

Fayetteville State University  
College of Arts and Sciences  
Department of Biological Sciences

**Biol 330: Microbiology and Immunology  
Fall 2011**

**I. Locator Information:**

Instructor: **Dr. Sherrice V. Allen**

Office Location: **Lyons Science, Rm. 309**

Course # and Name: **Biol 330 Microbiology and Immunology**

Semester Credit Hours: **3 credit hours**

Day and Time Class Meets:

**Section 01**

Lecture: <b>Tues./Thurs.</b>	<b>9:30 am – 10:20 am</b>	<b>LS 109</b>
Lab: <b>Wed.</b>	<b>8:00 am – 9:50 am</b>	<b>LS 222</b>

**Section 02**

Lecture: <b>Tues./Thurs.</b>	<b>9:30 am – 10:20 am</b>	<b>LS 109</b>
Lab: <b>Wed.</b>	<b>10:00 am – 11:50 am</b>	<b>LS 222</b>

Total Contact Hours for Class: **4 hours per week**

Office Phone: **672-1046 or 672-1691/1695 (Departmental Office)**

Email address: [svallen@uncfsu.edu](mailto:svallen@uncfsu.edu)

Office hours: **Mon. 2:00 pm – 4:00 pm**  
**Tues: 12:00 pm – 1:00 pm; 4:00 pm – 5:00 pm**  
**Wed: 3:00 pm – 5:00 pm**  
**Thurs: 10:30 am – 12:30 pm**

**Other times by appointment**

**FSU Policy on Electronic Mail:** Fayetteville State University provides to each student, free of charge, an electronic mail account ([username@uncfsu.edu](mailto:username@uncfsu.edu)) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

Rules and regulations governing the use of FSU email may be found at  
<http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf>

**II. Course Description:** BIOL 330, Microbiology and Immunology (3-2-2) An introduction to the structure, physiology, ecology, and immunological host relationships of prokaryotes and other microorganisms, with two (2) hours of lab consisting of applications of microbiological and immunological techniques. Prerequisites: BIOL 200, and one year of Chemistry.

**III. Disabled Student Services:** In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability to please contact the Center for Personal Development in the Spaulding Building, Room 155 (1<sup>st</sup> Floor); 910-672-1203.

**IV. Textbook:**

a. Gerard Tortora, Berdell Funke and Christine Case. Microbiology: An Introduction Media Update (10<sup>th</sup> edition) Pearson Education, Inc. publishing as Benjamin Cummings, 2010.

b. Symbiosis: The Pearson Custom Library for the Biological Sciences 02 (Adapted from Ted R. Johnson and Christine Case. Laboratory Experiments in Microbiology (9<sup>th</sup> edition) Benjamin Cummings, 2010).

**V. Student Learning Outcomes** – Upon completion of this course, students will be able to:

1. Explain the contributions to microbiology made by key scientist (ex. Jenner, Pasteur, Hook, Fleming, etc.) evidenced through a group project-skit/dramatization.
2. Compare and contrast the characteristics of the five major categories of microbes with regards to infections, antimicrobial treatment and control via class discussions, laboratory exercises, case studies, on quizzes/examinations and on a group project-microbe informational pamphlet.
3. Differentiate the types of microscopy currently used in microbiology and describe the chemical basis of each staining procedure used with brightfield microscopy during in class discussions & laboratory exercises and on quizzes/examinations.
4. Describe sample microbial metabolic pathways and specifically explain the role each has in microbial growth and control on written assignments, and quizzes/examinations.
5. Explain basic bacterial genetic principles and analyze the consequences of mutation and genetic recombination on genetic stability on written assignments and quizzes/examinations.
6. Compare/contrast the phases of microbial growth and describe the role each phase has in enhancement or control of microbial growth on written assignments, quizzes and/or examinations.
7. Explain the modes of action of each physical/chemical antimicrobial control method and describe the preferred usage of each through laboratory exercises, written assignments, quizzes/examinations and unknown lab report.
8. Compare and contrast non-specific and specific defenses; adaptive, humoral and cell-mediated immunity and describe the role each process has in regulating homeostasis, combating infection and fighting cancer evidenced on quizzes/examinations, case studies and a group project-immunology pamphlet.
9. Outline mechanisms used by microbes to evade the host immune system that aid in pathogenicity/ virulence and summarize counter mechanisms that a host uses to override these mechanisms on quizzes/examinations.
10. Retrieve, evaluate and use microbiological laboratory data to create a dichotomous key and construct a bacterial identification report/poster.

