Biology Department, College of Science & Mathematics, Valdosta State University
SPRING 2024----COURSE SYLLABUS*

BIOL 3100, Sections A Microbiology (CRN 21977) -- 4 credit hours
BIOL 5100, Sections A Microbiology (CRN 22006) – 4 credit hours

Class:	**TR**	**3100/5100 Section A**	**8:00-9:15 am, 2022 Bailey Science Center**
Laboratory:	**TR**	**3100/5100 Section A**	**10:00-11:25 am, 2068 Bailey Science Center**

Instructor:	**Dr. Jenifer Turco**	**Email:**	jturco@valdosta.edu
Telephone:	**229-249-4845**	**Office:**	**2091 Bailey Science Center**

Office Hours: **Mon. & Wed, 12:00-1:30 pm; Tues. & Thurs, 4:30 – 5:30 pm; or by appointment.**

Course Description: BIOL 3100 Microbiology 3-3-**4 (4 credit hours)** Prerequisites: BIOL 1107K, BIOL 1108K, BIOL 3200, CHEM 1211/CHEM 1211L, CHEM 1212/1212L. Recommended: CHEM 3402. **BIOL 5100 Microbiology** 3-3-**4 (4 credit hours)** Prerequisite: Admission into the graduate program or permission of the instructor. Survey of microbiology covering eubacteria, archaebacteria, protozoa, fungi, algae, and viruses. Includes fundamental techniques, microbial physiology and genetics, biotechnology, medical applications, and applied microbiology. Two 1.5 - hour laboratory periods per week.

Required Textbook:

BROCK BIOLOGY OF MICROORGANISMS, Sixteenth Edition
by Michael T. Madigan, Kelly S. Bender, Daniel H. Buckley, W. Matthew Sattley, and David A. Stahl.
Pearson Education, Inc. 2021. PLEASE see below for important details:
The required textbook (see above) is being offered to students as an etextbook (ISBN 9780135845554) via the DAY ONE program developed by Pearson Education, the Bookstore, and VSU. Students may also opt-out of the DAY ONE program and select one of the following alternate options for the textbook (select one): (1) traditional, hard-cover book (ISBN 9780134874401; if available); (2) unbound loose-leaf book (if available); (3) "Mastering Microbiology" with Etext for BrockBiology of Microorganisms (if available). Please note that "Mastering Microbiology" is an online resource that is included with the eText in this option. Access to "Mastering Microbiology" is NOT required for the course (although it is included with this particular option), and students may use it if they wish. For additional information about the textbook options, please see the VSU Bookstore Web site.

Special emphasis: **The textbook is required and assignments will be given from the textbook.**

Required Lab Manual: **LAB MANUAL FOR BIOL 3100 MICROBIOLOGY, Valdosta State University, Biology**
McGraw-Hill, 2014. (ISBN 9781308191034)

Other items or abilities that are (or may be) required: (i) proper attire for lab, including **close-toed shoes and NO shorts**; (ii) a calculator; (iii) a permanent, fine-tip marking pen ("Sharpie") for labeling cultures in lab; (iv) a notebook for organizing and recording lab results (this may be a loose-leaf folder); (v) ability to access BlazeView to obtain/make use of course and lab materials, handouts, class PowerPoint files, etc.; (vi) ability to complete assignments (typewritten) and/or assessments and submit them online via BlazeView; (vii) ability to complete assignments and/or assessmentsand submit them during in-person classes/labs; (viii) ability to participate in discussions via BlazeView; (ix) ability to give an oral presentation that uses PowerPoint software; (x) ability to use VSU Email, Microsoft Word, PowerPoint, and Excel, as well as the ability to save files from these applications in regular and PDF format.

***This is a tentative syllabus. Changes to this syllabus may be announced during class or laboratory periods; alternatively, changes may be posted in BlazeView.**

Special notes to students:

1. **Please do not come to the classroom or my office if you are sick.** If you must be absent due to illness or a serious emergency, please report your absence through the Division of Student Affairs (Dean of Students Office) https://www.valdosta.edu/administration/student-affairs/absentee-notification-form.php
Please also notify me through VSU Email.

2. If you are experiencing symptoms of COVID-19, use the testing available at the Student Health Center; you may also obtain a test at many other locations around town. If you must self-isolate or quarantine, follow the directions provided by Student Health. For additional information, please see the guidance at the following link: https://www.valdosta.edu/administration/student-affairs/student-health/covid-19-health.php

3. **Food and drink may not be consumed in the classroom or in the laboratory.** If you carry a bottle of water or other beverage with you, please be sure that it is sealed and put away **before** you enter the classroom or laboratory.

4. Cell phones, laptop computers, tablets, and other electronic devices may not be used for non-course-related activity at any time in class. Students who wish to use a laptop computer, tablet, or cell phone during class as an aid to following the material being covered must take care not to distract others.
No disruptive behavior will be tolerated during class. A student who engages in disruptive behavior will be asked to leave.

5. In order to respect the privacy of each student, grades will not be physically posted or given out by telephone or email. Grades and feedback will be given to students in person or in BlazeView.

