

SYLLABUS

NAME OF COURSE: MICROBIOLOGY PATH -132

LENGTH OF COURSE: 2 units, 33 hours (3 hrs lecture, 3 hrs lab/week)

COURSE DESCRIPTION: This course covers the characteristics of eukaryotic and, prokaryotic microbes and viruses. Microbial growth and reproduction are studied as well as the role of various agents in the control of growth. The relationship between the virulence of the parasite and the resistance of the host is stressed as a paramount factor in the process of infectious disease. The immunological response of the host to the presence of microbes is also emphasized. The laboratory will introduce students to techniques and the application of such procedures to the Chiropractic Clinic and practice. Students will also perform some of the procedures used to characterize and study microorganisms.

PREREQUISITES: CHEM -121, PATH-120

COURSE OFFERED BY: Basic Science Department

REQUIRED TEXT:

Talaro KP. and Chess B. *Foundations in Microbiology*. Any Edition. ISBN-10: 0073375292 | ISBN-13: 978-0073375298

RECOMMENDED TEXTS:

Harvey RA., Champe PC., and Fisher BD. *Microbiology* (Lipincotts Illustrated Reviews Series). Any Edition ISBN-13: 978-1496395856 / ISBN-10: 1496395859

METHOD OF INSTRUCTION: Lecture, PowerPoint

Evaluation:

Grades: Grade is based on 2 written 40 question midterm examinations worth 40 points each, and a final exam worth 100 points. Exams may be a combination of objective (multiple-choice, true/false, and matching) and/or short essay questions. The letter grade corresponds to an adjusted percentage of points earned. Because quarter instructional hours vary due to holidays or special events, the instructor may expand or reduce the length of the final exam to accommodate this situation. The final exam will be comprehensive in nature and include both material covered since the last exam and cumulative material.

Grades and Method of Grading:

The final grade will be based on the following scale:

A	4.0 Superior work	90 - 100%
B	3.0 Above Average	80 - 89%
C	2.0 Average Work	70 - 79%
F	0.0 Must repeat the course	00 - 69%

Grades and the Grading System Final Grades are available online through the CAMS student portal. If there are any questions on grading procedures, computation of grade point average, or the accuracy of the grade report, please contact the Registrar's Office or the Office of Academic Affairs. Grades will be reported and evaluation will be based on the Academic Policies, Procedures, & Services. Please refer to Evaluation Policy (**Policy ID: OAA.0007**)

In order to maintain **Satisfactory Academic Progress**, a student must maintain a 2.0 or better in each and every course. **Any grade less than a C must be remedied by repeating the class.** Please refer to Satisfactory Academic Progress (**Policy ID: OAA.0006**)

Attendance: Please refer to Attendance Policy (**Policy ID: OAA.0002**)

Conduct and Responsibilities: Please refer to the Personal Conduct, Responsibility and Academic Responsibility Policy (**Policy ID: OAA.0003**)

Make-up Exams: Please refer to Make-up Assessment Policy (**Policy ID: OAA.0001**)

Request for Special Testing: Please refer to Request for Special Testing (**Policy ID: OAA.0004**)

Accommodation for Students with Disabilities:

If you have approved accommodations, please make an appointment to meet with your instructor as soon as possible. If you believe you require accommodation but do not have an approved accommodation letter, please see the Academic Counselor Lori Pino in the Office of Academic Affairs. Contact info: Lpino@lifewest.edu or 510-780-4500 ext. 2061. Please refer to Service for Students with Disabilities Policy (**Policy ID: OAA.0005**)

Electronic Course Management:

Canvas is LCCW's Learning Management System (LMS). Canvas will be used throughout the quarter during this course. Lectures, reminders, and messages will be posted. In addition, documents such as the course syllabus and helpful information about the class project will be posted. Students are expected to check Canvas at least once a week in order to keep updated. The website address for Canvas is <https://lifewest.instructure.com/login/canvas> Please refer to the Educational Technologies Policy (**Policy ID: OAA.0009**)

COURSE GOALS:

The goal of this class is to provide the student with a level of knowledge and understanding of the characteristics of microbial organisms and their role in establishing flora and disease. To establish the base understanding of microbial physiology and host interaction and the application of these principles to health care.

COURSE OBJECTIVES:

Week 1:

- To survey pioneers in the field of microbiology
- To discuss prokaryotic cell features

Week 2:

- To discuss spore formation
- To discuss various diseases propagated by spore formation
- To illustrate and discuss bacterial morphology and shape
- To discuss unusual forms of bacteria
- To discuss the differences between domain Eubacteria and domain Archean

Week 3

- To discuss bacterial glycolytic pathways
- To discuss bacterial fermentation pathways
- To discuss bacterial aerobic and anaerobic respiration

Week 4

- To discuss bacterial chromosomal genetics
- To discuss bacterial plasmid genetics
- To discuss bacterial and fungal genetic methods of regulation
- To discuss the effects of mutation on bacteria
- To discuss methods of DNA transfer and Recombination
- To discuss Transposons and retro-Transposons
- **Assessment One: Midterm One**

Week 5

- To discuss bacterial nutrition categories
- To discuss the effects of temperature, oxygen, pH, and salinity on bacteria
- To discuss microorganism ecological associations
- To discuss binary fission and exponential growth patterns

