

Course Specification Student Version

Course Title:	Introduction to Applied Microbiology
Course Code:	MAC 311
Department:	Basic Medical Sciences
Program:	Bachelor of Dentistry
College:	Vision College in Riyadh
Institution:	Vision College in Riyadh
Revised:	June 2025

A. Course Identification

1. Credit hours: 2 (1+1+0)
2. Level/year at which this course is offered: Level 6/Year 3
3. Pre-requisites for this course (if any): General Microbiology and Immunology (MAC 211)
4. Co-requisites for this course (if any): None

B. Teaching Methods

1	Lecture
2	Practical

C. Course Description and Objectives

This course provides an in-depth exploration of medical microbiology and its applications in dental practice. Students will gain a comprehensive understanding of common infections and diseases of medical importance, their microbial causes, and the methods for laboratory diagnosis, prevention, and control. Emphasis is placed on the role of oral microbial flora in maintaining the oral ecosystem and the factors influencing microbial growth.

2. Main course Objective

The main objective of the "Introduction to Applied Microbiology" course (MAC 311) is to educate students about the common infections and diseases of medical importance, their microbial causes, and the methods for laboratory diagnosis, prevention, and control. The course aims to provide a deep understanding of the role of oral microbial flora in maintaining the ecosystem within the oral cavity and the factors that affect microorganisms' growth. Students will learn about the role and mechanisms of microorganisms in dental caries, the process of dental plaque formation, and the causes of periodontal diseases. The course also covers the identification of signs and symptoms of various oral infections, management strategies, and the appropriate use of prophylactic antibiotics. Additionally, students will be trained to identify the appropriate laboratory tests for diagnosing infections, differentiate between various viral infections, and implement effective infection control techniques. Practical skills in interpreting microbial diagnostic tests and applying infection control techniques will be emphasized, along with the importance of teamwork and collaboration in a healthcare setting. This comprehensive approach ensures that students are well-prepared to manage and prevent infections in their future dental practice.

3. Course Objectives

By the end of this course, students should be able to:

- Identify the role of oral microbial flora in maintaining the microbial ecosystem in the oral cavity and the factors that affect the growth of microorganisms in this environment.

- Identify the role and mechanisms of microorganisms in dental caries, the process of dental plaque formation, the causes of periodontal diseases, and the signs and symptoms of various oral infections.
- Describe the management of various oral infections, the indications for prophylactic antibiotics, the appropriate lab tests for diagnosing different infections, and the techniques of infection control.
- Perform and interpret microbial diagnostic tests to determine the causative agents of dental infections and apply techniques of infection control.
- Appreciate the importance of teamwork and emphasize its significance in a collaborative setting.

D. Course Content

No	List of Topics
1	Overview of microbiology and its relevance to dentistry. Laboratory safety and introduction to microbiological techniques.
2	Distribution of normal human flora Microscopic examination of oral microbial samples
3	Oral Microbial Flora Microscopic examination of oral microbial samples
4	The mouth as a microbial habitat Collection of oral cavity specimens
5	Microbial Growth Factors Culturing oral microorganisms under different conditions
6	Resident oral microflora Microbial examples
7	Dental plaque formation Plaque sampling and culturing
8	Plaque mediated diseases- dental caries Isolation and identification of cariogenic bacteria
9	Plaque mediated diseases- periodontal diseases Identification of periodontal pathogens
10	Approaches for controlling plaque mediated diseases Plaque sampling and microbial examination
11	Orofacial bacterial Infections Microbial diagnostic techniques
12	Orofacial fungal Infections Microbial diagnostic techniques

E. Assessment Tools

#	Assessment task	Percentage of Total Assessment Score
1	Quizzes	10%
2	Assignments	10%
3	Midterm Exam	20%
4	Practical Exam	20%
5	Final Exam	40%
	Total	100%



F. Learning Resources

Essential References	Oral Microbiology, Philip D Marsh, Michael V Martin, 5th edition (2009)
Supportive References	Practical handbook of microbiology 2nd, Goldman, E. and Green, L. H. (eds) 2009 by Taylor & Francis Group, LLC or Microbiology in practice 6th edition, Lois Beishir (1996) Advanced Techniques in Diagnostic Microbiology, by Yi-Wei Tang and Stratton, C. W. (eds) (2006).
Electronic Materials	PC, Data show, Moodle
Other Learning Materials	None