**Course objectives:**

**Chapter 1**

List several ways in which microbes affect our lives.

Recognize the system of scientific nomenclature that uses two names.

Differentiate among the major groups of organisms studied in microbiology.

Explain the importance of observations made by Hooke and van Leeuwenhoek.

Compare theories of spontaneous generation and biogenesis.

Identify the contributions to microbiology by Van Leeuwenhoek, Hook, Pasteur, Koch, Lister, Ehrlich, Fleming, Jenner, etc.

Explain the importance of Koch's postulates.

Define microbiology, mycology, parasitological, immunology and virology and recombinant DNA technology.

List the beneficial aspects of microorganisms.

Define normal flora and emerging infectious disease; define/describe several infectious diseases.

Demonstrate an understanding of microscopes and microscopy.

**Chapter 3**

Define resolution and total magnification.

Compare and contrast bright-field, dark-field, phase-contrast, fluorescence, differential interference contrast, co focal, electron, scanning acoustic, and scanned probe microscopy; cite advantages/disadvantages of each type of microscopy.

Define resolution and total magnification.

Differentiate between acidic and basic dyes.

Compare and contrast simple, differential and special stains.

List steps in preparing a gram stain and describe the appearance.

Compare and contrast the Gram stain and acid-fast stain.

Explain why each of the following is used: capsule stain, endospore stain, and flagella stain.

#### **Chapter 4**

Compare and contrast the overall structure of prokaryotes and eukaryotes.

Describe the structure and function of the glycocalyx, flagella, axial filaments, fimbriae and pili.

Identify the 3 basic shapes of bacteria.

Compare and contrast the cell walls of gram-positive bacteria, gram-negative bacteria, acid-fast bacteria, archaea and mycoplasmas.

#### **Chapter 5**

Define metabolism and describe the fundamental differences between anabolism and catabolism.

Identify role of ATP in metabolism.

Explain what is meant by oxidation-reduction.

List and explain the similarities and differences of the three types of phosphorylation reactions that generate ATP.

Explain the overall function of biochemical (metabolic) pathways.

Explain the chemical reactions of glycolysis, Krebs cycle and Electron transport chain; include net/total ATP generated, amount and type of high energy carriers produced; final products of each major reaction; production of carbon dioxide or water, etc.

Describe the chemical reactions of, and list some products of, anaerobic respiration and fermentation.

Categorize the various nutritional patterns among organisms according to carbon source and mechanisms of carbohydrate catabolism/ATP generation.

#### **Chapter 8**

Define genetics, genome, chromosome, gene, genetic code, genotype, phenotype and genomics.

Describe processes of replication, transcription and translation.

Compare the mechanisms of genetic recombination in bacteria.

Differentiate between horizontal and vertical gene transfer.

Describe function of plasmids and transposons.

#### **Chapter 6**

Classify microbes into five groups on the basis of preferred temperature.

Identify how and why the pH of culture media is controlled.

Explain the importance of osmotic pressure to microbial growth.

Provide the major use of the four elements needed in large amounts for microbial growth.

Explain how microbes are classified on the basis of oxygen requirements and identify ways in which aerobes avoid damage by toxic forms of oxygen.

Distinguish between chemically defined, complex, selective and differential media.

Define colony.

Explain how the streak method is used to isolate pure cultures.

Define bacterial growth and calculate the generation time.

Compare/contrast the phases of microbial growth and describe their relationship to generation time

Explain direct and indirect methods to measure cell growth.

#### **Chapter 11**

Make a dichotomous key to distinguish the bacteria described in Chapter 11.

Compare/contrast key genera of bacteria based on Phylogenetic group or Phylum name, Gram stain reaction, Cell morphology, motility (flagella arrangement if positive), oxygen requirement, habitat, disease, key biochemical test used for identification, any distinguishing features (colony morphology, endospores, appendages, pigments, etc.)

#### **Chapter 10**

Define taxonomy, taxon and phylogeny.

List the key characteristics of Bacteria, Archaea, and Eukarya domains.

Differentiate among eukaryotic, prokaryotic and viral species.

Explain the purpose of *Bergey's Manual*.

Describe how biochemical tests and staining are used to identify bacteria.

List at least six characteristics used to classify and identify bacteria according to *Bergey's Manual*

#### **Chapter 7**

Define the following key terms related to microbial growth: sterilization, disinfection, antiseptics, degerming, sanitization, biocide, germicide, bacteriostasis and asepsis.

