Microbiology for the Health Sciences
BIOL 206

Instructor: Dr. Frank T. Kuserk
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Office Hours: MWF 10:00 AM - 11:00 AM or by appointment

Lecture Classroom: 335 Pricilla Payne Hurd Academic Complex
MWF 2 (9:10 AM-10:00 AM)

Laboratory: 300 Collier Hall of Science
L-A: 12:45 PM-2:15 PM
L-B: 2:15 PM-3:45 PM

Course Description: Microbiology involves the study of microorganisms, literally those organisms such as bacteria, viruses, fungi, algae and protozoa that are too small to be seen clearly by the naked eye. This, however, would be a monumental task to perform within the time limits of one semester. Therefore, we will primarily restrict ourselves to the study of bacteria and viruses during this course. Even then, we will only be able to scratch the surface. Broad in its scope, this course will introduce you to the taxonomy, evolution, morphology, physiology, ecology and behavior of microorganisms. We will pay particular attention to the nature of infectious organisms in causing disease and how the human body fights these foreign invaders. I hope that you will find our journey exciting!

Course Objectives: Upon completion of this course students will be able to demonstrate:

1) Knowledge of basic concepts in microbiology, including understanding the dynamic nature of host-microbe interactions in causing infectious disease and the importance of host defenses in the disease process
2) Ability to make a scientific argument & support it with appropriate examples or scientific justification
3) Knowledge of and ability to apply the scientific process
4) Ability to find, evaluate, & use published scientific information
5) Ability to objectively analyze and interpret data and to use other qualitative and quantitative microbiological techniques
6) Competence in scientific writing and oral communication
7) Ability to work together in teams
8) Ability to integrate concepts within and among disciplines of science
9) Understanding of the relevance of microbiology to society

Required Texts: Talaro, Kathleen Park. 2009. *Foundations in Microbiology* (7th edition). McGraw-Hill, Boston.

Pierce, Burton E. and Michael J. Leboffe. 2005. *Exercises for the Microbiology Laboratory* (3rd edition). Morton Publishing Co., Englewood, CO.

Grading: The grading system is as follows:

A	=	93-100	C	=	73-76
A-	=	90-92	C-	=	70-72
B+	=	87-89	D+	=	67-69
B	=	83-86	D	=	63-66
B-	=	80-82	D-	=	60-62
C+	=	77-79	F	=	59 and below

Lecture Exam 1	100 points
Lecture Exam 2	100 points
Lecture Exam 3	100 points
Lecture Exam 4 (Final Exam)	100 points
Project & Report	100 points
Laboratory Question Sheets	100 points
Laboratory Midterm Exam	50 points
Laboratory Final Exam	50 points
Laboratory Attendance	100 points
	800 points

It is within the instructor's purview to apply qualitative judgment in determining grades for an assignment or for the course.

Class Attendance: It has been my experience that students who do poorly in this course usually have numerous absences. I strongly suggest that you attend and participate in all lecture sessions unless you have a valid reason not to. I will not specifically maintain lecture attendance records. However, if I detect that you have excessive absences or are habitually tardy I will speak with you in private. **An absence on an examination day will require either prior permission or a suitable excuse from the health center or Dean of Students Office before a make-up is given.**

Laboratory sessions, because they involve hands-on experiences that cannot be mastered effectively without performing them, are especially critical to gaining an understanding of basic concepts and techniques and are not excusable. Therefore, I will keep a record of your laboratory attendance. Each lab session is worth 4 points so you can miss two sessions and still earn 100 points. You can earn a bonus of 4 points by attending each of the remaining two sessions.

Disability Accommodations: Students who wish to request accommodations in this class for a disability should contact Mr. Joe Kempfer, Assistant Director of Learning Services for Disability Support, 1307 Main Street (extension 1510). Accommodations cannot be provided until authorization is received from the office of Learning Services.

Academic Honesty: Moravian College's policies on academic honesty and disruptive course-related student behavior can be found in the Student Handbook. It is assumed that each of you has read and understands these policies and the consequences of violating them.

Microbiology for the Health Sciences
Lecture Schedule
Spring 2009

Day & Date			Topic	Talaro Chapter
M	Jan.	19	The Main Themes of Microbiology	1
W		21	The Main Themes of Microbiology	1
F		23	Procaryotic Cell Structure & Function	4
M		26	Procaryotic Cell Structure & Function	4
W		28	Eucaryotic Cells & Microorganisms	5
F		30	Eucaryotic Cells & Microorganisms	5
M	Feb.	02	Introduction to Viruses	6
W		04	Introduction to Viruses	6
F		06	Introduction to Viruses	6
M		09	Review Session	1, 2*, 4, 5, 6
W		**11**	**Exam 1**	**1, 2, 4, 5, 6**
F		13	Microbial Nutrition, Ecology & Growth	7
M		16	Microbial Nutrition, Ecology & Growth	7
W		18	Microbial Control: Physical Methods	11
F		20	Microbial Control: Chemical Methods	11
M		23	Microbial Control: Chemical Methods	11
W		25	Chemotherapy	12
F		27	Chemotherapy	12
M	Mar.	02	No Class-Spring Break	
W		04	No Class-Spring Break	
F		06	No Class-Spring Break	
M		09	Chemotherapy	12
W		**11**	**Exam 2**	**7, 11, 12**
F		13	Infection & Disease	13
M		16	Infection & Disease	13
W		18	Epidemiology	13
F		20	Epidemiology	13
M		23	Host Defenses	14
W		25	Host Defenses	14
F		27	Specific Immunity & Immunization	15
M		30	Specific Immunity & Immunization	15
W	Apr.	01	Specific Immunity & Immunization	15
F		**03**	**Exam 3**	**13, 14, 15**
M		06	Cocci of Medical Importance	18
W		**08**	Gram-Positive Bacilli of Med. Importance	19
F		10	No Class-Easter Break	
M		13	No Class-Easter Break	
W		15	Gram-Negative Bacilli of Med. Importance	20
F		17	Gram-Negative Bacilli of Med. Importance	20
M		20	Miscellaneous Bacterial Diseases	21
W		22	Miscellaneous Bacterial Diseases	21
F		24	DNA Viral Diseases	24
M		27	DNA Viral Diseases	24
W		29	RNA Viral Diseases	25

