

Microbiology Laboratory Course Syllabus & Objectives

BIOL 207A • Winter 2012 • Muskegon Community College



Instructors: Deb Howell, Room 243D (231.777.0673)
Scott Kendall, Room 243E (231.777.0674)

Howell Office Hours:

Monday and Wednesday from 9:20-10:20am and 12:15-1:45pm
Tuesday and Thursday from 12:06-12:56pm and 4:00-4:30pm
Tuesday from 8:00-10:00pm (Instant Messaging and Email only)

Kendall Office Hours: TBA

Email: debra.howell@muskegoncc.edu and scott.kendall@muskegoncc.edu

Course Description: BIOL 207A Microbiology Laboratory (one credit hour; three contact hours/week for 15 weeks). This course is designed for students in allied health programs. It includes preparing stained smears, culturing micro-organisms, conducting immunology experiments, performing tests to identify bacteria and fungi, and studying microbial growth control methods. **NOTE:** Computer/online work is required weekly.

Prerequisites/Co-requisites:

Prerequisite: **BIOL 105** (Anatomy and Physiology I with a C or better) or other biology course with instructor permission; CHEM 100 and BIOL 106 are highly recommended; **Co-requisite (required): BIOL 207 lecture.**

Schedule/Sections*:	W01	T	09:05-12:05am	room 247	Instructor: Howell
	W02	T	01:00-04:00pm	room 247	“
	W03	TH	09:05-12:05am	room 247	“
	W04	TH	01:00-04:00pm	room 247	“
	W05	T	06:35-09:35pm	room 247	Instructor: Kendall

Material:

1. Talaro, Kathleen Park, **Foundations in Microbiology**, 8th Ed.
2. Lammert, John M., **Techniques in Microbiology A Student Handbook**.
3. Howell, D., **BIOL 207A Microbiology Laboratory Supplement (current semester) and Special Project Supplement**.
4. ParScore sheets (form no. F=3652-PAR-L) – three
5. Black or blue permanent marker
6. Colored pencils
7. Safety goggles
8. Non-latex Gloves – 8 pairs
9. Three-ring Binder (minimum of 1 inch) and note paper

**Evaluation/
Grading Scale:**

You are evaluated on the basis of your performance on tests, quizzes, worksheets, papers, reports, assignments...

The following grading scale will be used:

100 - 92.0	A	79.9 – 78.0	C+	61.9 – 60.0	D-
91.9 - 90.0	A-	77.9 – 72.0	C	59.9 and ↓	E
89.9 - 88.0	B+	71.9 – 70.0	C-		
87.9 - 82.0	B	69.9 – 68.0	D+		
81.9 - 80.0	B-	67.9 – 62.0	D		

Total Lecture Points Earned ÷ Total Lecture Pts. Possible × 100 = your lab percentage

**Technology
Requirements:**

1. Operating system – Windows or Macintosh OS
2. Web browser – Internet Explorer or FireFox (FireFox is preferred)
3. High-speed internet
4. Document software (Microsoft Word or other) – save files in MS Word, rtf, or pdf.
5. QuickTime Player (free version) - <http://www.apple.com/quicktime/download/>
6. Microsoft PowerPoint Viewer – <http://www.microsoft.com/downloads/details.aspx?FamilyID=428d5727-43ab-4f24-90b7-a94784af71a4&displaylang=en>

**Student
Responsibilities:**

You are responsible for all course material/assignments on the day they are presented or due. In the event of a missed assignment(s), or lab session, contact the instructor within 24 hours of the absence. You will be required to **schedule a make-up time (within 24 hours of absence) and receive an excused absence from your instructor** (only one per semester allowed and must be for a valid reason; validity to be determined by your instructor). All unexcused absences will result in a zero for missed/assigned work. Additional information-