6. Students should consult the VSU Student Handbook, Catalog, Semester Calendar, Schedule of Classes, & Registration Guide (all available online) for information about VSU policies and procedures regarding registration, drop/add, and withdrawal. February 29 is midterm, and the last day to withdraw is March 7. Students are not permitted to withdraw after midterm except in cases of hardship.

7. **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) and 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,please contact Ms. Myia Miller Title IX Compliance officer, at maburden@valdosta.edu. Please note, you will be required to provide documentation from an appropriately licensed medical professional indicating the requested accommodations are medically necessary.

8. **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 Ms. Selenseia Holmes. To view the full policy or to report an incident visit: https://www.valdosta.edu/administration/student-affairs/title-ix/

9. **Academic Integrity**. Students are expected to read and adhere to the following: (i) the **VSU Student Code of Conduct** (https://www.valdosta.edu/administration/student-affairs/student-conduct-office/student-handbook.php) and (ii) the **Biology Department Policy on Plagiarism** (available online through the departmental Web site at http://www.valdosta.edu/colleges/arts-sciences/biology/documents/resources/PlagiarismPolicy.pdf). The instructor may use a variety of methods for detecting cheating and plagiarism. One method that will be used to check extended papers submitted by graduate students will be **Turnitin**. For more information on the use of Turnitin at VSU see **Turnitin for Students** (https://www.valdosta.edu/academics/academic-affairs/turnitin-for-students.php). Cheating or plagiarism will result in a grade of "0" for the assignment and a grade of unsatisfactory ("U") for the course. In addition, the instructor may complete a Report of Academic Dishonesty and submit it to the VSU Student Conduct Office.

Please note that content generated by an Artificial Intelligence third-party service or site (AI-generated content) may not be used in writing your paper (graduate student) or preparing your oral presentation (all students) in this course. Use of such content will be considered cheating.

10. **SOI Statement:** At the end of the term, all students will be expected to complete an online Student Opinion of Instruction survey (SOI) that will be available through SmartEvals. Students will receive an email notification through their VSU email address when the SOI is available (generally at least one week before the end of the term). SOI responses are anonymous to instructors/administrators, and they will be able to access results only after they have submitted final grades. Before final grade submission, instructors will not be able to see any responses, but they can see the percentage of students who have or have not completed their SOIs. While instructors will not be able to see student names, aan automated system will send a reminder email to those who have yet to complete their SOIs. Students who withdraw or drop a course will also be sent invitations to complete the Dropped Course Survey. Complete information about the SOIs, including how to access the survey, is available on the **SOI Procedures webpage**.

11. **Basic Mental Health Statement:** As a student, you may experience a range of challenges that can interfere with learning, such as strained or violent relationships, death and loss, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. VSU services are available and treatment does work. You can learn more about confidential mental health services available on campus at **https://www.valdosta.edu/hopeconnect**

12. Materials in this course are presented to students in an educational context for their personal use and study only and should not be shared, distributed, or sold in print, or digital formats, outside the course without the express written permission of the instructor.

Course Objectives:

After successful completion of this course, the student should be able to:

A. List and describe the three domains of living organisms.
B. List and describe the three types of noncellular infectious agents.
C. List several activities of microorganisms that are beneficial to humans and the environment.
D. List and briefly explain several current challenges in medical microbiology and infectious diseases.
E. Compare and contrast the structure and function of the microorganisms in the domains *Bacteria, Archaea*, and *Eukarya*.
F. List and describe the various strageties used by microorganisms to obtain carbon and e nergy.
G1. Describe the growth (including the growth phases) of a pure culture of bacteria in a closed system, and perform mathematical calculations related to the exponential growth phase. Explain several ways in which bacterial growth can be measured.
G2. Define and describe a biofilm. Discuss the importance and roles of biofilms.
H. Compare and contrast the following processes as they occur in *Bacteria, Archaea*, and *Eukarya*: DNA replication, transcription, and translation.
I. Describe several mechanisms through which gene expression is regulated in bacteria.
J. Describe in detail how viruses replicate.
K. Describe the causes and consequences of mutations.
L. Describe the three mechanisms of horizontal gene transfer in bacteria, and explain their significance.
M. Give examples of the use of microorganisms in genetic engineering and biotechnology.
N. Briefly describe the role of microorganisms in the evolutionary history of life on earth.
O. List and describe a variety of methods and approaches that are used to detect and identify various microorganisms and noncellular infectious agents.
P. Explain how physical methods and chemical agents (antiseptics and disinfectants) are used for controlling microbes.
Q. State the mechanisms of action of various antibacterial, antifungal, and antiviral medications.
R. Discuss the problem of antimicrobial drug resistance, and explain several ways in which the emergence of drug resistant bacteria can be minimized.
S. Explain what is meant by the human micro biome. Discuss its importance and roles.
T. Briefly describe the role of microorganisms in the cycling of nutrients, using examples from the carbon cycle, the nitrogen cycle, and the sulfur cycle.

