VALDOSTA STATE UNIVERSITY

BIOLOGY 2900--FALL 2012

INSTRUCTOR: Dr. J. A. NIENOW
OFFICE: 2089 New Science Building; 249-4844
Office hours: 2:00-3:00 MTWR or by appointment
EMAIL: jnienow@valdosta.edu

TEXTS:

- Nester, E. W., D. G. Anderson, C. E. Roberts, Jr., N. N. Pearsall, M. T. Nester. 2004. Microbiology, A Human Perspective. 4th Edition. McGrawHill Higher Education, New York.
- Benson, H. J. 2004. Microbiological Applications. Short Version. 9th Edition. McGrawHill Higher Education, New York.

OTHER RESOURCES:

- http://www.valdosta.edu/~jnienow

PREREQUISITES: Chemistry 1152K.

COURSE GOALS:

1. Students will acquire basic knowledge of bacteriology, immunology, and virology with an emphasis on applications and disease processes.
2. Students will gain experience with some basic techniques used for studying microorganisms in the laboratory including aseptic technique, transfer and culture of bacteria, identification and quantification of bacteria, and antibiotic sensitivity testing. Students will learn how to prepare and give an oral presentation on a clinical microbiological topic.

ATTENDANCE: Students are responsible for attending class and for the material presented in all classes. There will be no make-ups of missed labs, quizzes, and other assignments. However, students who miss more than three labs will have 20 points deducted from their point total for each lab missed. Exams missed without prior permission of the instructor may be made up, but the final score on the exam will be reduced by 25%. It is the student's responsibility to contact the instructor to set up a time to take a make-up exam. Arrangements for a make-up exam must be made within 1 week of the missed exam, otherwise no make-up will be given and the student will receive 0 points for the exam. Students who have missed 20% of regularly scheduled class meetings, especially labs, are subject to a failing grade for the course.

ATTIRE: Lab aprons will be provided and must be worn during lab. Sandals, flip-flops and other open shoes are not permitted in lab.

EXAMS: There will be four unit exams. The first 3 exams will each be worth 150 points, the last will be worth 200 points. The exams will include a mixture of short answer and multiple choice questions. Expect the later exams to include some material covered in the earlier exams. The dates of these exams are included in the attached schedule of lectures. DO NOT MISS THESE EXAMS WITHOUT PRIOR PERMISSION. If you are caught cheating on an exam you will receive no points. CELL PHONES MUST BE OFF AND OUT OF SIGHT DURING THE EXAM.

IF I SEE OR HEAR YOUR CELL PHONE DURING THE EXAM, YOU WILL BE TOLD TO TURN YOUR EXAM IN IMMEDIATELY. IF YOU LEAVE THE EXAM ROOM DURING THE EXAM FOR ANY REASON, YOU WILL BE TOLD TO TURN IN YOUR EXAM IMMEDIATELY. Estimated total from exams--650 points.

LABORATORY GRADES: Periodically you will be asked to complete informal and formal reports of your lab work. You should also be prepared for occasional announced and unannounced quizzes. Estimated total from laboratory reports and quizzes--200 points.

ORAL REPORTS: All students will be required to prepare and deliver a 7 minute talk on a microbiological subject (see separate handout). PRESENTATION OF AN ORAL REPORT IS MANDATORY. FAILURE TO GIVE AN ORAL REPORT WILL RESULT IN A ZERO FOR THE ENTIRE LAB PORTION OF THE GRADE!!! Points for this talk will be distributed as follows: preliminary information from the text--10 points; copies of two references from the scientific literature--20 points; detailed outline of the report--40 points; printouts of the power point slides--50 points; presentation of the oral report--80 points. Estimated total for the oral report assignment--200 points.

