
Biology Department, College of Arts & Sciences, Valdosta State University

SPRING 2014----1 3100/5100 Section A 10:00-11:25 am, 2068 Bailey Science Cer

TR 3100/5100 Section B 2:00-3:25 pm, 2068 Bailey Science Centre

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Instructor:	Dr. Jenifer Turco	Email:	jturco@valdosta.edu
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Office Hours:	Tues. 4:15-5:15 pm & Thurs. 12:30-1:30 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, genetics, biotechnology, medical applications, and applied microbiology. Two 1.5 hour laboratory periods per week.

Required 3

principles to issues, and they will produce viable solutions or make relevant inferences. The VSU General Education Outcomes (numbered 1-8) are available online at

Date	Topics/Lab Exercises	Related material in text
Thurs. Jan. 16	.....continued from the preceding page >PLEASE READ THE FOLLOWING BEFORE NEXT WEEK : LABORATORY SAFETY (Read handout & p.i-xvi in lab manual.) EX. 9, ASEPTIC TECHNIQUE SUPPL. EX., WINOGRADSKY COLUMN; EX	

Date	Topics/Lab Exercises	Related material in text
Thurs. Feb. 6L	……continued from preceding page >FINISH EX. 8, THE FUNGI (Fungi Study – Do NOT open fungal cultures in the lab. Open them only in the biological safety cabinet. You will use clear cellophane tape to prepare slides of two or more different molds. The instructor will demonstrate this procedure, which is described in the lab manual on p. 64. Examine the slides using the low power (10x) objective and the high dry (40x) objective. Draw the specimens on p. 65, part A2, or you may draw them in your lab notebook. Also record a description of the appearance of the fungal colonies. Answer the questions on p. 66.)	
Tues Feb. 11	Nutrition, culture, & metabolism of microorganisms	Chap. 4, 14, 13, 17 & 18
Tues Feb. 11L	REMEMBER TO BRING 2 TUBES WITH FRESH WATER SAMPLE FOR TODAY'S LAB. >EX. 59, BACTERIOLOGICAL EXAMINATION OF WATER (You will work in groups of 4 and use the fresh water collected in 2 sterile, 50 ml tubes for this exercise.) >EX. 10, PURE CULTURE TECHNIQUES, STREAK-PLATE METHOD ONLY Examine plates from Thursday. Hopefully, each group of 4 students will be able to decide today on an isolate to use for their general unknown. If you are looking at a streak plate prepared from a mixed isolated colony, pick a well-isolated colony and transfer it to a nutrient agar slant. This can be your group's general unknown culture; please label it clearly with "UNKNOWN", your lab section, and seat numbers. If your group has no plates that were prepared from well-isolated colo [(i)3(ck)8(aP3) tlo [(i>	

Date	Topics/Lab Exercises	Related material in text
Thurs. Feb. 20L	*Program #3, Metabolism*	Chap. 35 (p. 1007-1010); Chap. 15 (p. 425-427), & Chap. 23 (p. 693-695)
	>SUPPL. EX., USING RIBOSOMAL RNA GENE SEQUENCES TO LEARN ABOUT A MICROORG ANISM WORK SESSION ON DILUTION PROBLEMS ; ASK QUESTIONS ABOUT PROBLEMS	
	>>OPTIONAL: Hand in 3 stapled articles in a folder (formal articles from peer-reviewed, professional, scientific journals). These articles will be used to prepare your oral presentation. The instructor will provide feedback if you hand in the articles today; however, points will not be awarded until you submit the articles immediately after your oral presentation during lab.	
Tues. Feb. 25	MolecularMolecularMoleculfTd [-4(4.9oe a4.4 624.---2----------1(cl)3(es)6(f[])11(45(g)7(d)]TJ (n)5(ta2a	

Date	Topics/Lab Exercises	Related material in text
Tues. Mar. 4 L	……continued from preceding page >HAND IN SUPPL. EX., RIBOSOMAL RNA SEQUENCES (15 POINTS) >MONITOR WINOGRADSKY COLUMNS Work on lab report with your group.	
Thurs. Mar. 6	Viruses	Chap. 9 & 21
Thurs. Mar. 6 L	>EX. 31, ULTRAVIOLET LIGHT: LETHAL EFFECTS >FINISH SUPPL. EX., VARIOUS MEDIA -- Record results in the table provided with the exercise. ALSO, record results for your unknown in your notebook, and on the descriptive chart on p. 225. Consider the following question: Is the pattern of growth of your unknown on the selective media consistent with the results you obtained in the Gram stain? >EX. 16, SPORE STAINING (Modified Schaeffer-Fulton Method) On one slide prepare a smear of the *Bacillus* species provided as well as a separate smear of your unknown. Allow smears to air dry, and then heat fix them. Put on gloves, and try to be neat. (You are responsible for cleaning up any spills of malachite green.) Complete drawings/questions, p. 117-120. Record results for unknown culture in lab notebook and on the descriptive chart on p. 225.	
Tues. Mar. 11	Viruses	Chap. 9 & 21
Tues. Mar. 11 L	>FINISH EX. 31, ULTRAVIOLET LIGHT (Observe demonstration. Record results today or Thurs.; answer questions on p. 213-214.) >PREPARE NEW STOCKS OF GENERAL UNKNOWNS >EX. 38, CULTURAL CHARACTERISTICS (You will inoculate your unknown in/on the following:	