U. Describe in detail: (i) the innate defenses of humans and (ii) the adaptive immune response of a human to a foreign antigen.
V. Explain how infectious diseases are transmitted, giving specific examples.
W. List the major types of virulence factors observed in pathogenic bacteria, giving specific, detailed exa mples.
X. List and describe several human diseases that are due to specific bacteria, viruses, protozoa, and fungi.
Y. Describe the general course of the disease caused by human immunodeficiency virus (HIV).
Z. Describe the features of the diseases caused by influenza viruses and SARS-Coronavirus-2 in humans.
ZA. Properly handle microorganisms in a biosafety level 2 laboratory.
ZB. Use a compound light microscope to examine various types of microorganisms.
ZC. Keep accurate and complete records of microscopic observations, as well as other laboratory and field work.
ZD. Use culture media to grow bacteria and fungi in the laboratory, and maintain stock cultures.
ZE. Use staining techniques, physiological tests, and rRNA sequences as aids in bacterial identification.
ZF. Use dilutions to solve problems such as determining the colony-forming units per milliliter in a bacterial suspension and the plaque-forming units per milliliter in a viral suspension.
ZG. Formulate an answerable question; develop a hypothesis; design and conduct an experiment; collect, organize and analyze data; and prepare a report with emphasis on the results and discussion.
ZH. Use library and electronic resources to obtain formal scientific articles related to a particular topic in microbiology.
ZI. Read, understand, and be able to discuss scientific articles (primary sources and review articles). Summarize the articles and/or and write a report and/or give a brief oral presentation on a scientific article that is a primary source.

Alignment of Assignments with Course Objectives:
The course objective(s) aligned with each assignment are given on the last page of this syllabus.

Alignment of Course Objectives with Learning Goals/Educational Outcomes:
The **Student Learning Goals for the Core Curriculum in the University System of Georgia (USG)** are available online at http://www.usg.edu/academic_affairs_handbook/section2/C738/. The application of these learning goals in VSU's Core Curriculum is explained at http://www.valdosta.edu/academics/academic-affairs/vp-office/vsu-core-curriculum.php . Each Core Area (A1, A2, B, C, D, and E) has one or more learning goals. In this syllabus they are referred to as VSUA1, VSUA2, VSUB, VSUC, VSUD, and VSUE.

The **Biology Undergraduate Educational Outcomes** (numbered 1-5) are available in the VSU Undergraduate Catalog, and the **Biology Graduate Educational Outcomes** are available in the VSU Graduate Catalog and are numbered 1 through 4. Both catalogs are available online at http://catalog.valdosta.edu/ . In this syllabus the Biology Undergraduate and Graduate Educational Outcomes are designated as B1-B5 (http://catalog.valdosta.edu/undergraduate/academic-programs/sciences-mathematics/biology/) and GB1-GB4 (http://catalog.valdosta.edu/archive/2021-2022/graduate/graduate-degree-programs/sciences-mathematics/biology/ms-biology/), respectively.
The course objectives that are aligned with the USG, VSU and Biology Department Learning Goals/Educational Outcomes are listed next.

USG, VSU or Biology Objective	**Course Objective(s)**
Core Area A1Learning Goal	ZG, ZH, ZI
Core Area A2 Learning Goal	G, ZE, ZF
Core Area B Learning Goal	C, D, M, R, U, V, X, Y, Z
Core Area D Learning Goal	all course objectives
VSUA1	ZG, ZH, ZI
USG, VSU or Biology Objective	**Course Objective(s) (continued from preceding page)**
VSUA2	G, ZF, ZG
VSUB	C, D, M, R, U, V, X, Y, Z
VSUD	all course objectives
B1	ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI
B2	A, B, D, E, H, J, K, L, N, O, R, U, X, Y, Z
B3	A, B, D, E, F, G, H, I, J, K, L, O, P, Q, U, W, X, Y, Z
B4	B, D, H, I, J, K, L, M, O, R, X, Y, Z
B5	C, D, F, R, S, T, V
GB1	all course objectives
GB2	G, ZC, ZF, ZG, ZH, ZI

Additional requirements for BIOL 5100:
Students who are taking BIOL 5100 Microbiology will have additional assignments. For this semester, these students will be able to complete an additional, extended paper based on the formal scientific literature. Another possibility will be to complete a lab-based project in microbiology. Details about the requirements for the paper are given on the last page of the syllabus. Details about doing a lab-based project will be provided by the instructor upon request. **Grading information for BIOL 5100 is also given on the last page of the syllabus.**

BIOLOGY 3100/5100. Microbiology – Plans and Class Topics

Note about the order in which course topics will be covered.
The next pages show the topics that will be covered during the lecture portion of the course, along with a general schedule for class meetings and exams. The topics are listed in the general order in which they will be covered. However, the instructor may occasionally need to adjust the order of some topics to facilitate students' understanding of the lab material. The location of related material in the textbook for each topic is also given. **PowerPoint slides will be posted in BlazeView.**

