VALDOSTA STATE UNIVERSITY
BIOLOGY 2260—FALL 2022

INSTRUCTOR: Dr. J. A. NIENOW
OFFICE: 2089 Bailey Science Center; 249-4844
Office hours: TTh 9:30 to 12:00 or by appointment
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RECOMMENDED TEXTS:

- Foster, J. W., Z. Aliabadi, J. L. Slonczewski. 2021. Microbiology, The Human Experience. 2nd edition. W. W. Norton, New York.
- Brown, A. E. Benson's Microbiological Applications. McGraw Hill, New York. Any edition or version that fits your wallet.

OTHER RESOURCES:

- BlazeView

PREREQUISITES: None

COURSE GOALS:

- Students will acquire basic knowledge of bacteriology, immunology, and virology with an emphasis on applications and disease processes.
- 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 expected to attend lectures and participate in lab exercises. They are responsible to for the material presented in all classes whether they were in attendance or not. Lectures will be recorded in Kaltura and posted in BlazeView in case you happen to miss a lecture. Labs are more problematic since we work with live cultures and perform complex procedures. Therefore, do not expect to be able to make-up missed labs; if you do miss a lab you will receive a zero for the exercise. Students who have missed 20% of regularly scheduled class meetings, especially labs, are subject to a failing grade for the course.

ATTIRE: Lab aprons, face shields and glove will be provided and must be worn during lab. SANDALS, FLIP-FLOPS AND OTHER OPEN-TOED SHOES ARE NOT PERMITTED IN LAB. IF YOU ARRIVE IN FOR LABS SANDALS OR FLIP-FLOPS YOU WILL BE SENT HOME TO CHANGE.

LECTURE EXAMS: There will be five unit exams and a comprehensive final exam. The unit exams will each be worth 100 points; the final exam will be worth 200 points. All the exams will be on-line in BlazeView. Lecture exams will consist of 76 multiple choice questions that you will have to answer correctly in 75 minutes. BE PREPARED. The final exam will consist of 150 multiple choice questions that you will have to answer in 10 minutes. Again, BE PREPARED. The dates of these exams are included in the attached schedule of lectures. DO NOT MISS THESE EXAMS WITHOUT PRIOR PERMISSION. 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. If you are caught cheating on an exam you will receive 0 points. Estimated total from lecture exams—700 points.

LABORATORY EXAMS: There will be two laboratory exams. The first, a lab skills test, is worth 75 points; you may use any notes you wish for this exam. The second will consist of 25 PowerPoint slides illustrating some of the procedures and tests conducted during the lab. Each slide will have two questions requiring either an explanation of the purpose and set-up of the procedure, details of the material used in the procedure, or an analysis of the results, and will be displayed for 60 seconds. You may use a completed study guide, but no other materials, during the exam. This exam is worth 100 points. Estimated total from laboratory exams—175 points.

ADDITIONAL LABORATORY GRADES: Some of your lab work will be assessed and assigned points based on the quality of the work. In addition you will occasionally be asked to complete informal and formal reports of your lab work. Most of these assignments have specified due dates; pay attention them. Absolutely no assignment will be accepted later than 5: 00 pm the day of the last lecture. Estimated total from laboratory work – 500 points.

ORAL REPORTS: All students will be required to prepare and deliver a 10 minute talk on a microbiological subject (see separate handout). Points for this talk will be distributed as follows: references from the text-- 5 points; copies of two references from the primary scientific literature--20 points; printouts of the power point slides and the presentation of the oral report--125 points. Estimated total for the oral report assignment – 150 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 complete the process with 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: Non-Discrimination and Title IX Statement. Valdosta State University (VSU) upholds all applicable laws and policies regarding discrimination on the basis of race, color, sex (including sexual harassment and pregnancy), sexual orientation, gender identity or expression, national origin, religion, age, veteran status, political affiliation, or disability. The University prohibits specific forms of behavior that violate Title IX of the Education Amendments of 1972. Title IX of the Education Amendments of 1972 prohibits discrimination on the basis of sex in education programs and activities that receive federal funding. VSU considers sex discrimination in any form to be a serious offense. Title IX refers to all forms of sex discrimination committed against others, including but not limited to: sexual harassment, sexual assault, sexual misconduct, and sexual violence by other employees, students or third parties and gender inequity or unfair treatment based on an individual's sex/gender. The designated Title IX Coordinator for VSU is Mr. Darius Thomas. To view the full policy or to report an incident visit: https://www.valdosta.edu/administration/student-affairs/title-ix/

SPECIAL NOTE 3: Accommodations Statement. Students with disabilities who are experiencing barriers in this course may contact the Access Office (https://www.valdosta.edu/student/disability/) for assistance in determining and implementing reasonable accommodations. The Access Office is located in University Center Room 4136 Entrance 5. The phone numbers are 229-245-2498 (V), 229-375-5871. For more information, please visit VSU's Access Office or email: access@valdosta.edu. To request reasonable accommodations for pregnancy and childbirth, contact Christina Kidd, Student Conduct Coordinator at chkidd@valdosta.edu. Please note, you will be required to provide documentation from an appropriately licensed medical professional indicating the requested accommodations are medically necessary.

