



Course specifications

(Postgraduate Degree)

| | |
|----------------------|---------------------------|
| Course Title: | Advanced Medical Bacteria |
| Course Code: | 622 MBIO |
| Program: | PhD in Microbiology |
| Department: | Botany and microbiology |
| College: | Science |
| Institution: | King Saud university |

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A. Course Identification

| |
|---|
| 1. Credit hours: 2 |
| 2. Course type <input type="checkbox"/> Required <input checked="" type="checkbox"/> Elective |
| 3. Level/year at which this course is offered: 1st Year |
| 4. Pre-requisites for this course (if any): |
| 5. Co-requisites for this course (if any): |

6. Mode of Instruction (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|----|-----------------------|---------------|------------|
| 1 | Traditional classroom | 28 | 100 % |
| 2 | Blended | | |
| 3 | E-learning | | |
| 4 | Correspondence | | |
| 5 | Other | | |

7. Actual Learning Hours (based on academic semester)

| No | Activity | Learning Hours |
|------------------------------|---------------------------------|----------------|
| Contact Hours | | |
| 1 | Lecture | 20 |
| 2 | Laboratory/Studio | |
| 3 | Seminars | 8 |
| 4 | Others (specify) | |
| | Total | 28 |
| Other Learning Hours* | | |
| 1 | Study | 15 |
| 2 | Assignments | 8 |
| 3 | Library | 15 |
| 4 | Projects/Research Essays/Theses | 7 |
| 5 | Others(specify) | |
| | Total | 45 |

*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

Microbial pathogenesis antibiotics, properties, the physiology of their infection, reactions, mechanism of pathogenesis and some aspects of resistance and metabolism.

Pathogenesis of bacteria, fungi and viruses. The major epidemic diseases. Immune interaction chemotherapy, vaccination and control measures. Gene therapy.

2. Course Main Objective

This course covers initial concepts of microbial pathogenesis antibiotics, properties, the physiology of their infection, reactions, mechanism of pathogenesis and some aspects of resistance and metabolism.

Pathogenesis of bacteria, fungi and viruses. The major epidemic diseases. Immune interaction chemotherapy, vaccination and control measures. Gene therapy.

The assignments, projects, and other activities in this course are designed to help students to learn the principles of Medical Microbiology, and report their presentation topic clearly and concisely, both in oral and written form. Students are expected to show up for class on time and be prepared for the class activities, work diligently, ask questions and participate in class discussions

3. Course Learning Outcomes

| Course Learning Outcomes (CLOs) | | Aligned PLOs* |
|---------------------------------|--|---------------|
| 1 | Knowledge | |
| 1.1 | Students will be able to acquire the knowledge of medical bacterial cell structure, growth and metabolism | 1.1 |
| 1.2 | Students will be able to describe the medical aspects of bacteria. | 1.2 |
| 1.3 | Students will be able to demonstrate proficiency in understanding of the hypotheses and experimental designs in advanced medical bacteria. | 1.3 |
| 2 | Skills | |
| 2.1 | Students will be able to compare between types of different pathogenic bacteria | 2.2 |
| 2.2 | Students will be able to interpret results and correlate data in a scientific context. | 2.4 |
| 3 | Competence | |
| 3.1 | Students will be able to show the ability to work effectively as a part of research team. | 3.1 |
| 3.2 | Students will be able to analyze the results of projects, studies and assignments in a group. | 3.2 |
| 3.3 | Students will be able to present the scientific data and research results in meetings, seminars, and conferences. | 3.3 |
| 3.4 | Students will be able to effectively use library facilities and data resources. | 3.4 |

* Program Learning Outcomes

C. Course Content

| No | List of Topics | Contact Hours |
|----|-----------------------------|---------------|
| 1 | Introduction | 2 |
| 2 | Pathogenesis of bacteria | 6 |
| 3 | The major epidemic diseases | 4 |
| 4 | Immune interaction | 4 |
| 5 | Chemotherapy | 2 |
| 6 | Vaccination | 4 |
| 7 | Control measures | 2 |

| | | |
|--------------|--------------|----|
| 8 | Gene therapy | 4 |
| Total | | 28 |