BIOLOGY 3100/5100. Microbiology – Plans and Class Topics

Day/Date	Topics	Related material in textbook
Tues/Jan 9	General course information; special considerations **Introduction to Microbiology** Microorganisms and microbiology An overview of microbial life	**Chap. 1; Chap. 30 & 33 (selected figs/tables)**
Thurs/Jan 11	**Introduction to Microbiology** Microorganisms and microbiology An overview of microbial life Microscopes	**Chap. 1; Chap. 30 & 33 (selected figs/tables)**
	Review (on your own) the following topics that you covered in introductor biology & genetics: **Basics of chemistry and biochemistry** **DNA structure & replication** **Transcription & translation**	
Tues/Jan 16	Microscopes	**Chap. 1; Chap. 30 & 33 (selected figs/tables)**
	Cell structure/function	**Chap. 1 (selected fig) , 2, 7 (p. 210-213);** **Chap. 8, 14, 15, 16 (selected figs)** **Chap. 6, 13, 18 (selected figs)**
	Please note that, when selected figures are used, page numbers or figure numbers are generally noted in the PowerPoint to make it easier for you to locate the related information in the textbook.	
Thurs/Jan 18	Cell structure/function	**Chap. 1 (selected fig) , 2, 7 (p. 210-213);** **Chap. 8, 14, 15, 16 (selected figs)** **Chap. 6, 13, 18 (selected figs)**
Tues/Jan 23 & Thurs/Jan 25		
	Cell structure/function	**Chap. 1 (selected fig) , 2, 7 (p. 210-213);** **Chap. 8, 14, 15, 16 (selected figs)** **Chap. 6, 13, 18 (selected figs)**
	Nutrition & culture of microorganisms (in part) Eukaryotic microorganisms	**Chap. 4** **Chap. 18 & 34; Chap. 13 (selected fig)**

BIOLOGY 3100/5100. Microbiology – Plans and Class Topics

Day/Date	Topics	Related material in textbook
Tues/Jan 30	Eukaryotic microorganisms	**Chap. 18 & 34; Chap. 13 (selected fig)**
Thurs/Feb 1	**Exam (Quiz) 2** Please note that "Exam 1" was the short online quiz called "Quiz 1".	
Tues/Feb 6	Eukaryotic microorganisms	**Chap. 18 & 34; Chap. 13 (selected fig)**
Thurs/Feb 8	Nutrition & culture of microorganisms (continued) **Microbial systematics & Microbial evolution (selected topics)** Microbial systematics; Strategies for identification of microorganisms (emphasis on prokaryotes) Microbial identification & clinical microbiology	**Chap. 4** **Chap. 13** **Chap. 29 (Fig. 29.4)**
Tues/Feb 13	**Microbial systematics & Microbial evolution (selected topics)** Microbial systematics; Strategies for identification of microorganisms (with emphasis on prokaryotes) Microbial identification & clinical microbiology Bacterial diversity	 **Chap. 13** **Chap. 29 (Fig. 29.4)** **Chap. 16**
Thurs/Feb 15	Molecular microbiology	**Chap. 6; Chap. 12 (PCR, p. 355-358)**
Tues/Feb 20	Molecular microbiology Microbial metabolism	**Chap. 6; Chap. 12 (PCR, p. 355-358)** **Chap. 3, 14, 15, 16 & 17 (selected topics)**
Thurs/Feb 22	Microbial metabolism	**Chap. 3, 14, 15, 16 & 17 (selected topics)**
Tues/Feb 27	Microbial metabolism Microbial growth (includes assigned reading on biofilms)	**Chap. 3, 14, 15, 16 & 17 (selected topics)** **Chap. 4, 8, & 20**
Thurs/Feb 29	**Exam (Quiz) 3** (assigned reading on biofilms will not be on this exam)	
Tues/Mar 5	Microbial growth (includes assigned reading onbiofilms) Regulation	**Chap. 4, 8, & 20** **Chap. 7**
Thurs/Mar 7	Regulation Introduction to Viruses	**Chap. 7** **Chap. 5**
	SPRING BREAK	
Tues/Mar 19	Introduction to Viruses Viruses: Additional information	**Chap. 5** **Chap. 5; 10 (p. 307); 11; 13 (origin)**
Thurs/Mar 21	Viruses: Additional information **Microbial Genetics** Genetics of *Bacteria & Archaea*	**Chap. 5; 10 (p. 307); 11; 13 (origin)** **Chap. 9**

BIOLOGY 3100/5100. Microbiology – Plans and Class Topics

Day/Date	Topics	Related material in textbook
Tues/Mar 26	Genetics of *Bacteria & Archaea*	**Chap. 9**
	Microbial genomics and other omics	**Chap. 10 & Chap. 19 (p. 625-637)**
	Biotechnology & synthetic biology (selected topics)	**Chap. 12**
	(We will not have time to cover all of the topics of interest related to microbial genetics.)	
	RNA Interference & more (only to be covered if time permits)	**Chap. 9 & 12; With some supplemental information**
	Microbial growth control (Assigned reading)	**Chap. 4, 28, & 8**
Thurs/Mar 28	Microbial symbioses with humans; human microbiome	**Chap. 24 is assigned reading**
	(Assigned reading on these topics will be included on the final exam & not on the next exam.)	
	Immunology	
	Innate immunity (broadly specific)	**Chap. 26**
	Adaptive immunity	**Chap. 27-28**

Please note that, at the time this syllabus was prepared, my PowerPoint files on immunology had not been revised to incorporate the figures in the 16th edition of the textbook. It is unlikely this will cause a major problem. However, please be aware of this matter when you are reading the16th edition of the textbook and using the PowerPoint files.

