

SYLLABUS BIOL 2900 SECTION "B" Fall 2015
 Instructor: Bipin Patel
 Course: Microbiology in Health and Disease

Office Hours: Before or after class or by appointment

Semester Begins August 17th to December 11 2015

2900 B 4.00	Microbiology in Health/Disease	Main Campus
LECTURE	MON-TUES 05:30 pm - 06:45 pm	BC 1025LECTURE
LAB	MON-TUES - 06:55 pm - 08:20 pm	BC 2068LAB

COURSE OBJECTIVES:

With a focus on healthcare majors, the objectives of this course are:

- A. To introduce students to microbiology and the vital role microorganisms play in the well-being of higher forms of life, as well as in causing diseases, mostly as opportunists,
- B. To learn various groups of microorganisms and what makes them infectious,
- C. To learn most common infections caused by microorganisms, and
- D. To learn the preventive and curative measures against common infections.

GRADES:

1. There will be tests, a mid-term examination and a final examination. Tests and exams typically consist of multiple choice, matching, fill-in blanks type of questions, including some open book. However, students may be challenged with questions that may require creative thinking and true understanding of concepts in order to answer them correctly.
2. In addition, there may be special assignments and projects which will be announced in the class.
3. Vocabulary, spelling and pronunciation of medical terms may be important parts of assignments, tests and examinations.
4. Lab. portion of testing will be merged with lectures.
5. Tests will be worth a total of 150 points.
6. Mid-term examination will be worth 150 points.
7. Special projects or presentations will be worth 50 points.
8. Final examination will be worth 250 points.
9. Between tests, mid-term, final examination, special projects and presentations, each student can earn a maximum of 600 points.

GRADING SCALE:

Grade A = 90 -100% or between 540 and 600 points

Grade B = 80 - 89% or between 480 and 539 points

Grade C = 70 – 79% or between 420 and 479 points

Grade D = 60 – 69% or between 360 and 419 points

Grade F = Less than 60% or 359 or less points

Week 1	
Subject(s)	Learning Objectives
General course information Introduction to Microbial World Introduction to Microscopy Personal and patient safety in healthcare environment Safety in microbiology laboratory	History of Microbiology, role of microbes in nature, well-being of other living things, science, health and diseases. Introduction to Microbiology Laboratory Safety, hand hygiene Proper handling and use of microscope
Week 2	
The Molecules of Characteristics of prokaryotic and eukaryotic cells Principles of Life Microscopy microscopy, use of microscopes Distinction of various groups and Cell Structure of bacteria Use of Microscope, Practice of focusing on human blood components Practice of using oil immersion lens	
Week 3	
Microbial Metabolism, Physiology and Genetics How microbes live and multiply Examination of microscopic life in pond water - Study of higher forms of microbial life Protozoa, Algae, Cyanobacteria What grows where? Culture of normal environmental and body flora	
Week 4	
Host Defense Mechanisms – Role of normal flora and physical barriers to infections How physical make-up of human body defend against infections Natural and Acquired Immunity What are natural, acquired and artificial means of combating infections Study of growth acquired from environmental flora Colony characteristics and recovered bacteria Are our counters, keyboards, drains, toilet seats, and body door handles AND our mouths, skin and noses simple stain of STERILE? What do they grow?	
Week 5	
FIRST TEST Infectious Disease Process – How Microbes survive defenses and cause infection Organism mutation, virulence, drug resistance, host avoidance of phagocytosis Importance of Gram Stain Gram Stain as an important diagnostic tool Gram Stain of bacteria recovered from previous exercise	
Week 6	
Control of Microbial Growth – Disinfection and Sterilization Levels of sanitization, disinfection, and Demonstration of Steam sterilization and Sterility Check sterilization under various situation ^s Gram Stain of common pathogenic bacteria	
Week 7	
Diagnosis of Infectious Diseases in clinical Methods for the direct and indirect, rapid employed in a clinical What is available at the disposal of clinicians to Laboratory - diagnose infectious diseases? and slow techniques Microbiology laboratory Demonstration of rapid diagnostic techniques used in a POC or ED laboratory	
Week 8	

MID-TERM EXAMINATION Introduction to Antimicrobial Agents Aerobic Gram Positive Cocci and their clinical significance Differentiation of Gram Positive Cocci in a laboratory	Treatment of microbial infections Introduction to Staphylococci, and their impact on humans
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Week 9	
Continuation of Antimicrobial Agents Continuation of Aerobic Gram Positive Cocci Differentiation of Gram Positive Cocci in a laboratory	Treatment of microbial infections
Week 10	
Week 11	
Antimicrobial Susceptibility testing – Principles, procedures, and results Clinically significant aerobic Enteric Gram Negative bacteria – Escherichia, Salmonella, Shigella	How antimicrobial treatment parameters are determined Introduction to Enterobacteriaceae, and their impact on humans
Week 12	
Antimicrobial Susceptibility Results – Their Interpretation and Applicability to patient care Clinically significant aerobic Non-Enteric Gram Negative bacteria – Pseudomonas, Acinetobacter, Haemophilus	How the results from a Microbiology laboratory may be applied in patient treatment Introduction to non-enteric aerobic bacteria, and their impact on humans
Week 13	
Clinically significant: Gram Negative diplococci – Neisseria, Moraxella Gram Positive Bacilli - Bacillus, Listeria Spiral bacteria – Treponema, Leptospira	Introduction to Neisseria, Bacillus, and Spirochaetes, and their impact on humans
Week 14	
SECOND TEST Clinically significant anaerobic bacteria – Clostridium, Bacteroides	Introduction to anaerobic bacteria, and their impact on humans
Week 15	
Clinically significant miscellaneous microorganisms – Viruses, Parasites, Chlamydia, Mycobacteria, Fungi, Yeasts Etiology of common human infections: Urinary tract, Respiratory, Gastro-intestinal, Genito-urinary, Skin and Wound infections	Introduction to non-bacterial Microbial pathogens Agents responsible for most common infections
Week 16	

Review and interpretation of important laboratory results
Epidemiology, Emerging Diseases and Public
Health Role of Infection Control Personnel
Review & Class Picture
Visit to a Clinical Testing Laboratory in Working

Challenges posed by MRSA – “The Superbug”, CDAD, EHAC and other emerging, important infections and how to control them

Week 17

FINAL EXAMINATION
End of Semester