

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Dental Hygiene</u>
COURSE RUBRIC AND NUMBER	<u>SCIT 1313</u>
COURSE TITLE	<u>Workplace Microbiology</u>
COURSE CREDIT HOURS	<u>3 2 :</u> <u>3</u>
	Credit Lec Lab

I. Catalog Description

Provides a study of the identification and growth of microorganisms as pathogenic or non-pathogenic agents including epidemiology. Includes the detection of microbes and control of infectious agents in the workplace; immunology; emphasizing sanitation and asepsis. A grade of "C" or better is required in this course to take the next course. **Prerequisite: DHYG 1301. (2:3). .Lab fee.**

II. Course Objectives

Theory Unit Activities

A. Unit I – Introduction to the Science of Microbiology and Microbial Structure

1. Define and explain the relevance of microbiology to the health professions.
2. Explain the germ theory of disease and discuss the significance of Koch's postulates.
3. Identify the parts of a light microscope and compute the magnification.
4. Describe the correct use of the electron microscope.
5. Describe the function and use of the electron microscope.
6. Be able to convert the metric units to describe the size of microorganisms according to the international system.
7. Site a function for each part of the eucaryotic cell and procaryotic cell.
8. Explain the different types of bacteria staining procedures.
9. Define the different atmospheric requirements of living organisms.
10. Compare and contrast the important characteristics of plant, animal, bacterial, and virus organisms.

B. Unit II – Basic Life Chemistry, Physiology, and Microbial Growth

1. Distinguish between organic and inorganic compounds.
2. Describe the role of enzymes in metabolism.
3. Discuss how DNA directs cellular activities.
4. List the various nutritional types of bacteria.
5. Discuss and give examples of metabolism, catabolism, anabolism, and photosynthesis.
6. List the reasons bacteria die during the death phase.
7. List and describe five ways by which the genetic constitution of bacteria can be changed (mutation, transduction, transformation, conjugation and lysogenic conversion).
8. Define bacterial agents, bacteriostatic agents, pasteurization, lyophilization, virucidal agents, fungicidal agents, and tuberculocidal agents.

9. Discuss the modes of disease transmission found in the clinical environment.
10. Plot a population growth curve and discuss the significance of each of the growth phases.

C. Unit III – Microbial Pathology

1. Discuss where indigenous microflora are found and their importance.
2. Define symbiosis, mutualism, commensalisms, and parasitism.
3. Differentiate between infectious, communicable, and contagious diseases and discuss the significance of virulence.
4. List and discuss the four phases of the course of an infectious disease.
5. List six reasons why an infection may not occur even though a pathogen is present.
6. List and discuss eight factors that affect the pathogenicity of bacteria.
7. List the types of reservoirs of infection and discuss their importance.
8. Identify five modes of disease transmission.
9. List some of the indigenous microflora found in the oral cavity and discuss their significance.

D. Unit IV – Asepsis

1. Review the OSHA Bloodborne Pathogen Standard in a health care setting.

E. Unit V – Human Defenses Against Infectious Diseases: Inflammation, Repair, and the Immune Response.

1. List and describe the nonspecific defenses of the human body.
2. Identify the first and second lines of defense.
3. List the five “cardinal signs” of inflammation.
4. List three systemic signs of inflammation.
5. List and describe the microscopic events of the inflammatory process.
6. List the primary types and functions of white blood cells that participate in inflammation.
7. Describe the difference between acute and chronic inflammation.
8. Describe the microscopic events that occur during wound repair.
9. Describe the contrast healing by primary, secondary, and tertiary intention. Acquiring and evaluating information, Organizing and maintaining information)
10. Describe the primary difference between the immune response and the inflammatory response.
11. List and describe the roles of the different white blood cells involved in the immune response.
12. Define antigen, antibody, and the five classes of immunoglobulins.
13. Describe the difference between the humoral immune response and the cell mediated immune response.
14. List and describe four types of hypersensitivity reactions and give an example of each.
15. Compare and contrast natural and artificial (acquired immunity).

F. Unit VI – Immunologic Pathogenesis An Autoimmune Disease

1. Define autoimmunity and describe how it results in disease.
2. Describe the oral manifestations of five autoimmune diseases.

G. Unit VII – Major Infectious Diseases of Humans

1. Describe the clinical features and the etiology of skin, eye, mouth, and ear infections.
2. Describe the etiology and the clinical features of the infectious diseases of the respiratory, gastrointestinal, genitourinary, circulatory, and nervous systems.

H. Unit VIII – Oral Bacteria and Dental Caries

1. Describe the typical bacteria found on the exposed soft tissue and teeth in the oral cavity and name two of the bacteria that are common on this area.
2. Describe the typical types of bacteria found in the pockets around teeth.
3. Name the bacteria normally associated with smooth surface caries.
4. Name the bacteria that are presumed to be responsible for root caries.
5. Name the five deposits that are found on teeth.

I. Unit IX – Oral Bacteria and Periodontal Disease

1. Define gingivitis and describe the location and types of bacteria that are responsible for it.
2. Describe gingivitis by tissue color, and contour.
3. Name three non-bacteria conditions that may cause gingivitis.
4. Name two systemic diseases that may cause gingivitis.
5. Describe the treatment for ANUG.
6. Describe the difference between gingivitis and periodontitis.
7. Name two organisms that have been implicated in chronic adult periodontitis.
8. Describe the microorganisms, and then name one that has been implicated in refractory or rapidly progressive periodontitis.

Laboratory Unit Activities

Assignments are composed of the following topics:

1. Luis Pasteur
2. Legionnaires Disease
3. Ebola
4. Introduction to the microscope
5. Culturing bacteria
6. Identification and Gram Staining
7. Protozoa
8. Parasites
9. Immunity
10. Components of blood
11. Viral Diseases
12. Oral Infections
13. Tb, Syphilis, Hepatitis
14. Aids
15. Blood Dyscrasias

III. THECB Learning Outcomes (WECM)

1. Describe the basic structures of microorganisms
2. Differentiate between infectious agents and normal microorganisms in the workplace.
3. Perform aseptic techniques for the isolation and identification of infectious agents in the workplace.
4. Identify the relationship between routes of transmission and the communicability of infectious disease among workers.
5. Follow a protocol for the detection and destruction of infectious agents in the workplace.

IV. Evaluation

- A. Conditions of performance:

1. There will be three (3) examinations covering lecture and lab given at scheduled times, which may include exam questions covering material from previous units. The instructor has the option of giving announced and unannounced quizzes.
2. The laboratory portion of the course will require a paper worth 10% of the final grade.
3. Lecture = 60% of the final grade
Lab = 10% of the final grade
Final exam = 30% of the final grade

B. Grading Scale

A = 93 – 100

B = 85 – 92

C = 75 – 84

A student will receive a grade of (F) if they score below 75%.

V. **Disability Statement (American with/Disabilities Act [ADA])**

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

VI. **6 Drop Rule**

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.