Tues/Apr 2	**Exam (Quiz) 4**	
Thurs/Apr 4	**Immunology**	
	Adaptive immunity	**Chap. 27-28**
	Practical applications of immunology (including vaccines)	**Chap. 28-29**
	Microbial identification & clinical microbiology	**Chap. 29 (Fig. 29.4)**
		Some online resources are also listed in BlazeView.
Tues/Apr 9 & Thurs/Apr 11	**Pathogenic microbiology**	
	Human-microbe interactions; pathogenesis	**Chap. 24, 25**
	Epidemiology & public health	**Chap. 30**
	Microbial diseases (selected topics)	**Chap. 31-34**
Tues/Apr 16 & Thurs/Apr 18	**Pathogenic microbiology**	
	Human-microbe interactions; pathogenesis	**Chap. 24, 25**
	Epidemiology & public health	**Chap. 30**
	Microbial diseases (selected topics)	**Chap. 31-34**
	HIV	**Chap. 11 & 31**
Tues/Apr 23 & Thurs/Apr 25	**HIV**	**Chap. 11 & 31**
	Influenza	**Chap. 11 & 31**
	Human coronaviruses	**Chap. 11 & 31**
		Some online resources are also listed in Blazeview.

Exam (Quiz) 5 (Final Exam)-Tues. Apr 30 (8:00 am - 10:00 am)

BIOLOGY 3100/5100. Microbiology – Laboratory

Information for each week's labs will be posted in BlazeView. Students are responsible for printing out this information for the lab from BlazeView, organizing it in their lab notebooks, and bringing it to lab. The information generally will consist of a guide for the week's labs, and may also include supplemental exercises that are not in the lab manual. Students must bring their lab manuals and lab notebooks (including the lab information from BlazeView) to each lab meeting. The instructor may ask to see your lab notebook (with information from BlazeView) and lab manual to check your lab work/records during any lab meeting.

The lab work for the first week of class (Jan 9 & 11) will be done independently (online). It includes introductory information, as well as information about handwashing, media preparation, and lab safety. There is a short quiz on lab safety that you will need to complete in BlazeView (Quiz 1). The quiz must be completed by Tuesday morning, Jan 16, at 7:30 am. **Please see Lab Module 1 (under Lab Work in BlazeView) for details.**

The lab work to be done during the second week of class (Jan 16 & 18) is extremely important and will be found in **Lab Module 2** in BlazeView. The work on Jan 16 includes an introduction/orientation to the microbiology lab & lab safety, aseptic technique, and the streak-plate technique. Please be sure to attend this lab unless you are sick or have a serious emergency. On Jan 18, you will complete the work begun on Jan 16. In addition, you will learn how to prepare a smear of bacteria and stain the smear. Please see BlazeView for details about this lab work.

The tentative lab schedule is shown below. The labs are listed as modules. However, please be aware that sometimes, work begun in a given lab module will be continued later in the semester.

Tentative Lab Schedule (See BlazeView for details)

Lab Module 1 – Week of Jan 8 (Safety, Handwashing, Preparation of Culture Media)-Online
Lab Module 2 – Week of Jan 15 (Safety, Aseptic Tech, Streak Plate, rRNA, Simple Staining)
Lab Module 3 – Week of Jan 22 (Fungal Culture, Microscope, Yeast/bacteria, Negative Stain, Winogradsky)
Lab Module 4 – Week of Jan 29 (Fungi-microscopic observation, Gram Staining)
Lab Module 5 – Week of Feb 5 (Bacteria & Produce; Dilutions & Problems; Produce Isolate Streak Plate)
Lab Module 6 – Week of Feb 12 (Produce isolate work; Pathogen topic selection; Ubiquity of Bacteria; Dilution problems)
Lab Module 7 – Week of Feb 19 (Various Media; Cultural Characteristics/Motility; Hydrolytic & Degradative Reactions; Unknown Produce Isolate)
Lab Module 8 – Week of Feb 26 (Oxidation & Fermentation Tests; Unknown Produce Isolate)
Lab Module 9 – Week of Mar 4 (Activity of disinfectants/antiseptics against microbes)
Spring Break
Lab Modules 10 & 11--Weeks of Mar 18 & 25 (Plaque Assay--Begin on March 19; Growing Bacteria from Yogurt--Begin on March 21; Effectiveness of alcohol--Begin on March 26)
Mar. 26: Hand in lab notebook (& manual if you have records & information in it) for scheduled lab notebook check.
Lab Modules 12 & 13 – Weeks of Apr 1 & 8 (Details will be in overview/guide)
Lab Weeks of Apr 15 & 22 – Oral Presentations on Pathogens

ADDITIONAL INFORMATION:

1. LABORATORY, ETC. Safety is important in any science lab, and it is particularly important in a microbiology lab. You must read and follow the provided safetyguidelines. These include washing your hands with soap and water before you leave thelab. Please keep a copy of the Microbiology Laboratory Safety Rules in your lab notebook. Food or drink may

not be consumed in the microbiology lab, and should not be brought into the lab. If you are carrying a drink with you, please make usre it is closed and put away (out of sight) before you enter the microbiology lab. **As noted previously, you will need to complete Quiz 1 (a brief quiz) on these safety rules by Tuesday, Jan 16, at 7:30 am.**

--Please read the laboratory exercises for the day and any additional required readings(noted in BlazeView) before coming to the laboratory. Please print your own paper copies of these materials, and bring them, as well as your lab manual and lab notebook, to the lab.

