

# MICROBIOLOGY

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SUMMER QUARTER, 2011 David B. Fankhauser, Ph.D.

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**SYLLABUS**  
 34-BIOL-281-151

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**COURSE OBJECTIVES:** To learn about microorganisms, including their anatomy, physiology, taxonomy, genetics, how to control their growth, their medical significance, their epidemiology, the body's protective responses to their challenge (both non-specific and immune), exogenous antimicrobial agents, and **etymology** of the nomenclature related to all these subjects.

**LABORATORY SKILLS TO BE LEARNED:** oil immersion microscopy, differential staining, sterile technique, sterile media preparation, single colony isolation, serial dilution, use of selective and differential media, microbial enumeration (photometrically, plate count, membrane filtration), inhibition assay. See **Lab Notebook Procedure** for important details.

**REQUIRED TEXT:** Bauman, Robert *Microbiology With Disease by Taxonomy*, 3rd Ed, Pearson educational (2011)

**SCHEDULE: Lecture is 10:00 to approximately 11:25, Laboratory from 11:35 to 1:20.**

This calendar is an approximation, and may be adjusted according to the rate at which material is successfully presented and mastered. **Assigned readings:** in the lower left of each date are text page numbers which should be read before class.

READINGS IN TEXT ARE IN LOWER LEFT OF DUE DATE.

NOTE: Pop pre-lab quizzes will be given.

7/4 <b>INDEPENDENCE DAY HOLIDAY...</b>  Last day of Freedom!	7/6 Introduction to Course Early History of Microbiology Spontaneous Generation? 1-53 (Review Chemistry on your own)	7/8 <b>Lab First: Prepare media</b> Germ Theory of Disease Microscope History, Function & Stains Microscope: 95-113
7/11 Prokaryotic Anatomy: Capsules, Flagella, Pili Cell Wall Structure 55-77 <b>QUIZ I</b>	7/13 <b>Lab first, middle and last...:</b> <u>Bacterial Growth Curve</u> Sporulation. Enzymology, Metabolism 73, 125-134	7/15 Glycolysis Microbial Fermentation 134-164, esp 145-147 (ferm),
7/18 Required for Microbial Growth? Microbial Control: Physical Means 165-193, 257-271 <b>QUIZ I</b>	7/20 Microbial Control: Chemical Means 271-311	7/22 Microbial Genetics  [Mon: bring anti-bacterial agents to test] 194-235 <b>NOTEBOOKS DUE</b>
7/25 Microbial Taxonomy Intro to Gram positive bacteria <i>Staphylococcus, Streptococcus</i> 312-337; 533-545	7/27 Spore forming Gram positive bacteria: <i>Bacillus, Clostridium,</i> 545-552	7/29 <b>NO CLASS TODAY!</b> <b>FANK'S DAUGHTER</b> <b>IS GETTING MARRIED!</b>
8/1 <b>Lab First: Blood Agar results</b> Take home sterile culture tubes  <b>MIDTERM EXAM</b>	8/3 Midterm returned, discussed. Gm+ cont: <i>Mycoplasma, Mycobacteria</i> Gram neg bacteria intro: <i>Neisseria,</i> 553-573	8/5 Enterobacteriaceae etc. <i>E.coli,</i> <i>Salmonella, etc.</i> ¶ <i>Pseudomonas, Vibrio</i> <i>Rickettsia, Chlamydia, Spirochete</i> 574-593 600-624 <b>QUIZ III</b>
8/8 <b>Lab First: TSI slant prep</b> Medically Important Fungi Eukaryotic Parasites 625-650; 651-680	8/10 Viruses I: DNA Viral Diseases: Pox viruses, Herpes, CMV Papilloma, Hepatitis B 374-400; 681-705 <b>NOTEBOOKS DUE</b>	8/12 Viruses II: RNA Viral Diseases Rhino-, Polio-, Encephalitis, Rubella HIV, Measles, Rabies, Influenza 706-744 <b>QUIZ IV</b>
8/15 Diseases and Epidemiology Host Defenses: Non-specific and specific 401-434; 435-458	8/17 <b>Lab 1<sup>st</sup>: growing viruses!</b> Immunology: Mech. of the Immune Response, Problems 459-531	8/19 <b>Lab 1<sup>st</sup>: Count plaques, calc. titer</b>  <b>FINAL EXAM</b> So long, it's been good to know you. <b>KEEP IN TOUCH!</b>

Quizzes (given at 11:00) and exams will include material from both lecture and lab exercises. Grades will be assigned according to your position on a class histogram of cumulative points earned on quizzes, notebooks and exams. The class midline approximates a B. See separate handout on suggestions for how to succeed in this course.

28 June 2011