Describe the effects of microbial control agents on cellular structures.

Describe the pattern of microbial death caused by treatments with microbial control agents.

Identify the methods of action and preferred uses of physical methods of microbial control.

Identify the methods of action and preferred uses of chemical disinfectants.

Interpret the results of use-dilution tests and the disk-diffusion method.  
Explain how the control of microbial control is affected by the type of microbe.

### **Chapter 20**

Name the microbes that produce the most antibiotics.  
Define the following terms: spectrum of activity, broad-spectrum antibiotic and superinfection.  
Identify the five modes of action of antimicrobial drugs.  
List the modes of action and advantages of the following antimicrobial agents: penicillin, semisynthetic penicillins, cephalosporins, vancomycin, aminoglycosides, tetracyclines, chloramphenicol, macrolides, polymyxin B, bacitracin, neomycin, rifamycins, quinolones, and sulfa drugs.  
Describe two tests for microbial susceptibility to chemotherapeutic agents.  
Describe the mechanism of drug resistance.  
Compare and contrast synergism and antagonism.

### **Chapter 12**

List the defining characteristics of fungi, lichens, algae, protozoa, and parasitic helminthes.  
List the defining characteristics of the three phyla of fungi listed in Chapter 12.  
Describe the outstanding characteristics of the protozoa that are human pathogens and provide an example of each.  
Define arthropod vector.

### **Chapter 13**

Differentiate between a virus and a bacterium.  
Define viral species.  
Differentiate between virus, viroid and prion.  
Describe the chemical and physical structure of both an enveloped and a nonenveloped virus.  
Describe how one would culture bacteriophages and animal viruses.  
Compare/contrast the lytic and lysogenic cycles of bacteriophages.  
Compare/contrast the multiplication cycle of DNA- and RNA-containing animal viruses.  
Discuss the relationship between DNA- and RNA-containing animal viruses and cancer.

### **Chapter 14**

Define pathogen, etiology, infection, disease, normal microbiota, and transient microbiota.  
Compare commensalism, mutualism, parasitism, and give an example of each.  
List Koch's postulates.  
Differentiate a communicable from a noncommunicable disease.  
List the causative agent, method of transmission and clinical symptoms of major microbial diseases.  
Categorize diseases according to frequency of occurrence and severity of disease.  
Define reservoir of infection.  
Contrast human, animal and nonliving reservoirs, and give one example of each.  
Explain three methods of disease transmission.  
Define nosocomial infections; explain their importance and how they can be prevented.  
List several methods involved in disease transmission in hospitals.

### **Chapter 15**

Differentiate between pathogenicity and virulence.  
Identify the principal portals of entry.  
Define ID<sub>50</sub> and LD<sub>50</sub>.  
Using examples, explain how microbes adhere to host cells.  
Explain the role of capsules and cell wall components in pathogenicity.  
Compare the effects of coagulases, kinases, hyaluronidase, and collagenase.  
Describe how bacteria use the host cell's cytoskeleton to enter the cell.  
Contrast the nature and effects of exotoxins and endotoxins.  
Outline the mechanisms of action of A-B toxins, membrane disrupting toxins, and superantigens. Classify diphtheria toxin, erythrogenic toxin, botulinum toxin, tetanus toxin, *Vibrio* enterotoxin, and staphylococcal enterotoxin.  
Compare and contrast portal of entry and portal of exit.

### **Chapter 16**

List the non-specific and specific defenses of the host.  
Differentiate physical from chemical factors and list five examples of each.  
Classify phagocytic cells, and describe the roles of granulocytes and monocytes.  
Define phagocyte and phagocytosis.  
Describe the process of phagocytosis.  
Identify the six methods used by microorganisms to avoid destruction by phagocytes.  
List and explain the stages of inflammation.  
Describe the roles of vasodilation, kinins, prostaglandins, and leukotrienes in inflammation.  
Describe the cause and effects of fever.  
List the components of the complement system.  
Describe the three pathways of activating complement.

Describe the three consequences of complement activation.  
Define interferons.  
Compare and contrast the actions of  $\alpha$ -IFN and  $\beta$ -IFN with  $\gamma$ -IFN.