--Microscopes will be assigned in lab and spot checks will be made to ensure that they are clean and properly stored. Misuse or mishandling of the microscopes may result in the loss of points Specific directions for using the microscopes safely will be given in lab.

--Each student must keep lab records in a well-organized lab notebook. In addition, students must incorporate class data into their lab notebooks as soon as it is available. All pages of the notebook must be numbered. The lab notebook must have a "Table of Contents" that includes the titles of all the lab exercises/experiments/work (the number of the lab module is not sufficient for a title), the dates they were performed, and the pages in the notebook where they are located. The instructor will check lab notebooks at least once during the semester. She may also ask to view students' lab records, notebooks and/or lab manuals during any lab.

--Please neatly draw and write out your lab results. Photographing your results using your cell phoneis possible, but is not advised because you may contaminate your phone. Calculators may be used in lecture or lab. However, you should disinfect your calculator before you leave the lab. Please be aware that calculators and other electronic devices may NOTbe used during exams.

-- Lab work will be covered on the exams. There may also be a few lab assessments/assignments/reports. Some of these may be submitted via BlazeView; whereas, others may be submitted or checked in the laboratory.

2. EXAMINATIONS (quizzes) 2-5 will cover material presented during both the class and laboratory portions of the course. The examinations will be given in the classroom and will begin promptly at the beginning of the indicated class periods. The final examination (Exam 5) will be comprehensive in that it will include material covered throughout the course. (However, there will be an emphasis on the more recently covered material.) Exams 3 and 4 will be comprehensive in that up to 25% of the points on the exam may cover material presented before any earlier examination. Exams may include questions of the multiple-choice, matching, true-false, and short-answer formats. Short-answer questions may be a very common type of question on the exams. Diagrams and occasional essay questions may also be included. A student who misses an examination should notify the instructor promptly. Arrangements for a make-up exam must be made within one week after the exam date; otherwise, a make-up exam may not be given. Make-up examinations may consist entirely of questions of the short answer and essay formats and may be worth fewer points than the regularly-scheduled exams. (**Quiz 1** is a very brief quiz that focuses on safety in the microbiology lab. Each student must complete this quiz by **Tuesday, Jan 16, 2023, at 7:30 am**.) Exams 2, 3, & 4 will be worth 140 points each; the final exam will be worth 200 points.

---Please use the rest room before you come to class to take an exam. Should a student need to leave the classroom during an exam, the student's exam will be terminated.

---During examinations, students will be asked to place their bags and books directly under their seats or in the front of the classroom. No hats may be worn during exams. Also, please remember that food and beverages may not be consumed during examinations.

---Students are cautioned to be certain that cell phones, other electronic devices, and specialty watches are silenced and put away (**OUT OF SIGHT**) during examinatons. **Unless otherwise noted, calculators may not be used during examinations**. Should a cell phone, specialty watch, calculator or other electronic device be seen or heard during an exam, the student's exam will be terminated and the student will receive a score of "0" on the exam.

--Exams will not be returned to students, and students will not be permitted to photograph exams. After grading has been completed, the instructor may bring the exams to one of the lab periods for students to view. **Students must be certain to put away (OUT OF SIGHT) their cell phones, other electronic devices, pencils, and pens while viewing exams.** An attempt to photograph or modify an exam will be considered cheating, and will result in a grade of "0" on the exam. If a student needs additional time to view an exam, or if a student is absent from lab on the day a particular exam is viewed, the

student must make an appointment with the instructor for viewing the exam within one week of the day the exam is viewed in lab.

--Grades on exams and quizzes and other course work will generally be posted in Blazeview for students to view. However, the instructor uses an Excel spreadsheet to calculate the final grades; therefore, final exam grades will not be posted in BlazeView, and final course grades will be posted only in Banner.