F	May	01	RNA Viral Diseases	25

Final Exam: Date, time & place to be announced 18, 19, 20, 21, 24, 25

Microbiology for the Health Sciences
Laboratory Schedule

Spring 2009

Date		Laboratory Exercise
W	Jan. 21	Set up: Exercise 1-1 (Nutrient Agar & Nutrient Broth Preparation) Introduction to Safety and Laboratory Guidelines
F	Jan. 23	Read: Exercise 1-1 Set up: Exercise 1-2 (Common Aseptic Transfers and Inoculation Methods) Exercise 2-1 (Ubiquity of Microorganisms)
W	Jan. 28	Read: Exercises 1-2, 2-1 Exercise 3-1 (Introduction to the Light Microscope) Do: Exercise 3-2 (Calibration of the Ocular Micrometer) Exercise 3-3 (Examination of Eukaryotic Microbes) Assignment: Talaro, Chapter 3
F	Jan. 30	Do: Exercise 2-2 (Colony Morphology) Exercise 3-4 (Simple Stains)
W	Feb. 04	Do: Exercise 3-6 (Gram Stain)
F	Feb. 06	Do: Exercise 3-7 (Acid-Fast Stains) Exercise 3-8 (Capsule Stain) Exercise 3-9 (Endospore Stain) Examination of Bacterial Flagella
W	Feb. 11	Set up: Exercise 2-5 (Evaluation of Media) Exercise 2-9 (Anaerobic Jar) Exercise 2-10 (Effect of Temperature on Growth) Exercise 2-12 (The Effect of Osmotic Pressure on Growth)
F	Feb. 13	Read: Exercises 2-5, 2-9, 2-10, 2-12
W	Feb. 18	Set up: Exercise 4-1 (Mannitol Salt Agar) Exercise 4-2 (Phenylethyl Alcohol Agar) Exercise 4-3 (Desoxycholate Agar) Exercise 4-4 (Endo Agar) Exercise 4-5 (Eosin Methylene Blue Agar) Exercise 4-6 (MacConkey Agar) Exercise 4-7 (Hektoen Enteric Agar) Exercise 4-8 (Xylose Lysine Desoxycholate Agar)
F	Feb. 20	Read: Exercises 4-1, 4-2, 4-3, 4-4, 4-5, 4-6, 4-7, 4-8
W	Feb. 25	Review for Laboratory Mid-term Exam
F	**Feb. 27**	**Laboratory Mid-Term Exam**

W	Mar. 04	No Lab-Spring Break
F	Mar. 06	No Lab-Spring Break
W	Mar. 11	Set up: Exercise 5-2 (Phenol Red Broth) Exercise 5-4 (Methyl Red and Voges-Proskauer Tests) Exercise 5-5 (Catalase Test) Exercise 5-6 (Oxidase Test) Exercise 5-7 (Nitrate Reduction Test) Exercise 5-8 (Citrate Test) Exercise 5-10 (Decarboxylation Test) Exercise 5-11 (Phenylalanine Deaminase Test)
F	Mar. 13	Read: Exercises 5-2, 5-4, 5-5, 5-6, 5-7, 5-8, 5-10, 5-11
W	Mar. 18	Set up: Exercise 5-13 (Starch Hydrolysis) Exercise 5-14 (Urease Tests) Exercise 5-15 (Casease Test) Exercise 5-16 (Gelatinase Test) Exercise 5-19 (SIM Medium) Exercise 5-20 (Triple Sugar Iron Agar)
F	Mar. 20	Read: Exercises 5-13, 5-14, 5-15, 5-16, 5-19, 5-20
W	Mar. 25	Set up: Exercise 5-25 (Blood Agar) Exercise 5-26 (Coagulase Tests) Exercise 5-27 (Motility Test) Exercise 5-28 (Bacterial Unknowns Project: Enterotube II)
F	Mar. 27	Read: Exercises 5-25, 5-26, 5-27, 5-28
W	Apr. 01	Set up: Exercise 6-1 (Standard Plate Count) Do: Exercise 6-3 (Direct Count)
F	Apr. 03	Read: Exercise 6-1
W	Apr. 08	Instructions for Epidemiology Project: CDC's MMWR
F	Apr. 10	No Lab-Easter Break
W	Apr. 15	Set up: Exercise 2-14 (Measuring Disinfectant Effectiveness) Exercise 2-15 (Antimicrobial Susceptibility Test)
F	Apr. 17	Read: Exercises 2-14. 2-15
W	Apr. 22	Set up: Exercise 7-1 (Membrane Filter Technique) Exercise 7-9 (Snyder Test)

F	Apr. 24	Read: Exercises 7-1, 7-9 Epidemiology Project Due
W	Apr. 29	Review for Laboratory Final Exam Laboratory Cleanup & Checkout
F	**May 01**	**Laboratory Final Exam**