

9/13/2022 DATE

 REQUIRED COURSE  
 ELECTIVE COURSE

 MSD DIVISION  
 NEW COURSE  
 REVISION

## Lake Land College

### Course Information Form

COURSE NUMBER:		BIO-235		TITLE: (30 Characters Max)		Microbiology					
SEM CR HRS:	4	Lecture:		3	Lab:	3	SOE/ Internship:		0	ECH:	6
Course Level:	<input type="checkbox"/> Gen Ed / IAI <input checked="" type="checkbox"/> Baccalaureate /Non-IAI		<input type="checkbox"/> Career/Technical <input type="checkbox"/> Dev Ed/ Not in Degree Audit		Clinical Practicum:	0	SOE/ Internship:		0	SOE ECH:	0
COURSE PCS #	11 - 26.0502		IAI Code				Contact Hours (Minutes Per Week)				
Repeatable (Y/N):	N	Pass/Fail (Y/N):	N	Variable Credit (Y/N):	N	Min:	Max:	16 Wks	300	8 wks	600
Prerequisites:	BIO-100 or consent of the instructor										
Catalog Description: (40 Word Limit)	This course covers a survey of microorganisms with detailed study of the biology, metabolism, growth, death, genetics and methods of differentiation of bacteria. Also classification, control of organisms by physical and chemical methods, immunology and diseases are covered.										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Non-Clinical Internship/ SOE
Introduction to Microbiology: History, Microscope and Taxonomy	3	2		
Survey of Microorganisms – Protozoans, Fungi and Viruses	11	2		
Bacteria: Morphology, Reproduction, Growth and Death. Staining Techniques and Pure Culture Techniques	9	17		
Major Groups of Bacteria, Metabolism, and Genetics	8	20		
Control of Microorganisms by Physical and Chemical Agents and Antibiotics	8	4		
Microorganisms and Disease and Immunity	6			
<b>TOTAL</b>	<b>45</b>	<b>45</b>	<b>0</b>	<b>0</b>

#### EVALUATION

QUIZZES	<input checked="" type="checkbox"/>	EXAMS	<input checked="" type="checkbox"/>	ORAL PRES	<input type="checkbox"/>	PAPERS	<input checked="" type="checkbox"/>
LAB WORK	<input checked="" type="checkbox"/>	PROJECTS	<input type="checkbox"/>	COMP FINAL	<input type="checkbox"/>	OTHER	<input type="checkbox"/>

#### COURSE MATERIALS

TITLE:	Tolaro's Foundations in Microbiology
AUTHOR:	Barry Chess
PUBLISHER:	McGraw Hill
VOLUME/EDITION/URL:	11th
COPYRIGHT DATE:	2021

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		<i>The student will be able to:</i>
Unit 1		
Introduction	4	Learn the significance of microbiology and the use of microscopes.
Protozoa	2	Recognize unique identifying characteristics, classification, and medical significance of microbial protozoa.
Microbial Fungi	6	Recognize unique identifying characteristics, classification and medical significance of microbial fungi.
Viruses	6	Recognize unique identifying characteristics, classification and medical significance of viruses.
Unit 2		

Bacteria	16	Students will demonstrate the general characteristics and cellular structure of bacteria.
Bacterial Growth	10	Students will learn the physical and chemical requirements that promote microbial growth; as well as the measurement of microbial growth rates.
<b>Unit 3</b>		
Photosynthesis/Respiration	1	Summarize the basic components of photosynthesis as well as aerobic and anaerobic respiration.
Identification	21	Student will learn microbial metabolism and its significance to the identification of bacteria.
Medical Significance of Bacteria	5	Students shall describe assorted bacterial diseases and their corresponding causative agents.
Microbial Genetics	1	Students will learn about microbial genetics including transformation and conjugation.
<b>Unit 4</b>		
Microbial Control	1	Students shall relate the various factors which influence microbial control to the types of microbial cellular injury they cause.
Physical Control	3	Students shall recognize the physical methods of controlling microbial populations and under which conditions this method is suitable.
Chemical Control	4	Students shall recognize the chemical methods of controlling microbial populations and under which conditions this method is suitable.
Antimicrobial Agents/antibiotics	4	Students will learn the history, mode of action, the use and evaluation of antimicrobial agents and the consequent development of microbial resistance to some of these agents.
<b>Unit 5</b>		
Normal Flora	1	Recognize the symbiotic relationships between microorganisms and the human body.
Diseases	1	Students will learn the factors that determine the establishment and transmission of diseases and associated bacterial toxins.
First Line of Defense	1	Identify the natural physical and chemical barriers of the human body that prevent the entry of disease causing pathogens

Second Line of Defense	1	Students will learn the roles of leucocytes, inflammation, fever, and chemical inhibitors in controlling the spread of pathogens and toxins.
Third Line of Defense	2	Students will learn the processes of cell-mediated and humoral immunity in controlling and destroying the presence of pathogens and toxins.
90		

COURSE OUTCOMES*	At the successful completion of this course, students will be able to:
	<ul style="list-style-type: none"> <li>• Understand basic characteristics of each microorganism discussed (fungi, protozoan, bacteria and virus).</li> </ul>
	<ul style="list-style-type: none"> <li>• Utilize laboratory equipment, media and demonstrate aseptic technique.</li> </ul>
	<ul style="list-style-type: none"> <li>• Utilize laboratory data, symptoms and etiology to distinguish the causative agent for human diseases</li> </ul>
	<ul style="list-style-type: none"> <li>• Understand effective mechanisms used to control the growth and spread of microbes</li> </ul>
	<ul style="list-style-type: none"> <li>• Understand the body's natural defense mechanisms</li> </ul>

\* Course Outcomes will be used in the Assessment Software for Outcomes Assessment. Limit to 3 - 5.