

## LIVING WITH MICROBES

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### Course Requirements:

REQUIREMENT	POINTS
Attend Class	20
Record in a journal daily events and observations related to microbes	20
Be prepared to share your observations or related information in class	10
Write and turn in NLT April 27, a three page paper (dbl space, 12 pts, 1" all around margin) on a topic relevant to this class	50

You must have 75 points to pass the course.

**Office Hours:** Immediately for one hour following class. Location: 1145 F Social Sciences Bldg

### Lecture Outline And Reading Assignments

**References:** Basic Text, *Coming to Terms with Germs*, W.C. Brown, Third ed. in preparation, chapters available online. Advanced Text for personal reading; *Microbiology, an Evolving Science*, Sloncewski and Foster, Norton, Inc., 2<sup>nd</sup> Ed., 2011

### INTRODUCTION TO MICROBES

(Introduction, Chapter 1)

- ✿ Rationale for This Initiative
- ✿ What is a Microbe
- ✿ How Did Microbes Evolve?
- ✿ Development of the Field of Microbiology
  - ⇒ Early History
  - ⇒ Golden Age
  - ⇒ Beyond the Golden Age
  - ⇒ Modern Age
- ✿ Relationship Between Microbes and Other Organisms

## **DIVERSITY OF MICROBES**

(Chapter 2)

- \* Viruses
- \* Viroids and Virusoids
- \* Prions
- \* Bacteria
- \* Algae
- \* Fungi
- \* Protozoa

## **BIOLOGICAL PROPERTIES OF MICROBES**

(CHAPTER 4)

- \* Structure
- \* Growth and Nutrition
- \* Metabolism
- \* Genetics

## **PRINCIPLES OF DISEASE**

(Class Notes)

- \* What is Disease
- \* Manifestations of Disease
- \* Major Categories of Disease
- \* Leading Causes of Death (US)
- \* Roles of the US Center for Disease and Prevention
- \* What are the Causes of Disease?
- \* Roles of Epidemiologists

## **SOURCES AND TRANSMISSION OF PATHOGENIC MICROBES (TEXT:**

(CHAPTER 5)

- \* Sources of Pathogens
- \* How Pathogens Spread Among Humans in Communities
- \* How Pathogens Spread in Hospitals

## **MICROBES AS AGENTS OF DISEASE**

(Chapter 2)

- \* Viruses
- \* Viroids and Virusoids
- \* Prions
- \* Bacteria
- \* Fungi
- \* Protozoa

## **HOW YOUR BODY PROTECTS YOU FROM PATHOGENS** (CHAPTER 6)

- ✿ Introduction– first line, second and third line
- ✿ Nonspecific Defenses
  - ⇒ Skin and mucous membranes
  - ⇒ Resident microbes
  - ⇒ Fever
  - ⇒ Natural killer cells
  - ⇒ Phagocytosis
  - ⇒ Bridging proteins
  - ⇒ Inflammation
- ✿ Specific Defenses
  - ⇒ Roles of Cytokines
  - ⇒ Antibodies – specific antibodies; memory B cells
  - ⇒ T-cells – cytotoxic T cells; helper T cells

## **HOW PATHOGENS CAUSE DISEASE** (CHAPTER 7)

- ✿ Definition of Terms
- ✿ Factors that Affect the Outcome of an Infection
- ✿ Events in the Establishment of a Disease
- ✿ How Bacteria Cause Disease
- ✿ How Fungi Cause Disease
- ✿ How Protozoa Cause Disease
- ✿ How Viruses Cause Disease

## **HOW TO CONTROL PATHOGENS** (CHAPTER 8)

- ✿ Introduction and Definition of Terms
- ✿ Prevention
  - ⇒ Chemical and Physical Agents
  - ⇒ Immunizations
  - ⇒ Treatment
- ✿ How Pathogens Become Resistant to Antimicrobial Agents
- ✿ Causes of the Resistance Problem and Recommendations

**DISEASE PREVENTION THROUGH HEALTHY HABITS**  
(CHAPTER 9)

- ✿ Introduction
- ✿ What You Cannot do to Fight Germs
- ✿ The Healthy Habits Approach to Fighting Germs