Date		Topics/Lab Exercises	Related material in text
Tues.	Mar. 25 L	……continued from preceding page >EX. 40, HYDROLYTIC/DEGRADATIVE REACTIONS (Modification: we will use tributyrin agar rather than spirit blue agar for the lipid hydrolysis test. On tributyrin agar, a clear zone around the bacterial growth indicates a positive test for lipid hydrolysis.) >DISCUSSION ON THE USE OF BERGEY'S MANUAL OF DETERMINATIVE BACTERIOLOGY BERGEY'S MANUAL OF DETERMINATIVE BACTERIOLOGY is on reserve in the library for your use. Do NOT use EX. 42 in the lab manual. >Do the following online exercise on your own: >MONITOR WINOGRADSKY COLUMNS	
Thurs.	Mar. 27	Genetic engineering & biotechnology (selected topics) Microbial genomics	Chap. 11 & 15 (p. 428-433) Chap. 12 & 22 (p. 656-658)
Thurs.	Mar. 27 L	>Finish EX. 39, OXIDATION/FERMENTATION TESTS (except Voges-Proskauer test) >Finish EX. 41, MULTIPLE TEST MEDIA (test for hydrogen sulfide production only) >Finish EX. 40, HYDROLYTIC/DEGRADATIVE REACTIONS (Recall that on tributyrin agar, a clear zone around the bacterial growth indicates a positive test for lipid hydrolysis.) Record results in lab notebook, and on descriptive chart on p. 255. Answer: questions 9 and 13 in part B on pages 283-284; matching sets 1-4 on pages 285-286. >DISCUSSION ON THE USE OF BERGEY'S MANUAL OF DETERMINATIVE BACTERIOLOGY BERGEY'S MANUAL OF DETERMINATIVE BACTERIOLOGY is on reserve in the library for your use. Do NOT use EX. 42 in the lab manual. Work on lab report on general unknown.	
Tues.	Apr. 1	Microbial evolution & systematics Microbial identification & clinical microbiology	Chap. 16 Chap. 31 (Fig. 31.1)
Tues.	Apr. 1 L	>*Program #9, Microbial Control* THIS IS THE LAST DAY FOR LAB WORK ON THE GENERAL UNKNOWN >EX. 39, OXIDATION & FERMENTATION TESTS; finish Voges Proskauer (VP) test >EX. 34, KIRBY-BAUER METHOD (ANTIBIOTICS) >EX. 35, EVALUATION OF ANTISEPTICS (PAPER DISK METHOD- this exercise will be slightly modified) >MONITOR WINOGRADSKY COLUMNS >Work on lab reports.	
Thurs	Apr. 3	>SUPPL. EX., *Staphylococcus aureus* (class work)	

Laboratory:
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complete) additional laboratory/student presentation periods will result in the loss of points as follows. Ten points will be deducted from the student's total points for the fourth missed (or incomplete) laboratory/student presentation period; 20 additional points will be deducted for the fifth missed (or incomplete) laboratory/student presentation period; 40 additional points will be deducted for the sixth missed/incomplete laboratory/student presentation period, and 50 additional points will be deducted for each subsequent missed/incomplete laboratory/student presentation period. Students who arrive late for lab or student oral presentation periods will be marked late. Coming late to lab or student presentation periods two times will be counted as one absence. A student with more than 6 missed or incomplete laboratory/student presentation periods will not pass the course. There will be no makeups for the laboratory exercises

Examinations Given During Class Periods:

1. Examinations 1-4 will cover material presented during both the class and laboratory portions of the course. The first three exams will be worth 100 points each. The final exam will be worth 100 points. Examinations will begin promptly at the times and dates indicated on the class schedule. The final examination will be comprehensive in that it will include material covered throughout the course. Exams 2 and 3 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, short-answer, and essay formats. 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 will not be given. Make-up examinations may consist entirely of questions of the short answer and essay format. Make-up examinations for exams 1, 2, and 3 will be worth 150 points rather than 100 points each.
2. Students must bring TWO #2 PENCILS AND ERASERS to all examinations. The instructor will not provide pencils. Unless otherwise noted, students may NOT use calculators or cell phones during examinations.