### **Chapter 17**

Compare and contrast humoral and cell-mediated immunity.  
Differentiate between innate and adaptive immunity.  
Contrast the four types of adaptive immunity  
Define antigen and epitope.  
Explain the function of antibodies and describe their structural and chemical characteristics.  
Name one function for each of the five classes of antibodies.  
Compare and contrast T-dependent and T-independent antigens.  
Differentiate between plasma cell and memory cell.  
Explain clonal selection and differentiation of B cells.  
Describe the four outcomes of an antigen-antibody reaction.  
Describe at least one function of each of the following: M cells,  $T_H1$  cells,  $T_H2$  cells,  $T_C$  cells,  $T_R$  cells, CTL, NK cells.  
Differentiate between helper T, cytotoxic T, and regulatory T cells.  
Differentiate between  $T_H1$  and  $T_H2$  cells.  
Define apoptosis.  
Define antigen-presenting cells.  
Describe the function of natural killer cells.  
Describe the role of antibodies and natural killer cells in antibody-dependent cell-mediated cytotoxicity.  
Identify at least one function of the following: cytokines, interleukins, and chemokines.  
Classify the five types of interleukins based on activity.  
Distinguish a primary from a secondary immune response.

### **North Carolina Department of Public Instruction Specific Competencies**

To obtain secondary science licensure and/or endorsement, the teacher should acquire competencies from the following list which are appropriate for the type of license or endorsement being sought.

#### **Biology**

- 1.0 Explain the major concepts and principles of biology including concepts in anatomy, physiology, behavior, evolution, genetics, cell biology, microbiology, diversity, growth, human biology, ecology, and the environment. Teachers should demonstrate competence and understanding in their ability to investigate:
- 1.1 the cell, including chemical composition, the structure and function of cell parts, the role of cells in growth, reproduction and heredity, and methods for the study of cells.
  - 1.2 the chemical processes of life including respiration, digestion, photosynthesis, protein synthesis, and methods for studying chemical processes.
  - 1.3 the principles of genetics and the chemical basis of heredity.

## **VI. Course Requirements and Evaluation Criteria**

### **a. Grading Scale –**

#### ***Final Grades – This policy becomes effective on August 16, 2007***

Final grades are calculated on a four-point system and affect a student's grade point average as indicated below. Faculty members will delineate in each class syllabus the methods and evaluative criteria for determining final grades in the class.

<http://catalog.uncfsu.edu/ug/academicregulations/grades.htm>

#### **WARNING ABOUT CLASS WITHDRAWALS:**

When you withdraw from a class, you are wasting your money and time. You receive no refund for withdrawing from individual classes and you slow your progress toward degree completion.

If you withdraw from or fail more than one-third of your classes, you will no longer be eligible for financial aid.

**STRIVE TO EARN CREDIT FOR ALL THE CLASSES IN WHICH YOU ENROLL; WITHDRAW FROM CLASSES ONLY WHEN IT IS ABSOLUTELY NECESSARY!**

<http://catalog.uncfsu.edu/ug/academicregulations/classwithdrawal.htm>

**Please note that the WN grade is no longer in effect. Students must not expect faculty to withdraw them from classes.**

### **b. Attendance Requirements-**

Students are expected to attend all class meetings, laboratories, and other instructional sessions for all courses in which they are enrolled. **Students are also expected to arrive to class on time and remain in class for the entire scheduled period.** When students must miss class(es) for unavoidable reasons, i.e., illness, family emergencies, or participation in official university sponsored activities – **they are responsible for informing faculty of the reasons for the absences, in advance if possible, and completing all missed assignments after providing appropriate documentation indicating the reason**

**for the absence and missed assignments.** Students who attend all classes, are punctual, and sit near the front of the room where they can hear and see better tend to attain higher achievement than their peers. In this regard the more you can become actively involved in the class (study with classmates, participate in class discussions, and ask questions) the better you should do in the course. Faculty members will indicate in their syllabi the conditions for making up missed assignments.

During the first half of the semester/term, faculty will assign an interim grade of “EA,” Excessive Absences, for students whose class absences exceed 10% of the total contact hours for the class. Students who receive EA interim grades must either withdraw from the class or resume attendance. Students who resume attendance must consult with the instructor about completion of missed assignments. The EA is not a final grade, so students who are assigned an interim grade of EA, but do not withdraw from the class, will receive a final grade based on the evaluation criteria for the class.

