

**BIOLOGY 235: Microbiology**  
**Fall 2014**

**Classrooms:** Lecture in Collier Hall of Science, Room 202; Lab in Collier Hall of Science Room 300

**Time:** Lecture on MWF 11:45 AM - 12:35 PM, followed by Lab on MW 1:15-3:15 PM

**Professor:** Karen Buchkovich, Ph.D., Visiting Professor, Department of Biological Sciences

**Office:** Collier Hall of Science Room 323

**Office Hours:** MW after class 3:15-4:15 PM (drop in), F 12:35-2:15 (by appointment), F 2:15-4:15 PM (drop in), and F 5:00-6:00 PM (by appointment)

**Email:** [buchkovichk@moravian.edu](mailto:buchkovichk@moravian.edu)

**REQUIRED MATERIALS:**

**Required Textbook:** *Prescott's Microbiology 9e*, by Joanne M. Willey, Linda M. Sherwood and Christopher J. Woolverton, McGraw-Hill Higher Education, 2013.

**Required Lab Manual:** *Laboratory Exercises in Microbiology 9e*, by John P. Harley, McGraw-Hill Higher Education, 2013.

**COURSE DESCRIPTION:** This course serves as an introduction to microbiology, including the ubiquitous role of microbes in our bodies and environment, the unique metabolic and organismal diversity of microbes, the medical relevance of microorganisms, and biotechnology applications of microbes. We will note the relevance of current events in medicine and biotechnology related to microbiology.

**COURSE OBJECTIVES:**

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

- Function of prokaryotic cell structure in comparison to those found in eukaryotes
- Microbiological growth and control of microbial growth, by cleaning agents and drugs
- Mechanisms involved in metabolism: anabolism and catabolism, energy flow and storage, synthesis of macromolecules
- Fundamental principles of microbial genetic and genomic variation
- Microbial Diseases
- Role of microbes in food production

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
- Work together on collaborative laboratory exercises

## 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 4<sup>th</sup> exam **will NOT be cumulative** and will be given the last day of lecture. Both lecture material and textbook readings are fair game for lecture exams. Lecture exams will be a combination of multiple-choice and short-answer essay questions.

In the event of special-needs (such as medical excuse or family emergency) make-up exams will be given, but arrangements must be made **in advance of the original test date**. 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.

**Attendance and participation:** It is my experience that those students who do not show up for class, do not perform well in class. Therefore to further encourage you to attend class you will receive **50 points for attending lecture and actively participating in class**. Students are allowed a **maximum of four absences** during the semester. If you miss class more than the allowed number of absences, 25 of these points will be deducted from your lecture attendance grade and 5 points will be deducted for each additional absence.

## 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 exercise **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:** Closed 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**. Be sure to wash your hands and clean your bench prior to leaving the lab! Additional safety information will be provided in the laboratory.

**Lab Reports:** The lab reports will consist of either the exercises found in the laboratory manual or provided handouts. The lab reports will include all data, as well as answering questions at the end of the exercises. They are due at the **beginning of the lab period immediately following completion of the experiment**. Due to copyright laws, please use and submit the sheets from the lab notebook.

**Quizzes:** In order to encourage attendance and preparedness for lab, **4 quizzes, each worth 25 points**, will be given during the designated laboratory sessions (Please see attached course schedule for quiz dates.) Quizzes will be given at the beginning of the lab period. If you are late to class your quiz will be due when the rest of the class finishes the quiz.

**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 **once the site is active**. For instruction please visit the following website: <http://home.moravian.edu/public/cit/help/blackboard/bbstudent.asp>. The course ID is BIO235.F14 and the enrollment code is "microbiology." When registering, **please use the email account where you would like to receive course notifications**. I frequently send out course notifications and announcements via email.

## CLASS POLICIES

**Cell phones:** As a courtesy to the professor, 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. If this occurs, you will not receive credit for attendance.

**Academic Integrity:** I expect all class members to adhere to 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 a 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 Elaine Mara, Assistant Director of Academic & Disability Support, located on the lower level of Monocacy Hall, or by calling 610-861-1401. Accommodation cannot be provided until authorization is received from the Academic Support Center.

