Biology 206: Microbiology for the Health Sciences
Spring 2012

Instructor: Dr. Heather B. Felise

Classrooms: Lecture – Collier Hall of Science Room 202
Lab – Collier Hall of Science Room 300
Time: Lecture - MWF 8:55 – 9:45am
Lab – Lab – WF 1:15-2:45pm (section LA) ***OR*** WF 2:45 – 4:15pm (section LB)

Office: Hall of Science Room 323
Office Hours: Mondays 1-3pm, Tuesdays 11am – 12pm, Thursdays 10 – 11am or by appointment
Phone: 610-861-1428
Email: feliseh@moravian.edu

Required Textbook: *Microbiology: A Human Perspective 7th Edition*, by Eugene W. Nester, Denise G. Anderson and C. Evans Roberts, Jr. and Martha T. Nester, McGraw-Hill Higher Education, 2012.

Required Lab Manual: *Microbiology Experiments: A Health Science Perspective 7th Edition*, by John Kleyn, Mary Bicknell and Anna Oller, McGraw-Hill Higher Education, 2012.

COURSE DESCRIPTION: This course serves as an introduction to microbiology (the study of organisms too small to be seen with the naked eye), with a focus on microbes in the field of biology, such as their unique metabolic and organismal diversity, as well as their role in human health. We will investigate the mechanisms used by humans, to ward of infectious diseases and the pathogenesis, immune invasion, and mechanisms of toxin action of microbial pathogens, particularly bacteria and viruses. Although microbiology is a rapidly expanding field, too broad to be completely covered in a single semester course, I hope that you will leave with an appreciation and enthusiasm for the breadth of microorganisms that exist and the critical role they play in our health.

COURSE OJECTIVES:
By the end of this course students should have mastered content in the following areas:

- Function of prokaryotic cell structures in comparison to those found in eukaryotes
- Mechanisms involved in energy flow and transformation
- Fundamental principles of prokaryotic genetics
- Range of biological diversity in the microbial world
- Methods of microbial control
- Role of microbes in food production
- Immunology
- Microbial diseases

By the end of this course students will have had the opportunity to:

- Use qualitative and quantitative microbial techniques
- Objectively analyze and interpret data
- Apply means by which scientists ask and answer questions
- Practice scientific writing and oral communication
- Work together on collaborative projects

LECTURE:
Lecture exams: There will be four exams, each worth 75 points, given during the designated lecture sessions (Please see the attached course schedule). The 5th exam will be given during the final exam period and ***will NOT be cumulative***. It too will be worth 75 points. In the event of special needs (such as medical excuse or family emergency), arrangements for taking a make-up exam must be made in advance and documentation for the absence, e.g. a doctor's note, is required. If there is an emergency please contact me ASAP. ***Make-up exams may be oral*** and will be given at a time I deem appropriate.

LAB:
Attendance: Attendance in the laboratory is mandatory and you should assume each lab will take the entire class period. Due to the nature of the experiments, ***there will be no make-up labs***. You are expected to read the assigned lab exercises ***prior*** to coming to lab. This includes assigned sections of the lab manual. ***It is my experience that students who do not attend and actively participate in laboratory exercises, do not do well in this course***.

Safety: Close-toed shoes are required - that means no flip-flops or sandals! If you wear inappropriate footwear, you ***will not be allowed to stay in lab***. Protective lab coats will be provided and ***their use is mandatory***. Additional safety information will be provided in the laboratory.

Lab reports: The lab reports will consist of the exercises found in the laboratory manual and will include all data, as well as answering questions at the end of the exercise. They are due at the ***beginning of the lab period following completion of the experiment*** (Please see attached laboratory schedule). Due to copyright laws, please use and submit the sheets from the lab notebook. Lab reports will be worth 10 points each, unless otherwise noted by the instructor.