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3. ORAL PRESENTATION ON A MICROBIAL PATHOGEN: Each student will prepare a report on a scientific article about a microbial pathogen. Additional information about the report is given in BlazeView. Students will present their reports orally during the specified lab periods; use of PowerPoint software is required for the presentations. Students will select their topics for these presentations by lottery during one of the lab periods. Once a topic is chosen, it may not generally be changed. Students should use the textbook as a starting point to obtain background information. Then they must locate **one formal, peer-reviewed, scientific journal article** about the pathogen. **This article must be a primary source (NOT a review article) that was published in a scientific journal between 2013 and 2024; it must also list references at the end, and the listed references must be cited within the article. The primary source must be between 4 and 20 pages in length.** **PLEASE NOTE THAT, IN A PRIMARY SOURCE, THE AUTHORS REPORT THE RESULTS OF THEIR OWN EXPERIMENTSS, FIELD STUDIES, OR CASE STUDIES.** A primary source will often have a Materials and Methods section. **For this particular assignment, systematic reviews and meta-analyses will not be acceptable as primary sources**. Some students might be able to locate a suitable primary source in "Emerging Infectious Diseases", which is available free online at www.cdc.gov . Additional peer - reviewed, scientific and medical journals are available in the Odum library and/or online (you may search online using GALILEO or PubMed, for example). The article may be obtained through interlibrary loan; however, this process is not recommended because it takes additional time. **Please select a primary source that you will be able to read and understand. Approximately 2/3 of the report should focus on the primary source; the remaining 1/3 should consist of background information on the pathogen.** Students are required to show and explain at least some of the figures/tables from the paper. Therefore, when you select your reference, be sure that the figures/tables will be easy to present. In addition to your chosen primary source, you may use one or more peer-reviewed, scientific review articles as sources of background information. Web sites, Internet articles or fact sheets, newspaper articles, magazine articles, book reviews, and letters to the editor are NOT acceptable as primary sources for this assignment. Lengthy reports published by the Centers for Disease Control and Prevention, the World Health Organization, or similar agencies may be used as supplemental sources but they are not acceptable as the main reference (which must be a scientific journal article that is a primary source). Students should make every effort to ensure the accuracy of the information in their reports. Questions may be asked if any inaccurate information is included Please feel free to stop by my office if you have questions about your primary source.

There are three graded items associated with the oral presentation: (1) A paper copy of the complete PDF file of the **primary source** you would like to use must be given to the instructor during lab on **Thursday, February 22**. The instructor will give feedback on your article in BlazeView to let you know if it is acceptable. If your article is not acceptable, you can submit another articleon **Feb 27, Feb 29, or March 5**. Once your article has been approved, it cannot be changed. This part is worth 20 points. (2) On the day you give your oral presentation, you must submit your **PowerPoint slides**, as well as **any notes used** during the presentation, to the appropriate discussion in BlazeView. The PowerPoint slides and notes are worth an additional20 points. Please be aware that you may not read notes from a cell phone, tablet, or laptop computer during your presentation—your notes must be on index cards or a few sheets of paper. **Special emphasis: you may NOT read your presentation from the primary source.** (3) The **oral presentation given during the lab** is worth an additional 70 points. The schedule for the presentations will be determined after you have selected your topics. A list of topics and an evaluation form for the oral presentation can be found in the Pathogens folder in the Lab Work section in BlazeView.

4. Format of Assignments and Late Assignments:

Some assignments, lab work/reports, and quizzes may be submitted via BlazeView. All assignments and reports to be submitted in BlazeView must be typed, and an assignment or report that consists of multiple pages must be submitted as a single file, unless otherwise specified. Assignments must be readable—please remember that readability may be a problem if you are planning to photograph your assignment, assemble the pages, and submit it via BlazeView. Please check your submitted file to be sure it is complete**. In addition, please promptly check any feedback given in BlazeView by the instructor.** This will help you to know if there might have been a problem with your assignment or its submission.

Completion of all assignments, the lab safety quiz (Quiz 1), and reports is required in order to pass the course. If you would like to earn the best possible score on an assignment or lab work/notebook/lab manual check, you should complete it and submit it on time. Substantial penalties may be imposed for late assignments, depending on the circumstances. For example, the maximum score for an assignment that is 2-4 calendar days late might be 75% of the originally possible points,

and the maximum score for an assignment that is 5-7 calendar days late might be 50% of the possible points. Depending on the assignment and the circumstances, students might receive no points for an assignment that is more than 7 days late.

ADDITIONAL COMMENTS

1. We will not be covering all of the material in the textbook and lab manual. Please read the pertinent sections of the textbook and lab manual, and make use of the tables and illustrations. Specific assignments on particular topics in these books may be announced in class or lab, or they may be posted on BlazeView.

2. Hardships & Difficulties. If you encounter hardships/difficulties during the semester that affect your ability to attend the class and complete assignments, please be sure that you notify the Office of Student Affairs (229-333-5941) so they can send a report to the instructor. I realize that some of you may have challenges, and I will do my best to work with each of you so you can complete the course successfully. However, please realize that I will expect you to do your best as well. Also, please be aware that, if hardships or other factors interfere with your ability to attend class/lab and complete assignments, you might need to retake this course during a future semester. Please be sure you read the information about class attendance and late assignments.

3. Attendance, Participation & Tardiness. Attendance and partipation are important for success in the course. This is particularly true for the laboratory. In accordance with VSU policy, attendance and participation will be checked in class and lab. The VSU Undergraduate Catalog states: "Whether online or face-to-face, a student who misses or does not participate in more than 20% of the scheduled course activities could be subject to receiving a failing grade in the course." Tardiness for lab and leaving lab early will be noted during lab. Students who habitually arrive late for lab or leave lab early may be marked absent the fourth and subsequent times they arrive late or leave early. **Please note that the highest possible grade for a student who misses or fails to complete more than 6 laboratory/oral presentation periods will be a grade of "D".**

4. As the instructor, I want you to enjoy learning about microbes during this course! Therefore, I will do my best to work with each of you so you can accomplish your goals in the course. Please feel free to schedule an appointment to meet with me, or to drop by during my office hours.