GRADING: Your grade will depend on how well you do on the exams, quizzes, and reports. Expect the following grading scale (based on the total number of points actually assigned:

A = 90 100 %
B = 80 89 %
C = 70 79 %
D = 60 69 %
F < 60 %

DROPPING A COURSE WITHOUT PENALTY: In order to officially drop a course without penalty, a student must obtain and fill out a drop/add form from the Registrar's Office, acquire appropriate signatures, and return the completed form to the Registrar's Office before the designated date (published in the academic calendar). If you don't officially withdraw, and instead just stop coming to class, you will receive an F for the course. It will then take three A's in science classes cancel out that F and bring your GPA back up to 3.0 so you can maintain your scholarship.

SPECIAL NOTE 1: Grades will be neither posted nor given out over the telephone.

SPECIAL NOTE 2: Students requiring special accommodations because of a documented disability must discuss their needs with me as soon as possible and must contact the Access Office for Students with Disabilities located in room 1115 Nevins Hall. The phone numbers are 245-2498 (voice) and 219-1348 (tty).

STUDY TIPS

1. It is recommended that you form small study groups and study together in the library or other locations without TV, stereo or other distractions.
2. Before you begin reading a chapter, make a very quick outline using the chapter subheadings, this will give you some idea of what the chapter is all about and how it is organized.
3. You should read ahead of the schedule. So when you come to class you can ask questions.
4. Answer the review questions at the ends of the chapters.
5. When studying, ask yourself how this information would be applied.
6. Come to office hours and ask questions if there is material you do not understand.
7. Ask questions in class!!

SCHEDULE OF LECTURES AND LABS
BIOLOGY 2900, SPRING 2005

Note: Pacing and testing dates may be changed if the need arises. Attend class regularly.

WEEK 1	-	-
1-10	LAB--Orientation; Lab safety; Brightfield microscopy; Hand-washing exercise	pp. ix-xiv; ex. 1; suppl.
1-11	LECTURE--Introduction to microbiology; Review of basic chemistry	Chapters 1 & 2
1-12	LAB--Lab safety; Media Preparation; *Protozoa, algae, and cyanobacteria*	pp. ix-xiv; ex. 18; ex. 5
1-13	LECTURE--Some basic biochemistry	Chapter 2
WEEK 2	-	-
1-17	MLK HOLIDAY--no labs	-
1-18	LECTURE--Microscopy and cell structure	Chapter 3
1-19	LAB--*Aseptic technique;* Set-up *Ubiquity of Bacteria;* and *The Fungi: Yeasts and Molds;* more microscopy	ex. 5, 6, 7, & 8
1-20	LECTURE--Cell structure (continued)	Chapter 3
WEEK 3	-	-
1-24	LAB--Complete *Aseptic technique*; microscopic examination of yeasts and bacteria; smear preparations and simple staining techniques	ex. 8, 10, 11, & 12; suppl.
1-25	LECTURE--Eukaryotes microorganisms; Multicellular parasites	Chapter 12
1-26	LAB--Complete *Ubiquity of Bacteria* and *The Fungi: Yeast and Molds*	ex. 6, 7
1-27	LECTURE--Microbial metabolism and prokaryote diversity	Chapter 6 & 11
WEEK 4	-	-
1-31	LAB--Streak plates, motility testing, Gram stains	ex. 9, 14, & 17
2-01	LECTURE--Microbial metabolism and prokaryote diversity	Chapters 6 & 11
2-02	LAB--Complete exercises 9 & 17; acid-fast staining	ex. 9 & 17; ex. 16
2-03	LECTURE--Microbial metabolism and prokaryote diversity; dynamics of bacterial growth	Chapters 4, 6 & 11
WEEK 5	-	-
2-07	LAB--Counting bacteria--standard plate counts	ex. 20
2-08	**FIRST UNIT EXAM**	-
2-09	LAB--More counting bacteria	ex. 20, suppl.
2-10	LECTURE--Dynamics of prokaryote growth	Chapter 4
WEEK 6	-	-