Week 6

- To discuss the acquisition of normal flora
- To discuss regional areas of natural flora and what species dominate in those areas
- To discuss the characteristics, nutritional requirements and morphology of Fungi
- To discuss reproductive methodologies of fungal organisms
- To discuss the various forms of mycoses associated with fungal organisms

Week 7

- To discuss medically significant algal interactions
- To discuss general characteristics of protozoans
- To discuss important protozoan diseases

Week 8

- To discuss general characteristics of Helminthes
- To discuss major helminthic groupings and associated diseases
- **Assessment Two: Midterm Two**

Week 9

- To discuss general characteristics of viruses

- To discuss viral classification
- To discuss viral replication methodologies
- To discuss viral pathogenesis and human host defense response
- To discuss antiviral therapies
- To discuss General Prion characteristics
- To discuss Prion disease characteristics

Week 10

- To discuss transmission patterns and types of infections
- To discuss the difference between signs and symptoms
- To discuss reservoirs
- To discuss various methods of microbial control

Week 11 **Assessment Three: Final Exam**

PROCEDURES FOR REVIEWING EXAMS: The instructor has not authorized the distribution of old midterm exams. Any possession of old exams is prohibited. A student may review his or her exam during office hours for two weeks following the exam (unless there is a shorter time period until the last scheduled office hour during the last week of classes.) Students may not review mid-term exams during the final exam week. Possession of any exam other than during a review session constitutes unprofessional conduct.

STUDENT LEARNING OUTCOMES:

This course aligns to PLOs: (1 and 3)

1. The student should be able to define and differentiate the various types of microorganisms including viruses, bacteria, Protozoa, fungi, and parasites.
2. The student should be able to demonstrate knowledge of the crucial ecological role of microorganisms.
3. The student should be able to demonstrate a basic understanding of the role of microorganisms in public health e.g. (food, water, and air quality)
4. The student should be able to demonstrate an understanding of basic microorganism properties, including genetics, metabolism, life cycles, host interactions, and their roles in infectious disease.

5. The student should be able to demonstrate how our knowledge of microbial characteristics has contributed to the control of an infectious disease.

Program Learning Outcomes (PLO): Students graduating with a Doctor of Chiropractic degree will be proficient in the following:

- 1. ASSESSMENT AND DIAGNOSIS:** An assessment and diagnosis requires developed clinical reasoning skills. Clinical reasoning consists of data gathering and interpretation, hypothesis generation and testing, and critical evaluation of diagnostic strategies. It is a dynamic process that occurs before, during, and after the collection of data through history, physical examination, imaging, laboratory tests, and case-related clinical services.
- 2. MANAGEMENT PLAN:** Management involves the development, implementation, and documentation of a patient care plan for positively impacting a patient's health and well-being, including specific therapeutic goals and prognoses. It may include case follow-up, referral, and/or collaborative care.
- 3. HEALTH PROMOTION AND DISEASE PREVENTION:** Health promotion and disease prevention requires an understanding and application of epidemiological principles regarding the nature and identification of health issues in diverse populations and recognizes the impact of biological, chemical, behavioral, structural, psychosocial and environmental factors on general health.
- 4. COMMUNICATION AND RECORD-KEEPING:** Effective communication includes oral, written and nonverbal skills with appropriate sensitivity, clarity, and control for a wide range of healthcare-related activities, to include patient care, professional communication, health education, and record-keeping and reporting.
- 5. PROFESSIONAL ETHICS AND JURISPRUDENCE:** Professionals comply with the law and exhibit ethical behavior.
- 6. INFORMATION AND TECHNOLOGY LITERACY:** Information literacy is a set of abilities, including the use of technology, to locate, evaluate and integrate research and other types of evidence to manage patient care.
- 7. CHIROPRACTIC ADJUSTMENT/MANIPULATION:** Doctors of chiropractic employ the adjustment/manipulation to address joint and neurophysiologic dysfunction. The adjustment/manipulation is a precise procedure requiring the discrimination and identification of dysfunction, interpretation, and application of clinical knowledge; and, the use of cognitive and psychomotor skills.

8. INTERPROFESSIONAL EDUCATION: Students have the knowledge, skills, and values necessary to function as part of an inter-professional team to provide patient-centered collaborative care. Inter-professional teamwork may be demonstrated in didactic, clinical or simulated learning environments.

9. BUSINESS: Assessing personal skills and attributes, developing leadership skills, leveraging talents and strengths that provide an achievable expectation for graduate success. Adopting a systems-based approach to business operations. Networking with practitioners in associated fields with chiropractic, alternative medicine, and allopathic medicine. Experiencing and acquiring the hard business skills required to open and operate an on-going business concern. Participating in practical, real-time events that promote business building and quantifiable marketing research outcomes

10. PHILOSOPHY: Demonstrates an ability to incorporate a philosophically based Chiropractic paradigm in approach to patient care. Demonstrates an understanding of both traditional and contemporary Chiropractic philosophic concepts and principles. Demonstrates an understanding of the concepts of philosophy, science, and art in chiropractic principles and their importance to chiropractic practice.