<http://catalog.uncfsu.edu/ug/academicregulations/classattendance.htm>

### c. Graded Assignments/ Value of Each Assignment –

Evaluation will be based primarily on written assignments, laboratory exercises, examinations, group projects and quizzes. A few exam questions will be objective and require recall skills. These will be in the form of multiple choice or fill-in-the-blank (short answer questions). The majority of questions (>90%) will be application based multiple choice and essay requiring higher levels of skill involving the use of interpretation, synthesis, and data analysis (charts, graphs, tables, etc.).

### Grading Scale:

**100 - 90% = A; 89 - 80% = B; 79 – 70% = C; 69 - 60% = D; 59% and below = F.**

Approximate total points of exams, quizzes and other graded assignments:

Item	Points	% of Final Grade
Lecture Quizzes (10 at 10 pts)	100 pts	7.9%
Homework Assignments	50 pts	4.0%
Hourly exams (4 at 100 pts each)	400 pts	31.8%
Final exam	200 pts	15.9%
Lab exercises (5-15 pts each)	150 pts	11.9%
Lab Midterm/Final (50 pts each)	100 pts	7.9%
Case Studies (4 at 15 pts each)	60 pts	4.8%
Group Microbiologic Pamphlet (2 at 50 pts each)	100 pts	7.9%
Bacterial Unknown (Report or Poster)	<u>100 pts</u>	<u>7.9%</u>
	<b>1,260 pts</b>	<b>100%</b>

**NOTE: Information related to all graded assignments will be posted on Blackboard and/or announced during class (ex. due dates, assignment worksheet, grading rubric, etc.). Lecture quizzes may be announced or unannounced.**

**NOTE: If the evaluation criteria must be revised because of extraordinary circumstances, the instructor will distribute a written amendment to the syllabus via Blackboard. Guidelines and grading Rubric for the Group Microbiologic Pamphlet and Bacterial Unknown Report will be provided at a later date.**

### d. Policy on Missed or Late Assignments

1. Students are required to take all **EXAMS and CONDUCT ALL LABS ON THE DATE THEY ARE SCHEDULED. Make-up exams WILL NOT be given unless the student has made special arrangements with the instructor prior to the exam date and presents a written excuse before the second class period following the initial date of a test.** Only in very unusual cases will any exceptions to these rules be made.
2. Each lab exercise is **due at the beginning of the next lab period** unless a later date has been announced. Labs will be randomly selected for grading!!! **If you are absent on the day that the lab was initiated, you CANNOT turn that lab in regardless of the reason!!**
3. Work handed in or reported **LATE WILL NOT** be accepted, unless accompanied by a **valid written excuse**. If you miss an assignment due to an unexcused absence, it **WILL NOT** be accepted. If a student is absent, then they can make up the assignment if a proper excuse is provided. **(This applies to Lecture only!)**
4. If you must be absent unavoidably, ask a friend to get your assignment, take notes for you, and pick up any handouts. You are also responsible for demonstrating an understanding of content covered in class on the day of the absence. Students are required to attend all classes regularly and to keep appointments when they are scheduled. An absence, excused or unexcused, does not relieve the student of any course requirement.

#### e. FSU Policy on Disruptive Behavior in the Classroom

The *Code of the University of North Carolina* (of which FSU is a constituent institution) and the *FSU Code of Student Conduct* affirm that all students have the right to receive instruction without interference from other students who disrupt classes.

FSU Core Curriculum Learning Outcome under Ethics and Civic Engagement (6.03): All students will “prepare themselves for responsible citizenship by fulfilling roles and responsibilities associated with membership in various organizations.” Each classroom is a mini-community. Students learn and demonstrate responsible citizenship by abiding by the rules of classroom behavior and respecting the rights all members of the class.

The FSU Policy on Disruptive Behavior (see FSU website for complete policy) identifies the following behaviors as disruptive ([http://www.unctsu.edu/policy/policies/academic\\_affairs/Disruptive%20Behavior.Final.pdf](http://www.unctsu.edu/policy/policies/academic_affairs/Disruptive%20Behavior.Final.pdf) .)