2-14	LAB--Finish plate counts; Effectiveness of alcohol as an antiseptic; **First lab quiz**	ex. 32
2-15	LECTURE--Review of DNA replication/protein synthesis	Chapters 7
2-16	LAB--Complete ex. 32; Counting bacteriophages	ex. 23
2-17	LECTURE--Viruses and viroids	Chapters 13 & 14
WEEK 7	-	-
2-21	LAB--Antimicrobial testing	ex. 33 & 34
2-22	LECTURE--Viruses and viroids	Chapters 13 & 14
2-23	LAB--Complete ex. 33 & 34, set up UV-light experiments	ex. 33 & 34; ex. 30
2-24	LECTURE--Viruses and Viroids	Chapter 13 & 14
WEEK 8	-	-
2-28	LAB--Complete UV-light experiment; Spore stains; Set-up fermentation tests and hydrolytic reactions	ex. 30; ex. 15; ex. 38 & 39
3-01	LECTURE--Bacterial genetics and recombinant DNA technology	Chapters 8 & 9
3-02	LAB--Complete ex. 38 & 39; The *Staphylococcus aureus* experiment	supplement
3-03	LECTURE--Bacterial genetics and recombinant DNA	Chapters 8 & 9
WEEK 9	-	-
3-07	LAB--Continue *S. aureus* experiment (set up antibiotic sensistivity tests); Determining the minimum inhibitory concentration (MIC)	supplement
3-08	**SECOND UNIT EXAM**	-
3-09	LAB--Continue *S. aureus* experiment (slide agglutination test); complete MIC exercise; Begin determination of unknown intestinal pathogen (ex. 54)	ex. 56; ex. 54; suppl.
3-10	LECTURE--Classification and identification of bacteria	Chapters 10 & 11
WEEK 10	-	-
3-14	LAB--Continue ex. 54; morphological and biochemical testing; **Second lab quiz**	ex. 54; ex. 36-40, suppl.
3-15	LECTURE--Classification and identification of bacteria	Chapters 10 & 11
3-16	LAB--Continue ex. 54; complete morphological and biochemical testing	ex. 54; ex. 36-40, suppl.
3-17	LECTURE--Host-microbe interactions I	Chapters 19
WEEK 11	-	-
3-21	LAB--Complete ex. 54; Set up food poisoning experiment	ex. 54; suppl.
3-22	LECTURE--Resistance to disease--innate immune responses	Chapter 15
3-23	LAB--Complete food poisoning experiment	suppl.
3-24	LECTURE--Adaptive immunity	Chapter 16
WEEK 12	SPRING BREAK--NO CLASSES	-
WEEK 13	-	-

4-04	LAB--Bacteriological analysis of urine; Isolation of oral streptococci	suppl.
4-05	LECTURE--Adaptive immunity	chapter 16
4-06	LAB--Continue bacteriological analysis of urine	ex. 43, suppl.
4-07	LECTURE--Immunologic disorders	Chapters 18
WEEK 14	-	-
4-11	LAB--Complete bacteriological analysis of urine, isolation of streptococci	ex. 43, suppl.
4-12	**THIRD UNIT EXAM**	-
4-13	LAB--Protozoa and animal parasites; **First set of student presentations (3)**	suppl.
4-14	LECTURE--Host-microbe interactions II	Chapters 19 & 20
WEEK 15	-	-
4-18	LAB--Protozoa and animal parasites; **Second set of student presentations (3)**	suppl.
4-19	LECTURE--Controlling microbial growth I	Chapter 5
4-20	LAB--Complete Protozoa and animal parasites; **Third set of student presentations (3)**	suppl.
4-21	LECTURE--Controlling microbial growth II	Chapter 21
WEEK 16	-	-
4-25	LAB--**Third lab quiz; Fifth set of student presentations (4)**	-
4-26	LECTURE--Controlling microbial growth III; applications of the immune response	Chapter 17
4-27	LAB--**Sixth set of student presentations (6)**	-
4-28	LECTURE--HIV and complications of immunodeficiencyApplications of immune responses	Chapter 29
WEEK 17	-	-
5-02	LAB--**Seventh set of student presentations (6)**	-
5-03	READING DAY	-
5-05	**FOURTH UNIT EXAM--FROM 7:15 TO 9:15 IN THE LECTURE ROOM**	-

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