CRN: 30140 Instructor: Pendley Course Biology 220 (Microbiology) Room 2712 SUMMER 2022
Time 8:15- 10:25 , 10:35- 03:00 pendley@imperial.edu

Provides students with fundamental concepts of the structure and physiology of non-disease and disease producing microorganisms with particular attention to bacteria. Basic techniques for culturing,
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Course Description Provides students with fundamental concepts of the structure and physiology of non-disease and disease producing microorganisms with particular attention to bacteria. Basic techniques for culturing, staining, counting and identifying microorganisms. Designed to meet the requirement to enter one of the medical fields as well as general education. (CSU, UC)

Student Learning Outcomes Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to: 1. accurately explain the basic principles of microbiology, which include but are not limited to: structure and functions of prokaryotic and eukaryotic cells, microbial metabolism, bacterial/molecular genetics, pathogenesis, virology, and immunology. (ILO1, ILO2) 2. devise a dichotomous key to aid in the identification of disease-causing bacteria in the lab, and accurately identify disease-causing bacteria by using the key and experimental techniques. (ILO1, ILO2) 3. perform experimental techniques in microbiology correctly to test hypotheses, determine characteristics of microbes and perform diagnostics. (ILO2) 4. apply lecture and laboratory concepts with critical thinking to explain experimental data and scenarios in microbiology not addresses directly in class/laboratory. (ILO1, ILO2) 5. fully participate in classroom and laboratory activities. (ILO3) Course Objectives Upon satisfactory completion of the course, students will be able to: 1. The student will list and describe the major historical events in the field of microbiology and the people and experiments involved.

The student will also describe different schemes of classification and utilize them to classify and identify microorganisms. 2. The student will describe different types of microscopy, their usage, advantages, and explain the general Imperial Valley College Course Syllabus –Course Title and number physical laws governing their operation. 3. The student will describe the general morphology of microorganisms and explain their associated cellular physiology. 4. The student will recognize and apply various techniques and factors necessary for optimum growth of different microorganisms. 5. The student will describe different modes of reproduction among microorganisms and calculate reproduction rates and population size of microorganisms. Student will differentiate

among methods of producing pure cultures and describe cultural characteristics of microorganisms. 6. The student will describe enzyme structure and explain enzyme function, regulation, and measurement of activity. 7. The student will describe and explain the various biochemical reactions and pathways of metabolism. 8. The student will describe the various means of inheritance and recombination in microorganisms and explain the results of various genetic situations. The student will describe technique of recombinant DNA. 9. The student will describe death and death-rate determination in microorganisms and explain the effects of various physical and chemical agents on microorganisms. 10. The student will describe chemotherapeutics including antibiotics and will explain the action of antibiotics in microorganisms including measurement of activity. 11. The student will describe the normal microbial flora of the human and explain the infection process and the host's defensive response. 12. The student will explain the theory of common diagnostic techniques and describe their usage. 13. The student will describe the epidemiology and the various modes of transmission of infectious diseases. 14. The student will list and describe the bacterial cause, symptoms, prognosis, and treatment of selected human diseases. 15. The student will list and describe the viral prion cause, symptoms, prognosis, and treatment of selected human diseases. 16. The student will list and describe the fungal or protozoan cause, symptoms, prognosis, and treatment of selected human diseases. 17. The student will list and describe the viral or bacterial cause, symptoms, prognosis, and treatment of selected plant diseases. Textbooks & Other Resources Required Texts 1. Microbiology, An Introduction. By Totora, Funke and Case; (13thEdition) Pearson -Cummings ISBN # 13: 978-0-321-73360-3 2. Lab Manual: Microbioloy, Laboratory Theory and Application (Brief Edition) 2 ndEdition Morton Publishing.ISBN# 089582947-9 Course Requirements and Instructional Methods This course includes both lecture and lab component. In order to pass the class you need to participate in both portions of the class which includes regular attendance and participation in both lecture and lab. In addition to all the exams you must take the final exam to receive a passing grade. Out of Class Assignments: The Department of Education policy states that one (1) credit hour isthe amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement. Course Grading Based on Course Objectives Your grade is based on the cumulative points you get in both lecture and lab exams. You are expected to keep track of your progress during the course

SCHEDULE

WK	DATE	LECTURE	LABORATORY
1	6-20	Intro, Red-tape, Expectations, etc. CHP 1	Ex. 2.1, 3.1
	6-21	Chp 2,3	Ex. 3.1, 1.4, 1.5
	6-22	Chp. 4	Ex. 2.2 , 2.6
	6-23	Chp. 5 , (Test #1 Chp1-4)	Ex. 3.4, 3.6
2	6-27	Chp. 6	Ex. 3.7, 3.8, 3.9
	6-28	Chp. 7	Ex. 3.12 Minor unk Given
	6-29	Chp.8	Ex. 4.3, 4.5
	6-30	Chp. 9 , Test#2 Chp. 5-8)	Ex. 5.2, 5.3, 5.6
3	7-4	HOLIDAY 4th of July	HOLIDAY
	7-5	Chp. 10	Ex. 5.7, 5.10, 5.14
	7-6	Chp.11	Ex. 5.18, 5.19
	7-7	Chp. 12	Minor Unk. Due 2:30
4	7-11	Chp. 13	Major unknown Given
	7-12	Chp. 14	Major Unknown =day 1
	7-13	TEST 3 (9-13)	"
	7-14	Chp. 15	"
5	7-18	Chp. 16, 17	"
	7-19	Chp. 18,19	"
	7-20	Chp. 20	Ex. 7.3 Kirby Bauer
	7-21	Test 4 (Chp. 14-19)	Ex. 7.2 MMWR
6	7-25	Chp. 21, 24	Finish slides for scores DUE on Wed
	7-26	Chp. 25	Finish Lecture, FINAL on Thursday
	7-27	Chp. 26	**MAJOR UNKNOWN DUE 2:30 Report and Slides also Due 2:30**
	7-28	CLEANUP	**END of CLASS**