**GRADING:** The final grade in the course will be based upon the following items:

### Lecture: (approximately 60% of the final grade)

- |   |          |                |
|---|----------|----------------|
| ➤ Lecture Exams 1-4 (4 x 100 points each) | 400 pts. |                |
| ➤ Attendance & participation              | 50 pts.  |                |
| ➤ Reading Reflections                     | 50 pts.  |                |
| ➤ Microbes in the News!                   | 50 pts.  | Sub-total= 550 |

### Laboratory: (approximately 40% of your final grade)

- |                                 |         |               |
|---------------------------------|---------|---------------|
| ➤ Laboratory Reports/ Exercises | 250pts. |               |
| ➤ Laboratory Quizzes            | 100pts. |               |
| ➤ Attendance & participation    | 50 pts  | Sub-total=400 |

**TOTAL=950**

## Grading Scale

<b>%</b>	<b>Grade</b>
<b>93-100</b>	<b>A</b>
<b>90-92</b>	<b>A-</b>
<b>87-89</b>	<b>B+</b>
<b>83-86</b>	<b>B</b>
<b>80-82</b>	<b>B-</b>
<b>77-79</b>	<b>C+</b>
<b>73-76</b>	<b>C</b>
<b>70-72</b>	<b>C-</b>
<b>67-69</b>	<b>D+</b>
<b>63-66</b>	<b>D</b>
<b>60-62</b>	<b>D-</b>
<b>58 &amp; below</b>	<b>F</b>

## Attachments

- **A calendar of LECTURES is attached.**
- **A schedule of LAB exercises (as a table) is attached.**
- *Any portion of the following syllabus for BIO 235 LECTURE and BIO 235 LAB is subject to change at the discretion of the instructor*

BIO 235						
Month	Day	Chap #	Chap Title	Lab#	Lab topics	
Aug	25	1 + 19A	Evol of Microorgs + Microbiol	Append. J+K+L; 1	Safety + Microscope	
	27	1+ 19A		2 +14		
	29	2	Microscopy			
Sept	1	3	Bacterial Cell Structure	interpret results 14; 7+8	Stains: Simple + Gram	
	3	4	Archeal Cell Structure	16+(19)	Streaking + Selective+ Differential; Bact. #	
	5	3,4,5				
	8	7	Microbial Growth	39/40+41	temp/pH and osmotic pressure	Half of the groups do 39 and half 40; all groups do 41
	10	"		Interpret results		
	12	review				
	15	EXAM 1		42 +43	Disinfectants + Antimicrobials	
	17	8 + 9	Control + Antimicrobials	Interpret results		
	19	"				
	22	10	Intro to Metabolism(ATP, RedOx, ETS, Enzymes & their regl)	28	Catalases	
	24	11	Catabolism	29	Coagulase+Dnase	
	26	"				
	29	"		31	Urease	
Oct	1	"		Interpret results		
	3	"				
	6	review		36 (or35)	Enterotube II (OR bio Merieux rapid 20 E Test)	
	8	EXAM 2		Interpret results		
	10	13				
	13	"		64	Genomic DAN from yeast	
	15	"		65	Genomic DNA from E coli	
	17	14				
	20	"		Interpret results		
	22	16		61+63	bacterial mutation +bacterial trasfer of antibiotic R	
	24	"				
	27	18		61 (day2)+ Interpret results(61+63)		
	29	(19B)?		Interpret results		
	31	EXAM 3				
Nov	3	35	pathogenicity + infection	53	normal microbiota (throat + skin)	
	5	27	Viruses	53	normal microbiota (throat + skin)	
	7	38	Human Diseases caused by Viruses and Prions			
	10	39		54 (partial)	Staphylococcus	optional: 3 days
	12	"				
	14	41	Microbiol of Food			
	17	class disc		54 (partial)	Staphylococcus	
	19	review		50	bacterial count of meat	
	21	EXAM 4				
	24				Lab Review?	
Dec	1				Lab Review?	
	3				LAB PRACTICAL EXAM	
	5				Lecture review?	