COURSE NUMBER AND TITLE:
BIOL 2320 Microbiology for Non-Science Majors (lecture)

COURSE (CATALOG) DESCRIPTION:
Study of the morphology, physiology, and taxonomy of representative groups of pathogenic and nonpathogenic microorganisms. Pure cultures of microorganisms grown on selected media are used in learning lab techniques. Includes a brief preview of food microbes, public health and immunology.

Prerequisite: CHEM 1311 General Chemistry I (lecture) and CHEM 1111 General Chemistry I Laboratory or CHEM 1411.

Plus one of the following biology sequences for majors:

BIOL 1306 Biology for Science Majors I (lecture) and BIOL 1106 Biology for Science Majors I Laboratory; and BIOL 1307 Biology for Science Majors II and BIOL 1107 Biology for Science Majors II Lab; or BIOL 1406 and BIOL 1407 or

BIOL 1311 General Botany (lecture) and BIOL 1111 General Botany Laboratory; and BIOL 1313 General Zoology and BIOL 1113 General Zoology Laboratory; or BIOL 1411 and BIOL 1413.

Corequisite: BIOL 2121 Microbiology for Science Majors Laboratory (lab)

Instructor: Charles Castillo
Office: U-152
Office Hours: MWF 9:00-10:00 TTH 10:00-11:00
Contact Information: 364-4722 charles.castillo@harlignen.tstc.edu

MAJOR COURSE REQUIREMENTS:
A. A Brief History of Microbiology
B. Cell Structure and Function
C. Microscopy, Staining and Classification
D. Microbial Metabolism
E. Microbial Nutrition and Growth
F. Microbial Genetics
G. Controlling Microbial Growth in the Environment
H. Controlling Microbial Growth in the Body
I. Characterizing and Classifying Prokaryotes
LEARNING OUTCOMES:
Upon successful completion of this course, students will:

1. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
2. Identify unique structures, capabilities, and genetic information flow of microorganisms.
3. Compare the life cycles and structures of different types of viruses.
4. Discuss how microscopy has revealed the structure and function of microorganisms.
5. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
6. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
7. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.
8. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.

CORE OBJECTIVES
1. Critical Thinking – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. Communication Skills – to include effective development, interpretation and expression of ideas through written, oral and visual communication
3. Empirical and Quantitative Skills – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
4. Teamwork – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
### Tentative Schedule (Subject to change by your instructor)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Topic/Lecture/Event</th>
<th>Resources to View &amp; Measurable Activities</th>
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| 1    | Chapters 1 A Brief History of Microbiology  
Chapter 2 Cell Structure and Function  
Chapter 3 Microscopy, Staining, and Classification | Exam 1  
LO 1, 2, 4 and 6  
CO 1, 2, 3 and 4 |
| 2    | Chapter 11 Characterizing and Classifying Prokaryotes  
Chapter 12 Characterizing and Classifying Eukaryotes  
Chapter 13 Characterizing and Classifying Viruses, Viroids, and Prions | Exam 2  
LO 8  
CO 1, 2 and 3 |
| 3    | Chapter 5 Microbial Metabolism  
Chapter 6 Microbial Nutrition and Growth | Exam 3  
LO 5  
CO 1, 2 and 3 |
| 4    | Chapter 9 Controlling Microbial Growth in the Environment  
Chapter 10 Controlling Microbial Growth in the Body: Antimicrobial Drugs | Exam 4  
LO 7  
CO 1, 2 and 3 |
| 5    | Chapter 14 Infection, Infectious Diseases, and Epidemiology  
Chapter 15 Innate Immunity  
Chapter 16 Adaptive Immunity | Exam 5  
LO 7  
CO 1 and 2 |

### REQUIRED TEXT AND MATERIALS:

### GRADING CRITERIA:  (75% Exams, 25% Paper)
5 lecture exams  
1 paper
GRADING SCALE:
90-100............A
80-89............B
70-79............C
60-69............D
50-59............F

CLASS POLICIES:
No eating, drinking, or smoking in lecture. Cellular phone usage will not be permitted, as it is very intrusive to the instructor and class.

REQUIREMENTS:
Students must attend every lecture period. Students must be on time for lecture, as it will begin at the designated start time. It is the student’s responsibility to acquire any notes, handouts, quizzes, announcements, etc., given during a day of absence. Assignments will be posted to Moodle for students to complete.

TESTS:
Lecture exams can be made up if a valid documented excuse is given. Documentation will be reviewed for acceptance by the instructor. The exam must be made up within a week of the original exam date.

COPYRIGHT STATEMENT:
The materials used in the course [textbooks, handouts, media files (podcast, MP3, Videos, RSS (Feeds), and all instructional resources on the colleges Learning Management System (Moodle)] are intended for use only by students registered and enrolled in this course and are only to be used for instructional use, activities associated with, and for the duration of the course. All materials generated for this course, which includes but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and any additional materials. These materials may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the Teach Act. These materials may not be reproduced, displayed, modified or distributed without the express prior written permission of the copyright holder or TSTC. For further information contact your instructor.

COMMUNICATION: (MyMail E-mail System)
All official college E-mail to students is sent through MyMail, the official student e-mail system at TSTC Harlingen. When communicating with instructors and/or employees of the college, you are required to use your TSTC MyMail student e-mail address. If you choose to forward your e-mail to another account, please be advised that you must respond from the MyMail account.

TSTC Harlingen faculty, staff, and students are asked to report all threats, perceived or real, immediately to College Police located in the Auxiliary Building. If the threat is imminent, the College Police emergency phone line at 364-4234 or 9-911 should be called. College Police will then coordinate the proper response in accordance with State and federal laws and TSTC System/College rules and regulations.
**TUTORING STATEMENT:** The Supplemental Instruction & Tutoring Program at TSTC offers free tutoring and academic support services to help you achieve your academic and career goals. You can access the most up-to-date Supplemental Instruction & Tutoring Schedule, as well as *MyTSTC Video Tutor Library*, by using your smart phone to scan over the QR code below or visiting our webpage at: [http://www.tstc.edu/harlingenoss/situtoringprogram](http://www.tstc.edu/harlingenoss/situtoringprogram)

For more information, please contact the Office of Student Success at 956.364.4163 or the Supplemental Instruction & Tutoring Program at 956.364.4170.

**ACCOMMODATION STATEMENT:** If you have a documented disability which will make it difficult for you to carry out classwork as outlined and/or if you need special accommodations due to a disability, please contact (956) 364-4520 or visit the Support Services Office in the Consolidated Student Service Center as soon as possible to make appropriate arrangements.