1. Failure to respect the rights of other students to express their viewpoints by behaviors such as repeatedly interrupting others while they speak, using profanity and/or disrespectful names or labels for others, ridiculing others for their viewpoints, and other similar behaviors;
2. Excessive talking to other students while the faculty member or other students are presenting information or expressing their viewpoints.
3. Use of cell phones and other electronic devices (**Cell phones and pagers are not allowed to be operational during lecture or lab periods**)
4. Overt inattentiveness (sleeping, reading newspapers)
5. Eating in class (except as permitted by the faculty member)
6. Threats or statements that jeopardize the safety of the student and others
7. Failure to follow reasonable requests of faculty members
8. Entering class late or leaving class early on regular basis
9. **Others as specified by the instructor:**
  - a. *Students are expected to arrive to class on time, remain in class until dismissed by the instructor, and refrain from preparing to leave class until it is dismissed.*
  - b. *Students are not permitted to wear headphones or other paraphernalia that may be distracting to the classroom environment. Students are not permitted to tape or record the class lectures or lab reviews.*
  - c. *Students are not permitted to use profanity in the classroom.*
  - d. *Students should not pass notes or carry on private conversations while class is being conducted.*
  - e. *Students are not to wear hats, caps, do-rags, or scarves. This applies to males and females.*
  - f. *Open-toed shoes are not to be worn on lab days. Failure to do so will result in the student being asked to leave the class and return with the proper shoes.*
  - g. *Students are not permitted to have visitors in the lab. Also, children are NOT permitted in lecture, lab or in the instructor’s office. In addition, children are not permitted to be in the hallway while the parent is in lecture or lab.*

**Consequences for Failing to Meet Behavioral Expectations:** The first time a student violates one of these rules, the instructor will warn him or her privately, either after class or before the next class. The second time a student violates the guidelines, the instructor may deduct **as many as twenty-five (25) points from the student’s next exam grade**. If a student **violates the guidelines three times**, the instructor will report the student to the Dean of Students for disciplinary action according to the FSU Code of Student Conduct.

The instructor may take the following actions in response to disruptive behavior. Students should recognize that refusing to comply with reasonable requests from the faculty member is another incidence of disruptive behavior.

1. Direct student to cease disruptive behavior.
2. Direct student to change seating locations.
3. Require student to have individual conference with faculty member. At his meeting the faculty member will explain the consequences of continued disruptive behavior.
4. Dismiss class for the remainder of the period. (Must be reported to department chair.)
5. Lower the student’s final exam by a maximum of one-letter grade.
6. File a complaint with the Dean of Students for more severe disciplinary action.

*Students who believe the faculty member has unfairly applied the policy to them may make an appeal with the faculty member’s department chair.*

#### VII. Academic Support Resources –

All Biol 330 students are encouraged to use the library and to do supplemental reading in the biological sciences. The following computer software/websites provide a source of current information in a format appropriate for both the major and non-major biology student.

**Computer Software/Internet Web Sites:**

1. Biol 330 Selected Course Material on Blackboard 8.0 at <https://blackboard.uncfsu.edu/>

2. Microbiology Interactive Student Tutorial Version 2.0 (CD-ROM)

3. The Microbiology Place Web Site ([www.microbiologyplace.com](http://www.microbiologyplace.com))

4. American Society for Microbiology recommended sites:

<http://www.microbe.org/> <http://www.microbelibrary.org/> <http://www.microbeworld.org/>

Microbe wiki: <http://microbewiki.kenyon.edu/index.php>

Smarththinking Online Tutoring: [http://www.smarththinking.com/static/pub\\_common/hours.cfm](http://www.smarththinking.com/static/pub_common/hours.cfm)

The Learning Center in the H.T. Chick Building is available to assist students with writing, mathematics, and reading.

**VIII. COURSE OUTLINE AND SELECTED ASSIGNMENT SCHEDULE FOR LECTURE**

<b>DATE</b>	<b>LECTURE TOPIC</b>	<b>CHAPTER</b>
Aug. 18	Review of Syllabus Microbial world and you	1
23	Microbial world and you	1
25	Microbial world and you Observing microorganisms through a microscope <i>Quiz #1</i> <i>Homework: Case Study #1</i>	1 3
30	Observing microorganisms through a microscope <i>Quiz #2</i> <i>Case Study #1 Due</i>	3
Sept. 1	Functional Anatomy of Prokaryotic and Eukaryotic Cells	4
6	Functional Anatomy of Prokaryotic and Eukaryotic Cells <i>Quiz #3</i>	4
8	Functional Anatomy of Prokaryotic and Eukaryotic Cells <i>Homework: Case Study #2</i>	4
13	<i>Exam 1</i>	
15	Microbial Metabolism <i>Case Study #2 Due</i>	5
20	Microbial Metabolism Microbial Growth <i>Quiz #4</i>	5 6
22	Microbial Growth	6
27	Microbial Growth Microbial Genetics <i>Quiz #5</i>	6 8
29	Microbial Growth The Prokaryotes/Microbial Diseases <i>Homework: Case Study #3</i>	6 11, 21-26
Oct. 4	The Prokaryotes/Microbial Diseases <i>Quiz #6/ Case Study #3 Due</i>	11, 21-26