STUDY TIPS

- It is recommended that you form small study groups and study together in the library or other locations without TV, stereo or other distractions.
- 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.
- You should read ahead of the schedule. So when you come to class you can ask questions.
- Answer the review questions at the ends of the chapters.
- When studying, ask yourself how this information would be applied.
- Come to office hours and ask questions if there is material you do not understand.
- Ask questions in class!!

SCHEDULE OF LECTURES AND LABS
BIOLOGY 2260, Fall 2022

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

WEEK 1		
8-15-22	LAB--Orientation; Lab safety; Lab safety quiz (on-line) LAB--*Hand-washing exercise*	pp. ix-xiv; supplement exercise 35
8-16-22	LECTURE— Introduction to microbiology DISEASE OF THE DAY--Rabies	pp. 1-58
8-17-22	LAB--*Brightfield microscopy*: *Animal parasites* LAB—Set up *Ubiquity of Bacteria* and *The Fungi: Yeasts &Molds*	exercise 2, supplement exercise 6, 7
8-18-22	LECTURE—Introduction to microbiology (continued) DISEASE OF THE DAY—Smallpox	pp. 1-58
WEEK 2		
8-22-22	LAB—Complete *Ubiquity of Bacteria* and *The Fungi: Yeasts & Molds* LAB—More microscopy: *Living protozoa, algae, cyanobacteria*	exercise 6, 7 exercise 5
8-23-22	LECTURE—Basic concepts in medical microbiology LECTURE—Microscopy DISEASE OF THE DAY—Bubonic plague	pp. 32-58 pp. 62-82
8-24-22	LAB—Observing Fungi LAB—*Aseptic Techniques* LAB—*Negative Staining*	exercise 6,7; handouts exercise 9
8-25-22	LECTURE—Bacterial cell structure DISEASE OF THE DAY--Malaria	pp. 124-144 exercise 9
WEEK 3		
8-29-22	LAB—Work on *Smear preparation, Simple Staining* LAB—*Comparing yeasts and* E. coli	exercise 10, 11 handout
8-30-22	LECTURE—Bacterial cell structure (continued) DISEASE OF THE DAY—Zika fever	pp. 124-144
8-31-22	LAB—*Gram Staining*	exercise 14
9-01-22	**UNIT EXAM I**	
WEEK 4		
9-05-22	LABOR DAY HOLIDAY—NO CLASS	
9-06-22	LECTURE—Eukaryotic cell structure LECTURE— Viruses & viroids DISEASE OF THE DAY--Cholera	pp. 144-152 pp. 350-382
9-07-22	LAB—Set up: *Enumeration of bacteria on natural foods* LAB—*Gram Staining*	handout exercise 14
9-08-22	LECTURE— Viruses & viroids DISEASE OF THE DAY—*Shigella* and *E. coli* infections	pp. 350-382
WEEK 5		
9-12-22	LAB—Complete: *Enumeration of bacteria on natural foods* LAB—Set up *Selective and differential media &* *Isolation of bacteria from natural foods* *(Streak plates using PEA & MacConkey agar)* LAB—Set up *Effects of UV light*	handout handout Exercise 10 exercise 30
9-13-22	LECTURE— Dynamics of bacterial growth DISEASE OF THE DAY—Salmonellosis/Typhoid fever	pp. 156-186