- **Assignments** are due at the beginning of the class period on the date/time designated by the instructor. **Late course work (e.g. projects, reports, papers...)** will only be accepted for up to 24 hours after the due date and result in an additional deduction of 20% for the work; unless otherwise indicated by the instructor.
- **Missed class notes** are not provided by the instructor and must be obtained from other students. See missed lab session below for more information.
- **Missed handouts** – may be picked up from the instructor or online if posted.
- **Missed exams or quizzes** require a call to the instructor on the day given or earlier with a valid excuse. Only one quiz (altered format) may be made-up per semester (24 hour extension only). NOTE: **Lab exams are only offered at specified times and must be taken at that time. Exceptions to this will only be made for an extreme emergency** (to be determined by the instructor).
- **Missed lab session (excludes exam day; only one allowed) and Punctuality...** if space is available you will be expected to attend another lab session to complete assigned work (you must contact your instructor to arrange this within 24 hours of the missed session). If this is not possible, and you are given an excused absence, **you will be expected to make up the work at an assigned time under the supervision** of an instructor. **Failure to complete a lab session will result in a 10% deduction of your final lab course grade. Two unexcused absences** are unacceptable, and the **student must withdraw** from the course. Failure to withdraw from the course will result in a grade of “E” for the final course grade. **Punctuality** is expected. Any missed quizzes or work (bonus or otherwise) will be forfeited and a grade of zero will be assigned. In addition, second or subsequent lab sessions attended late will result in a two point deduction from the total lab report grade and forfeiture of missed assessments (bonus or otherwise).
- **Incorrect content, formatting, general appearance, spelling, grammar...** will result in point deductions from student’s work.
- **Cell phones** and other electronic devices must be turned off while you are in class.
- **Communications**
 - **All email communication** originating from MCC to students will be via their MCC email account. You are **required to check your email account twice weekly.**
 - **Student communications to the instructor:** Responses to emails and voicemail messages will be sent within 24 hours after received Monday through Thursday. Emails received Friday through Sunday will be responded to as soon as possible. **Include BIOL 207, course section, and your name in the subject area of the email.**

**Student
Assessment:**

Muskegon Community College is fully accredited by the Higher Learning Commission located in Chicago. Accreditation helps ensure students that they are receiving a quality education and can transfer to other colleges and universities with ease and confidence. MCC is committed to an essential part of the accreditation process: assessing student learning. You may be asked to participate in assessing student academic achievement this semester by doing two things: 1. Evaluate your class and your instructor by completing a Student Opinion Survey, usually given toward the end of the semester; 2. In some classes, you will find that one hour of class time may be devoted to completing a test of your general knowledge. Your performance on this test will not affect your grade in this course or your status in the College. However, the College asks that you take the test seriously and do your very best since the information gained from test results is a key component of assessing student learning.

Laboratory Format: Methods of instruction include: lecture format; class discussion; assignments/presentations; experiments; lab reports; project work, and external links for self-study review (internet). Assessment formats for a laboratory course grade include:

2 Laboratory Exams (100 pts. each)	200 points
11 Laboratory Reports (3 submitted)	30
Technique Quizzes*/Pre-labs / & Assignments	90-100
Special Project** (mandatory project)	70

*Technique quizzes include demonstration of: 1) microscope usage/function, streak plate technique, aseptic technique, Gram stain technique, and 2) use of scientific method.

Special project involves culturing of unknowns (environmental), identification of microbes, and use of the scientific method to write your laboratory report. **Failure to complete this project results in a drop of one letter grade for the entire course and a grade of zero for the assignment. This may result in failing the course.

Grades will be posted in a timely manner. For most assessments:

- Lab reports will be returned at the next lab session.
- Quiz grades will be available within 48 hours or sooner.
- Exam scores will be posted on Blackboard within 5 days or sooner.
- Projects/Assignments will be available as announced.

