

# SYLLABU

FALL 2011

## Course: Microbiology in Health and Disease

BIPIN PATEL

Office Hours: Before or after Class or by appointment

Semester Begins AUGUST 15 AND ENDS DECEMBER 8<sup>TH</sup> 2011

2900 D 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
22801 BIOL		

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### 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.
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2. Students are advised to consult the VSU Student Handbook, Undergraduate Catalog, Semester Calendar, Schedule of Classes, & Registration Guide for information about VSU policies and procedures regarding registration, drop/add, and withdrawal. Students are not permitted to withdraw after midterm except in cases of hardship.
3. Students requesting classroom accommodations or modifications because of a documented disability should contact the Access Office for Students with Disabilities, 1115 Nevins Hall.
4. Cell phones are to be turned off during classes and examinations.
5. Students are responsible for reading and following the Biology Department policy on plagiarism.
6. Since important concepts are explained in the classroom, missing classes may seriously impact grades.
7. Make-up examination or quiz **WILL NOT BE OFFERED**, except under exceptional and unavoidable circumstance. If offered, it will be at the discretion of the Instructor, **AND** will not carry full earned points.
8. Changes to this syllabus may be made during the Semester.

#### 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.

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 Life Microscopy and Cell Structure Use of Microscope, Practice of focusing on human blood components Practice of using oil immersion lens	Characteristics of prokaryotic and eukaryotic cells Principles of microscopy, use of microscopes Distinction of various groups of bacteria
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**Week 3**

Microbial Metabolism, Physiology and Genetics Examination of microscopic life in pond water - Protozoa, Algae, Cyanobacteria Culture of normal environmental and body flora	How microbes live and multiply Study of higher forms of microbial life What grows where?
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**Week 4**

Host Defense Mechanisms    Role of normal flora and physical barriers to infections Natural and Acquired Immunity Study of growth acquired from environmental and body flora Colony characteristics and simple stain of recovered bacteria	How physical make-up of human body defend against infections What are natural, acquired and artificial means of combating infections Are our counters, keyboards, drains, toilet seats, door handles AND our mouths, skin and noses <b>STERILE?</b> What do they grow?
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**Week 5**

<b>FIRST TEST</b> Infectious Disease Process    How Microbes survive host defenses and cause infection Importance of Gram Stain Gram Stain of bacteria recovered from previous exercise	Organism mutation, virulence, drug resistance, avoidance of phagocytosis Gram Stain as an important diagnostic tool
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Week 6



Control of Microbial Growth Disinfection and Sterilization  
Demonstration of Steam sterilization and Sterility Check  
Gram Stain of common pathogenic bacteria

Levels of sanitization, disinfection, and sterilization under various situations

Week 7

Diagnosis of Infectious Diseases in clinical Laboratory - Methods for the direct and indirect, rapid and slow techniques employed in a clinical Microbiology laboratory  
Demonstration of rapid diagnostic techniques used in a POC or ED laboratory

What is available at the disposal of clinicians to diagnose infectious diseases?

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

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

Antimicrobial Susceptibility testing

Week 11