DATE	LECTURE TOPIC	CHAPTER
Oct. 6	The Prokaryotes/Microbial Diseases	11, 21-26
11	<i>Exam 2 (Midterm)</i>	
13	The Prokaryotes/Microbial Diseases <i>Quiz #7</i>	11, 21-26
18	<b>Fall Break</b>	
20	Classification of Microorganisms <i>Homework: Case Study #4</i>	10
25	Classification of Microorganisms The Eukaryotes/Microbial Diseases <i>Quiz #8</i>	10 12, 21-26
27	The Eukaryotes/Microbial Diseases <i>Case Study #4 Due</i>	12, 21-26
Nov. 1	The Eukaryotes/Microbial Disease Control of Microbial Growth <i>Quiz #9</i>	12, 21-26 7
3	<i>Exam 3</i>	
8	Control of Microbial Growth Antimicrobial Drugs	7 20
10	Non Specific Host Defenses Specific Host Defenses	16 17
15	Specific Host Defenses Pathogenicity <i>Quiz #10</i>	17 15
17	<i>Exam 4</i>	
22	Pathogenicity Principles of Disease	15 14
24	<i>Thanksgiving Break</i>	
29	Principles of Disease Viruses/Microbial Diseases	14 13, 21-26
Dec. 1	Viruses/Microbial Diseases Review/Catch-up	13, 21-26

**All assignments will be posted in BLACKBOARD during the semester.** All assignments will be in categories consistent with the assignments listed above under "Evaluation Criteria."

**NOTE: This is a tentative schedule and subject to change as needed per my discretion !!!!!**

**FINAL EXAM:** (Comprehensive)

**Graduating seniors:** *November 28 to December 3, 2011*; please notify Dr. Allen if this applies to any student.

**All students except graduating seniors:** *Thursday, December 8, 2011, 8:00 am – 9:50 am*

## LABORATORY SCHEDULE

WEEK	DATE	TOPIC	PAGE
1	8-24	Effectiveness of Hand Scrubbing	155
2	8-31	Use & Care of the Microscope Examination of Living Things	15 25
3	9-7	Microbes in the Environment	35
4	9-14	Prep of Smears/Simple Staining Negative Staining	53 59
5	9-21	Gram Staining	63
6	9-28	Acid Fast Staining Structural Stains	69 (questions only) 75
7	10-5	Transfer of Bacteria: Aseptic Techniques	43
8	10-12	Isolation of Bacteria by Dilution Technique <b>Lab midterm; labs from week 1 to week 7</b>	95
9	10-19	Chemical Methods of Control Disinfectants and Antiseptics	149
10	10-26	Morphologic Unknown Carbohydrate Catabolism	87 107
11	11-2	Fermentation	113
12	11-9	Protein Catabolism, Gelatin Hydrolysis & Urease	121
13	11-16	Protein Catabolism: Phenylalanine Deamination, Hydrogen Sulfide Production, MIO	125
14	11-23	Respiration Oxygen/Growth of Bacteria	133 141
15	11-30	<b>Lab Final; labs from week 7 to week 14</b> <b>Lecture Review Session</b>	

### ***BACTERIAL UNKNOWN ASSIGNMENT: DUE ON FRIDAY DECEMBER 1st 5:00 pm!!!!***

The following chapters can be used for the unknown assignment!!!!

Microbial Diseases 21, 22, 23, 24, 25,26

### **IX. Teaching Strategies**

Biology 330 is a lecture-based course designed to present the basic theories of Microbiology and Immunology. Biol 330 also contains a laboratory component that provides hands-on implementation of the theories and concepts covered in lecture. The principal teaching strategies will be lecture, animations, discussion, and laboratory exercises.

### **X. Bibliography:**

#### **Journals**

- |                 |                   |                        |                            |
|-----------------|-------------------|------------------------|----------------------------|
| 1. Discover     | 2. Science Digest | 3. Scientific American | 4. Science                 |
| 5. Science News | 6. Nature         | 7. Natural History     | 8. Journal of Bacteriology |
| 9. Cell         |                   |                        |                            |