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 | Knowledge | | |
| 1.1 | Students will be able to acquire the knowledge of medical bacterial cell structure, growth and metabolism | Class lectures, lab experiments and reports, homework assignments, reports, and presentations | Quizzes, exams, reports, assignments, and discussions |
| 1.2 | Students will be able to describe the medical aspects of bacterial. | Class lectures, lab experiments and reports, homework assignments, reports, and presentations | Quizzes, exams, reports, assignments, and discussions |
| 1.3 | Students will be able to demonstrate proficiency in understanding of the hypotheses and experimental designs in advanced medical bacteriology. | Class lectures, lab experiments and reports, homework assignments, reports, and presentations | Quizzes, exams, reports, assignments, and discussions |
| 2.0 | Skills | | |
| 2.1 | Students will be able to compare between types of different pathogenic bacteria | Homework assignments, presentations on a relevant research paper, open discussion and reports. | Class presentation, written reports, quizzes and exams |
| 2.2 | Students will be able to interpret results and correlate data in a scientific context. | Homework assignments, presentations on a relevant research paper, open discussion and reports. | Class presentation, written reports, quizzes and exams |
| 3.0 | Competence | | |
| 3.1 | Students will be able to show the ability to work effectively as a part of research team. | Reports, homework assignments, laboratory exercises, open discussion and presentations | Writing group reports, group class presentations, laboratory exercises, open discussions, peer instruction, and student-led lectures |
| 3.2 | Students will be able to analyze the results of projects, studies and assignments in a group. | Reports, homework assignments, laboratory exercises, open discussion and presentations | Writing group reports, group class presentations, laboratory exercises, open discussions, peer instruction, and student-led lectures |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|------|---|---|---|
| 3.3 | Students will be able to present the scientific data and research results in meetings, seminars, and conferences. | Utilization of computer in homework assignments and reports | Homework assignments, class presentations and written reports |
| 3.4 | Students will be able to effectively use library facilities and data resources. | Utilization of computer in homework assignments and reports | Homework assignments, class presentations and written reports |

2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|-----------------------------------|----------|--------------------------------------|
| 1 | Discussing some scientific papers | 3 | 5% |
| 2 | Mid Term Exam / Presentation | 6 | 35% |
| 3 | Seminar/Report | 14 | 20% |
| 4 | Final Exam | 15 | 40% |
| 5 | | | |
| 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:

Two hour per week

F. Learning Resources and Facilities

1. Learning Resources

| | |
|--------------------------------------|---|
| Required Textbooks | Hawley, Louise, Benjamin Clarke, Richard J. Ziegler. 2014. Microbiology and Immunology (Board Review Series). Sixth Edition. LWW. Alcama's Fundamentals of Microbiology 9th. Jeffrey C. Pommerville. 2010, Jones & Bartlett Learning. Sudbury, Massachusetts, USA Review of Medical Microbiology and Immunology, Tenth Edition (Lange Basic Science) 2008 |
| Essential Reference Materials | Essential Microbiology, Stuart Hogg, 2005, John Wiley. |
| Electronic Materials | Sciencedirect.com; Nature.com |

| | |
|---------------------------------|--|
| Other Learning Materials | |
|---------------------------------|--|

2. Educational and research Facilities and Equipment Required

| Item | Resources |
|--|---|
| Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) | Classroom, demonstration room. |
| Technology Resources (AV, data show, Smart Board, software, etc.) | Smart board, Microsoft PowerPoint, and Computer/students' own laptops |
| Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | |

G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|--|--|
| Effectiveness of teaching and assessment | Student, peer Reviewer, program leaders | Course evaluation questioner Students- faculty meetings |
| Extent of achievement of course learning outcomes | Program Leaders, faculty, quality and development unit | Preparation of course report Peer consultation on teaching Departmental council discussions Self evaluation |
| Quality of learning resources | Student, faculty, internal and external auditors | Course evaluation Self-study report |
| | | |
| | | |
| | | |

Evaluation Areas/Issues (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 | Botany and microbiology |
| Reference No. | |
| Date | 15-09-2019 |