Quizzes: In order to encourage attendance and preparedness for lab, ***4 quizzes, each worth 20 points***, will be given during the designated laboratory sessions (Please see attached course schedule). These quizzes will be given at the beginning of the lab period and will assess basic information about lab exercises either to be performed that day or recently completed. You will have the first 15 minutes of the laboratory period to take the quiz; if you are late to class your quiz will be due when the rest of the class finishes with their quiz.

Practicum: The laboratory practical exam will be based on experiments done in class and will include specimen slides under the microscope, cultures on specific growth media and identification of biochemical reactions. In other words, anything done in the lab may show up on this exam. You may not use your notes or lab manual for the exam.

GRADING: The final grade in the course will be based upon the following items:
Lecture: (50% of Final Grade)

- Lecture Exams 1-5 (5 x 75 points each) 375 pts.
- Classroom Attendance and Participation 25 pts.

Laboratory: (50% of Final Grade)

- Laboratory Reports/Exercises 170 pts.
- Laboratory Practicum 100 pts.
- Laboratory Quizzes 80 pts.
- Laboratory Unknown 30 pts.
- Laboratory Attendance and Participation 20 pts.

BLACKBOARD: All information, including announcements, lecture slides and study guides, associated with this course will be posted on Blackboard. You must register for this course on Blackboard the first week of class. Your opportunity to register will ***expire*** on Monday, January 30th. For instructions visit the following website: http://home.moravian.edu/public/cit/_help/blackboard/bbstudent.asp. The course ID is BIO206.SP12 and the enrollment code is "microbiology". When registering, ***please use the email account where you would like to receive course notifications***.

CLASS POLICIES:
Cell phones: Turn all cell phones OFF before class! No calls or texting during class. If you are observed texting during class you will be asked to leave the classroom.

Academic Integrity*:** I expect all class members to adhere to the Moravian College policy on academic honesty (please see ***Student Handbook). If dishonesty is observed on a student's exam, a course grade of an F will be assigned for the class and the individual will not be allowed to withdrawal from the course. If dishonesty is observed on an assignment, the student will receive a zero for that assignment.

***Disability Support*:** 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.

BIO206 TENATIVE COURSE SCHEDULE

DATE	DAY	LECTURE TOPIC	BACKGROUND READING
1/16	M	Introduction: Humans and the Microbial World	Chapter 1
1/18	W	Microscopy and Prokaryotic Cell Structure	Chapter 3
1/20	F	Cell Structure	Chapter 3
1/23	M	Dynamics of Prokaryotic Growth	Chapter 4
1/25	W	Microbial Metabolism: Fueling Cell Growth	Chapter 6
1/27	F	Metabolism	Chapter 6
1/30	M	Metabolism	Chapter 6
2/1	W	Microbial Diversity	
2/3	**F**	**EXAM I**	**Chapters 1, 3, 4, & 6**
2/6	M	The Blueprint of Life: From DNA to Protein	Chapter 7
2/8	W	The Blueprint of Life: From DNA to Protein	Chapter 7
2/10	F	Bacterial Genetics: Mutations	Chapter 8.1-8.5
2/13	M	Viruses	Chapter 13
2/15	W	Viruses	Chapter 13
2/17	F	Bacterial Genetics: Horizontal Gene Transfer	Chapter 8.6-8.9; 13.3
2/20	M	Recombinant DNA and Biotechnology	Chapter 9
2/22	**W**	**EXAM II**	**Chapters 7, 8, 13 & 9**
2/24	F	The Immune System: Innate Host Defenses	Chapter 14
2/27	M	The Immune System: Innate Host Defenses	Chapter 14
2/29	W	The Immune System: Adaptive Defenses	Chapter 15
3/2	F	The Immune System: Adaptive Defenses	Chapter 15
3/5-3/9	**M, W, F**	**NO LECTURES (Spring Recess)**	
3/12	M	The Immune System: Adaptive Defenses	Chapter 15
3/14	W	Applications of Immunology	Chapter 18
3/16	F	Applications of Immunology	Chapter 18
3/19	**M**	**EXAM III**	**Chapters 14, 15 & 18**
3/21	W	Host-Microbe Interactions	Chapter 16 Chapter 22 (p. 521-529; p.549-554)
3/23	F	*Staphylococcus* and *Streptococcus* species	Chapter 21 (p. 483-490)
3/26	M	Respiratory System Infections	Chapter 21 (p. 494-507)
3/28	W	Intestinal Pathogens	Chapter 24.1 & 24.4-24.5 Chapter 26 (p. 656-657); Chapter 22 (p.
3/30	F	Viral Diseases	534-536); 24.6
4/2	M	Viral Diseases	Chapter 21 (p. 507-511)
4/4	**W**	**EXAM IV**	**Chapters 16, 21, 22, 24, & 26**
4/6-4/9	**F, M**	**NO LECTURES (Easter Recess)**	
4/11	W	HIV/AIDS	Chapter 28
4/13	F	Epidemiology	Chapter 19
4/16	M	Control of Microbial Growth	Chapter 5
4/18	W	Antimicrobial Medications	Chapter 20
4/20	F	Antimicrobial Medications	Chapter 20
4/23	M	Food Microbiology	Chapter 31
4/25	W	Bioterrorism	
4/27	F	Special Topics	
4/30	**M**	**FINAL EXAM 8:30AM**	**Chapters 28, 19, 5, 20 & 31**