9-14-22	LAB—Complete *Effects of UV light* LAB—*Spore staining* LAB—Continue *Selective and differential media &* *Isolation of bacteria from natural foods (EMB agar)*	exercise 30 exercise 15 exercise 10; handout
9-15-22	LECTURE— Environmental influences on bacterial growth DISEASE OF THE DAY—Bacterial food poisonings	pp. 156-186
WEEK 6		
9-19-22	LAB—Continue *Selective and differential media &* *Isolation of bacteria from natural foods (Nutrient agar)* LAB--Set up *Enumeration of virus particles*	handout exercise 10 handout
9-20-22	LECTURE—Intro to bacterial metabolism DISEASE OF THE DAY—Viral gastroenteritis; amoebic dysentery	pp. 106-118
9-21-22	LAB—Complete *Enumeration of virus particles* LAB—Set up *Identifications - Part I:* *Morphological Study of an Unknown Bacterium;* *Motility Determination; Cultural Characteristics*	handout exercise 24; exercise 18, 25
9-22-22	**UNIT EXAM II**	
WEEK 7		
9-26-22	LAB—Complete *Identifications - Part I:* *Morphological Study of an Unknown Bacterium;* *Motility Determination; Cultural Characteristics* LAB—Set up *Identifications - Part II: Fermentations*	exercise 24 exercise 18, 25 exercise 26, 27
9-27-22	LECTURE— Bacterial metabolism DISEASE OF THE DAY--Polio	pp. 192-218
9-28-22	LAB—Complete *Identifications - Part II: Fermentations* LAB—Set up *Identifications - Part III: Fat & protein metabolism* LAB—*Gram stain of unknowns*	exercise 26, 27 exercise 27, 28 exercise 14
9-29-22	LECTURE— Bacterial metabolism DISEASE OF THE DAY—Measles (Rubeola & Rubella)	pp. 192-218
WEEK 8		
10-03-22	LAB—Complete *Identifications - Part III: Fat & protein metabolism* LAB—*Identification of Unknown Bacterium*	exercise 27, 28 handouts
10-04-22	LECTURE—Controlling metabolism DISEASE OF THE DAY—Mumps & Chickenpox	
10-05-22	LAB—Set up *Staphylococcus aureus Experiment*: *Inoculation of SM medium* LAB—Set up *RFLP-based DNA fingerprinting* LAB—Set up *DNA extraction -- unknowns*	exercise 52 handouts handouts
10-06-22	LECTURE—Controlling metabolism DISEASE OF THE DAY—Bacterial and viral meningitis	pp. 244-254
WEEK 9		
10-10-22	FALL BREAK – NO CLASS	
10-11-22	FALL BREAK – NO CLASS	
10-12-22	LAB—Continue *Staphylococcus aureus Experiment:* *Streak onto Mannitol-Salt agar* LAB—Continue *RFLP-based fingerprinting (gel electrophoresis)* LAB—Set up *PCR-based analysis of unknown bacteria*	exercise 52 handouts handouts
10-13-22	**UNIT EXAM III**	
WEEK 10		
10-17-22	LAB—Continue *Staphylococcus Experiment:* *Streak onto DNA agar and Blood agar* LAB—Continue *PCR-based analysis of unknown bacteria* *(gel electrophoresis)*	exercise 52 handout handout

10-18-22	LECTURE—Bacterial genetics DISEASE OF THE DAY--Influenza	pp. 225-244
10-19-22	LAB--Complete *Staphylococcus Experiment: Slide agglutination* LAB—Set up *Antimicrobic Sensitivity Testing*	exercise 52 exercise 21
10-20-22	LECTURE—Bacterial genetics DISEASE OF THE DAY—Coronavirus infections	pp. 225-244
WEEK 11		
10-24-22	LAB—Complete *Antimicrobic Sensitivity Testing* LAB—Intro to *Prevalence of Antibiotic Resistance in the Environment (PARE)* project	exercise 21 handout
10-25-22	LECTURE—Host-microbe interactions and the disease process DISEASE OF THE DAY--Bacterial pneumonia	pp. 524-560
10-26-22	**LAB QUIZ I**	
10-27-22	LECTURE—Defenses: Innate immunity DISEASE OF THE DAY— Tuberculosis	pp. 428-482
WEEK 12		
10-31-22	LAB—Set up *PARE Project I: Counting*	handout
11-01-22	LECTURE—Defenses: Innate immunity DISEASE OF THE DAY— Diphtheria & Whooping cough	pp. 456-482
11-02-22	LAB—Complete *PARE project I: Counting* LAB—Begin *PARE Project II: Transformation*	handout
11-03-22	**UNIT EXAM IV**	
WEEK 13		
11-07-22	LAB—Continue *PARE Project II: Transformation*	handout
11-08-22	LECTURE—Defenses: Adaptive immunity DISEASE OF THE DAY—*Rickettsia* infections	pp. 480-560
11-09-22	LAB—Continue *PARE Project II: Transformation* LAB—Set up *Transformation of E. coli*	handout handout
11-10-22	LECTURE—Defenses: Adaptive immunity DISEASE OF THE DAY—*Chlamydia* & Gonorrhea	pp. 480-560
WEEK 14		
11-14-22	LAB—Complete *PARE Project II: Transformation* LAB—Set up *ELISA*	handout handout
11-15-22	LECTURE—Applications DISEASE OF THE DAY-- Syphilis	pp. 842-872
11-16-22	**LAB QUIZ II**	
11-17-22	LECTURE—Controlling disease (medications) DISEASE OF THE DAY—Viral hepatitis	pp. 397-422
WEEK 15		
11-21-22	LAB—Student presentations (6)	
11-22-22	LECTURE—Controlling disease (medications) DISEASE OF THE DAY—Genital herpes & genital warts	pp. 397-422
11-23-22	THANKSGIVING HOLIDAY—NO CLASSES	
11-24-22	THANKSGIVING HOLIDAY—NO CLASSES	
WEEK 16		
11-28-22	LAB—Student presentations (6)	
11-29-22	LECTURE—Epidemiology DISEASE OF THE DAY— HIV infections	pp. 878-902
11-30-22	LAB—Student presentations (6)	
12-01-22	**UNIT EXAM V**	
WEEK 17		
12-05-22	LAB—Student presentations (6)	
12-06-21	**COMPREHENSIVE FINAL EXAM @ 8:00 AM**	