Grading for BIOL 3100:

Points for the course are allocated as follows:

Introduce yourself (online, discussion).....	20 points
Quiz 1 (online).....	20 points
Exams 2-5 (quizzes) (both class & lab material; in class) (all course objectives).....	620 points
rRNA assignment (due in lab, Feb. 8) (objectives O & ZI).....	20 points
Lab work/notebook/manual (all course objectives) (due in lab).....	210 points
Oral report on pathogen (includes primary source, PowerPoint, notes) (objectives ZH & ZI).....	110 points
(Primary source due in lab-Feb 22; Oral presentation in lab; PowerPoint & notes due online-discussion)	
TOTAL FOR COURSE	1000 points

Continued on the next page……

There are FOUR REQUIREMENTS TO PASS the course:

1. Complete and turn in all required assignments, lab work, notebook, etc.
2. Participate in class, lab, and discussions.
3. Obtain at least 30% of the points for each assignment, quiz, and report.
4. Have a total of 600 or more points for the course.

The grade is "F" for a student who obtains less than 600 total points,**or** fails to meet one of the other requirements for passing the course (see above list). Please note that the highest possible grade for a student who misses more than 6 lab/oral report periods is a grade of "D".

GRADING SCALE for BIOL 3100: 900-1000, A; 800-899, B; 700-799, C; 600-699, D; < 600, F

Grading for BIOL 5100:

Points for the course are allocated as follows:

Introduce yourself (online, discussion)..…….…….……..…….	20 points
Quiz 1 (online)…….….	20 points
Exams 2-5 (quizzes) (both class & lab material; in class) (all course objectives)……...	620 points
rRNA assignment (due in lab, Feb. 8) (objectives O & ZI)…….…….	20 points
Lab work/notebook/manual (all course objectives) (due in lab)……..……..…….	210 points
Oral report on pathogen (includes primary source, PowerPoint, notes) (objectives ZH & ZI)…..….	110 points
(Primary source due in lab-Feb 22; Oral presentation in lab; PowerPoint & notes due online-discussion)	
Extended paper based on formal scientific literature (or lab-based research project)..……..	200 points
TOTAL FOR COURSE	1200 points

The requirements to pass the BIOL 5100 course are the same as those for BIOL 3100, except that the extended paper is included in Item #1 (see preceding page). Please note that the highest possible grade for a student who misses more than 6 lab/oral report periods is a grade of "D".

GRADING SCALE for BIOL 5100: 90-100%, A; 80-89%, B; 70-79%, C; 60-69%, D; <60%, F

BIOL 5100 students only--Extended paper option:

Each student in BIOL 5100 will select a microbiology-related topic for an extended paper in consultation with the instructor. (An alternative assignment will be a lab-based research project; if you choose this option, please see the instructor for additional information.) The topic chosen for the paper must be submitted in BlazeView and it must not be closely related to the topic chosen for the oral report. The paper must be typed in a 12-point font, double-spaced, and be approximately 7 pages in length. A separate title page (an 8th page) that has the topic, the student's name, the date, and a summary (approximately 300 words), must also be included. Please check the line spacing in Word (or other word processing program) and be sure that extra space is not inserted below each line. Margins must be set at 1 inch on all sides of the page. The last (9th) page should be the "Literature Cited" (References) section.

Three peer-reviewed, primary sources from the formal scientific literature (published between 2013 and 2024) must be used in writing the paper. These articles may not include the article(s) being used for the student's oral presentation. Up to 4 review articles may also be used in addition to the primary sources; however, the review article(s) should be used for background information and must not be the main focus of the paper. If you are in doubt about what constitutes a primary source, please see item #3 on page 10. Complete PDF copies of the chosen articles must be submitted in BlazeView, and each PDF file must be labeled as a primary source or a review article. You must also prepare a list of your references with working links to the full text or PDF of each article; this list must include at least the title of each article and it must label each article as a primary source or a review article. If you are inserting a link from GALILEO, you must use the permalink; other links from GALILEO will not work for the instructor. The main focus of the paper should be the three primary sources. It is expected that the student will critically discuss the three primary references.

Turnitin will be used to assess plagiarism. (Plagiarized papers will receive a score of 0.) No direct quotations, tables or figures from the sources are permitted in the paper. Your sources must be cited within the text using the Council of Science Editors "Name-Year" format, and a "Literature Cited" section must be prepared and added as a 9th page. Guidelines for citations are available online at https://writing.wisc.edu/handbook/documentation/doccse/nameyear/ . This resource is part of the University of Wisconsin-Madison Writer's Handbook. Please add the digital object identifier (DOI; https://www.doi.org/) at the end of each reference in the "Literature Cited" section whenever possible.

Below are the "due dates" for the different parts of this assignment:

Topic submission in BlazeView: Thurs. Jan. 18, 2 pm

Submission of references (PDF files) in BlazeView: Thurs. Feb. 8, 9 pm
Submission of list of references with working links: Thurs. Feb. 8, 9 pm

Submission of extended paper in BlazeView: Thurs. Mar. 21, 9 pm