BIO206 TENATIVE COURSE SCHEDULE

DATE	DAY	EXERCISE	NUMBER	EXERCISE DUE
1/18	W	Introduction to Safety and Laboratory Guidelines		
1/20	F	Ubiquity of Microorganisms / Introduction to the Microscope	1, 3	
1/25	W	Ubiquity (day 2) / Oil Immersion Lens / Simple Stains	1, 4, 5	3
1/27	F	Differential and Other Special Stains (Gram Stain)	6	1, 5
2/1	W	Pure Culture and Aseptic Technique / Differential and Other Special Stains	2, 6	
2/3	F	**QUIZ #1** / Pure Culture (day 2) / Chemically Defined, Complex, Selective & Differential Media	2, 7	6
2/8	W	Media (day 2) / Quantitation of Microorganisms	7, 8	2
2/10	F	Quantitation (day 2) / Aerobic and Anaerobic Growth	8, 9	7
2/15	W	Aerobic and Anaerobic Growth (day 2) / Control of Microbial Growth with UV	9, 12	8
2/17	F	UV (day 2) / Selection of Bacterial Mutants Resistant to Antibiotics	12, 16	9
2/22	W	Resistant Mutants (day 2) / Transformation	16, 17	12
2/24	F	**QUIZ #2** / Resistant Mutants (day 3) / Transformation (day 2)	16, 17	
2/29	W	Transformation (day 3)	17	16
3/2	F	Normal Skin Biota	22	17
3/7-3/9	**W, F**	**NO LABS (Spring Recess)**		
3/14	W	Normal Skin Biota (day 2)	22	
3/16	F	Normal Skin Biota (day 3) / Streptococci & Respiratory Microorganisms	22, 23	
3/21	W	Normal Skin Biota (day 4) / Streptococci (day 2)	22, 23	
3/23	F	**QUIZ #3** /Streptococci (day 3) / Antibiotics	23, 14	22
3/28	W	Identification of Enteric Gram Negative Rods / Antibiotics (day 2)	24, 14	23
3/30	F	Gram Negative Rods (day 2) / Antiseptics & Disinfectants	24, 15	14
4/4	W	Antiseptics & Disinfectants (day 2)	15	24
4/6	**F**	**NO LAB (Easter Recess)**		
4/11	W	Clinical Unknown Identification	25	15
4/13	F	**QUIZ #4** /Clinical Unknown Identification (day 2)	25	
4/18	W	Clinical Unknown Identification (day 3) / Epidemiology	25, 30	
4/20	F	Clinical Unknown Identification (day 4) / Epidemiology (day 2)	25, 30	
4/25	W	Review for Laboratory Final Exam/ Laboratory Cleanup & Checkout		25, 30
4/27	**F**	**LAB PRACTICUM**		