|  |  |
| --- | --- |
| **Course Title:** | Training in medical microbiology laboratories |
| **Course Code:** | MBI-493 |
| **Program:** | BSc |
| **Department:** | Department of Botany and Microbiology |
| **College:** | **Sciences** |
| **Institution:** | **King Saud University** |

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# A. Course Identification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. Credit hours:** | | | | **6 (0+0+12) (Lect. – Exer. – Pract.)** | | | | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | | College | | |  | Department | | | | **x** | Others |  |  |
| **b.** | | Required | | | | **x** | Elective | | |  |  | | | | | |
| **3. Level/year at which this course is offered:** | | | | | | | | | | | | **Level 9** | | | | |
| **4. Pre-requisites for this course** (if any)**:**  450 MBIO 460 MBIO 492 MBIO | | | | | | | | | | | | | | | | |
| **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** | 90 | 100 |
| **2** | **Blended** |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Distance learning** |  |  |
| **5** | **Other** |  |  |

**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 |
| The students will be able to practice the various microbiological techniques for their applications in clinical and diagnostic laboratories in hospitals. |

## 3. Course Learning Outcomes

| **CLOs** | | **Aligned****PLOs** |
| --- | --- | --- |
| 1 | **Knowledge and Understanding** |  |
| 1.1 | Students will be able to learn about the general characteristics of  microorganisms used in Medical microbiology | K1.1 |
| 1.2 | Students will be able to determine the basic criteria of Medical microbial strains | K1.2 |
| 1.3 |  |  |
| 1... |  |  |
| **2** | **Skills :** |  |
| 2.1 | Students will be able to cultivate, examine, identify microorganism in the  laboratory. | S2.1  S2.2 |
| 2.2 | Students will be able to apply many ranges of medical test of human illness related to microbes | S2.3 |
| 2.3 | Students will be able to utilize many instruments to determine serious medical conditions | S2.4 |
| 2... |  |  |
| **3** | **Values:** |  |
| 3.1 | Students will be able to predict the results of medical microbes in human | C3.1 |
| 3.2 | Apply the studied techniques professionally | C3.5 |
| 3.3 | Students will be able to work in a group to plan the medical test needed. | C3.3  C3.4 |
| 3... |  |  |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | Microbiology | 10 |
| 2 | Blood Smear | 10 |
| 3 | Streak plate method | 10 |
| 4 | Blood culture | 10 |
| 5 | Gram stain | 10 |
| 6 | PyloPlus UBT System | 10 |
| 7 | Stool Culture | 5 |
| 8 | NEWBORN SCREENING | 5 |
| 9 | COVID-19 tests | 5 |
| 10 | Analytical chemistry | 5 |
| 11 | Serology | 5 |
| 12 | Presentation | 5 |
| **Total** | | 90 |

# 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 and Understanding** | | |
| 1.1 | Students will be able to learn about the general characteristics of  microorganisms used in Medical microbiology | Laboratory and self study | Report and Presentation |
| 1.2 | Students will be able to determine the basic criteria of Medical microbial strains | Laboratory and self study | Report and Presentation |
| … |  |  |  |
| **2.0** | **Skills** | | |
| 2.1 | Students will be able to cultivate, examine, identify microorganism in the  laboratory. | Laboratory and self study | Report and Presentation |
| 2.2 | Students will be able to apply many ranges of medical test of human illness related to microbes | Laboratory and self study | Report and Presentation |
| … | Students will be able to utilize many instruments to determine serious medical conditions | Laboratory and self study | Report and Presentation |
| **3.0** | **Values** | | |
| 3.1 | Students will be able to predict the results of medical microbes in human | Laboratory and self study | Report and Presentation |
| 3.2 | Apply the studied techniques professionally | Laboratory and self study | Report and Presentation |
| … | Students will be able to work in a group to plan the medical test needed. | Laboratory and self study | Report and Presentation |

## 2. Assessment Tasks for Students

| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Weekly reports | Every week | 40 |
| **2** | Final Reports | 15 | 20 |
| **3** | Oral Presentation | 15 | 40 |
| **4** |  |  |  |
| **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 :** |
| 2 hours weekly on working hours |

# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | Sastry, A. S., & Bhat, S. (2018). *Essentials of medical microbiology*. JP Medical Ltd.  Murray, P. R., Rosenthal, K. S., & Pfaller, M. A. (2020). *Medical microbiology E-book*. Elsevier Health Sciences. |
| **Essential References Materials** | Miller, J. M., & Miller, S. A. (2017). *A guide to specimen management in clinical microbiology*. John Wiley & Sons. |
| **Electronic Materials** | Scholar.google.com |
| **Other Learning Materials** |  |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**  (Classrooms, laboratories, demonstration rooms/labs, etc.) | laboratories |
| **Technology Resources**  (AV, data show, Smart Board, software, etc.) | , Smart Board |
| **Other Resources**  (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Medical Microbiology Lab |

# G. Course Quality Evaluation

| **Evaluation**  **Areas/Issues** | **Evaluators** | **Evaluation Methods** |
| --- | --- | --- |
| Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources | Faculty | Questioners in edugate, Direct |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**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** |  |
| **Reference No.** |  |
| **Date** |  |