Success Hints:

1. **Complete pre-lab** assignments prior to attending lab. This includes quizzes and all assignments. Failure to complete pre-lab assignments will result in a zero for the work.
2. It is very important to **come to lab prepared**. Take notes as you complete the pre-lab assignments and bring those notes to the lab as well as required assignments.
3. **Study on a regular basis** by reviewing **class notes, lab reports, and lab supplement** as soon as possible after class. Review a minimum of 2-3 hours for each 1 hour of class time. This should include: a) rewriting class notes and lab reports, b) forming a study group and meet once per week (minimum), c) meet with instructor as needed to clarify key course concepts, and d) study key concepts one at a time until mastered.
4. **Attend all lab and review sessions.**
5. **Review Guide:**
 - a. Study one key concept in a variety of ways. This must involve active learning practices (reading is passive learning). Try rewriting notes, looking for ways to relate new material to previously learned information, applying information to real-world situations, and testing your depth of knowledge.
 - b. To test your depth of knowledge: i) study a concept in a variety of ways, ii) take a blank sheet of paper and write down the information from memory, and iii) compare your answer against course notes, worksheets, textbook... correct all errors and repeat process until successful (*this process* requires you to organize your thoughts and write down your knowledge in a detailed, sequential format).

Statement on Student Behavior

Muskegon Community College is a community of scholars whose members include administrators, faculty, staff, and students. Mutual respect and civility are expected in the classroom or other college academic settings, as well as, in any communication.

- MCC has the duty of providing students with privileges, opportunities, and protections that best promote learning;
- Students have the right to a non-threatening learning environment;
- Students have the responsibility to refrain from infringing on the right of others to learn or the right of teachers to teach; and any student whose behavior disrupts learning may be subject to disciplinary action as outlined in the Muskegon Community College *Student Handbook/Planner*.
- Please review the following **Netiquette link**: www.albion.com/netiquette/corerules.html.

Academic Integrity Policy

Muskegon Community College expects that all faculty and students will adhere to high standards of personal and academic honesty. This means that all academic work will be done by the student to whom it is assigned without unauthorized aid of any kind. Faculty members, for their part, will exercise care in the planning and supervision of academic work so that honest effort will be positively encouraged. Academic dishonesty consists of, but is not limited to:

- Cheating.** Cheating is defined as using or attempting to use, giving or attempting to give, and obtaining or attempting to obtain, materials or information, including computer material pertaining to a quiz, examination, or other work that a student is expected to do alone.
- Plagiarism.** Plagiarism is defined as the use of another's words or ideas without acknowledgement.
- Penalties for violation of these standards of conduct may result in sanctions of up to and including suspension or expulsion from MCC.

Statement on Dispute Resolution Process

Should a student not agree with a faculty member's decision or actions as they may relate to this policy, the following steps shall be followed:

1. A student suspected of academic dishonesty shall be notified in writing within two school days of the time the violation is discovered. Copies of the written notification shall also be filed with the department chair and Vice President of Student Services.
2. The student should try to reach resolution of the matter through direct discussion with the involved faculty member within three (3) school days of the written notification.
3. If the matter is not resolved in Step 2, the student shall bring the matter to the attention of the department chairperson of the involved faculty member.
4. If the matter is not resolved at the department chairperson level, the student shall bring the matter to the attention of the Vice President for Academic Affairs who shall render a decision within five school days of the receipt of the dispute information.
5. If a satisfactory solution is not reached at the Step 4 level, the student may file a written request with the Vice President of Student Services for a hearing before the disciplinary board. This meeting shall be held not more than 20 days following the written request. A student may request a hearing before the disciplinary board. The disciplinary and judicial procedures are outlined in the Muskegon Community College *Student Handbook/Planner*.

Statement on Special Services

Special Services is an important part of the broad range of services offered at Muskegon Community College. Our goal is to provide effective services, materials, and resources which enable students who are members of Special Populations to be successful. Contact 231-777-0309. Contact must be made the first week of the course (contact your instructor also).

PLEASE NOTE: Student work (reports, projects, papers, quizzes...exams) will be held for fourteen days beyond the end of the course before being destroyed. All grade disputes must be made during this period.

COURSE WEB-SITE

A web-site has been set-up for both lecture and lab courses on Blackboard (**Bb9.1**). You must open up both classes the first week of the course and twice weekly after that. Go to www.muskegoncc.edu; open "Quick links"; and open "Blackboard" or go directly to <https://blackboard.muskegoncc.edu/> and login.

