in hospitals and research and development organizations.	Direct meeting and practical activities	Performance based assessment using rubrics
1.2	At end of the course, the student will be able to recognize the techniques for examining clinical specimens and isolating and identifying pathogens using both traditional and cutting-edge microbiological techniques.	Direct meeting and practical activities	
1.3	At end of the course, the student will be able to understand the important and advanced techniques used in the most advanced and applied biological fields.	Direct meeting and practical activities	
2.0	Skills		
2.1	At end of the course, the student will be able to analyze and discuss microbiological analytical data	Direct meeting and practical activities	Performance based assessment using rubrics
2.2	At end of the course, the student will be able to interpret some findings of the microbiology and biology for microorganisms with common microbe used in pharmaceutical applications.	Direct meeting and practical activities	Performance based assessment using rubrics
2.3	At end of the course, the student will be able to practice different research skills through live experiments and exposure to contemporary research problems.	Direct meeting and practical activities	Performance based assessment using rubrics
3.0	Values		
3.1	At end of the course, the student will be able to ability to work in team group	Assignment project	Performance based assessment using rubrics
3.2	At end of the course, the student will be able to demonstrate the policy and legislation of microbiology and ethics		Performance based assessment using rubrics

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Reports	every week	20
2	Laboratory activities and exams	every week	40
3	Oral presentation	15	20
4	supervisor evaluation	15	10
5	Research paper	15	10
6			
7			
8			

*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 :

- E-mail, blackboard and faculty personal website
- Office hours
- Practical support
- Student meeting.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	a. Principles and Practicals in Medical Microbiology, Melter Oto - Malmgren Annika- 2014 b. Textbook of Diagnostic Microbiology 6 th Ed., Connie Mahon Donald Lehman -2015
Essential References Materials	University library/databases
Electronic Materials	https://microbiologyonline.org/ https://microbiologyinfo.com/
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1) Data show room 2) Laboratory 3) E-learning room 4) Live presentations from the internet
Technology Resources (AV, data show, Smart Board, software, etc.)	Computer supported with important softwares , printer and scanner and access to internet.

Item	Resources
<p align="center">Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)</p>	Chemicals Disinfectant chemicals Cultural Media Protective gears Petri dishes Incubators Microscopically slides

G. Course Quality Evaluation


Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student feedback	Instructors	Indirect -Evaluation questioner
Effectiveness of teaching and assessment	Student, peer reviewer, program leaders	<ul style="list-style-type: none"> • Indirect (Course evaluation questioner by students) • Direct (faculty meetings)
Extent of achievement of course learning outcomes	Program Leaders, faculty, quality and development unit	<ul style="list-style-type: none"> • Indirect (Preparation of course report) • Peer consultation on teaching • Departmental council discussions • Revision of student results between previous semester\ • Self evaluation
Quality of learning resources	Student, faculty, internal and external auditors	<ul style="list-style-type: none"> • Course evaluation • Self-study report

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	20/09/1443 H