Login → username and password are the college designated access codes (MCC email, Blackboard...). Once this is completed, open up the lab course (repeat with the lecture course) and begin. Directions will be provided on the announcement page. This is **MANDATORY** and will be used on a weekly basis for assignments and **PRE-LAB** exercises.

NEED help with a technology problem? Contact 1-866-718-5170 (toll free, 24 hour student support).

STUDENT CONTACT INFORMATION FOR LABORATORY – Lab table partners.

Student Name	Telephone	Email

Laboratory Schedule* – Quizzes, assignments, lab reports...are not shown on this schedule and will be discussed in Lab. You must complete **Blackboard (Bb) PRE-LAB assignments prior to each lab.**

Lab/Week	Topic / Week	Textbook References (see Bb)
1	Lab Procedures; Microscopy; Scientific Inquiry; Preparation of Microorganism Stains and Wet Mounts; Sampling Environments.	Ch. 1, 3, 4, and 14
2	Bacterial Morphology, Structures, Motility; & Culture Techniques	Ch. 3 and 4
3	Media Preparation; Bacterial Culture Characteristics & ID; Special Project (SP) begins	Ch. 17
4	Biochemical Characteristics; Mutations in Microbes; and Special Project continues (due date: lab 11)	Ch. 9
5	Fungi and Protozoa	Ch. 5, 22, and 23
6	Environmental Transfer of Organisms; Indigenous Flora; Culture Handling	Ch. 13
7	Finish lab 6; and Review for lab exam	
8 – Exam	Lab Exam I (Covers Lab 1 – Lab 7)	
9	Antigen-Antibody Reactions; Agglutination and Precipitation Techniques	Ch. 14, 15, and 17
10	Effect of Physical and Chemical Agents on Bacteria	Ch. 11 and 12
11	Microbiology of the Respiratory Tract; Special Project due.	Ch. 18-21
12	Microbiology of the Intestinal Tract: Enteric Pathogens	Ch. 18-21
13	Skin and Wound Pathogens; Urogenital Pathogens	Ch. 18-21
14- Exam	Lab Exam II (Covers Lab 9 through Lab 13)	

* Content may change (additions/deletions) to accommodate current material as it becomes available.

GENERAL LAB OBJECTIVES (Specific learning objectives are listed with each laboratory):

- Demonstrate safe practices in a microbiology laboratory.
- Explain and correctly demonstrate use of the scientific method
- Demonstrate proper usage, identify the parts/functions of the following microscopes: brightfield and stereoscopic.
- Transfer living microbes using aseptic technique.
- Demonstrate proficiency and use of the following in the laboratory: streak plate isolation technique; bacterial staining techniques; wet mounts; and proper culture handling.
- Visually recognize and explain the macroscopic and microscopic characteristics of fungi, protozoa, and bacteria.
- Understand and explain environmental factors that influence microbes.
- Properly obtain, culture, identify, and explain microorganisms in environmental cultures.
- Identify the following microorganisms and explain the diseases stated:
 - Streptococcus pyogenes - strep throat and sequelae
 - Streptococcus pneumoniae – pneumonia and meningitis
 - Escherichia coli –cystitis
 - Neisseria gonorrhoeae – gonorrhea
 - Staphylococcus aureus - wound infections
 - Streptococcus pneumoniae – pneumonia
 - Treponema pallidum – syphilis
 - Clostridium sp. – wound infections
 - Trichomonas vaginalis – Trichomoniasis
 - Mycobacterium tuberculosis – tuberculosis
 - Klebsiella pneumoniae – pneumonia
 - Salmonella spp. – Salmonellosis
 - Shigella spp. - Shigellosis
 - Haemophilus influenzae, type b – meningitis
 - Corynebacterium diphtheriae – diphtheria
 - Other organisms to be announced
- Identify, explain function, and use common culture media properly
- Identify unknown bacteria using biochemical and immunologic testing.
- Explain and perform ELISA test; explain function and usage of a Western Blot test.
- Understand and explain causes of mutations in microbes.
- Demonstrate the use of chemical and physical control of microbes. This is a sustainability initiative.

The Life Science department reserves the right to Change this syllabus/Lab Supplement at any time without advance notice as needed.