Microbiology Laboratory Course Syllabus & Objectives  
BIOL 207A ● Winter 2013 ● Muskegon Community College

Deb Howell, Room 243D (231.777.0673), debra.howell@muskegoncc.edu

On-Campus Office Hours (also by appointment):
Monday and Wednesday: 9:45 - 10:15 AM and 12:30 – 1:30 PM
Tuesday and Thursday: 12:00 - 12:55 PM

Online Office Hours (by email):
Monday and Wednesday: 2:30-5:00 PM

Scott Kendall, Room 243E (231.777.0674), scott.kendall@muskegoncc.edu

Office Hours: by appointment.

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  09:05-12:10pm  room 247  Instructor: Howell
W02  T  01:00-04:05pm  room 247  “
W04  TH 09:05-12:10pm  room 247  “
W05  TH 01:00-04:05pm  room 247  “
W03  T  06:35-09:40pm  room 247  Instructor: Kendall

Material:
1. Talaro, K., Chess, B., 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)
5. ParScore sheets (form no. F=3652-PAR-L) – three (protect from bending)
6. Other: Black or blue permanent marker, colored pencils, safety goggles, 8 pairs of non-latex Gloves, 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:

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Grading Scale: 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
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.

Student Responsibilities:
You are responsible for all course material/assignments on the day they are presented or due. Carefully read through the following course guidelines:

- **Assignments** are due at the beginning of the class period on the date/time designated by the instructor. **Late course work is not accepted (e.g. projects, reports, papers...)**, unless otherwise indicated by the instructor. Work will only be accepted in an emergency situation.
- **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 and quizzes.** **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 pre-lab quizzes** may not be made up and will result in a grade of zero for the missed quiz.
- **Missed lab session (excludes lab exam day).** 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 missed labs** and the student must withdraw from the course. Failure to withdraw will result in an “E” for the final course grade.
- **Punctuality** is expected for each lab session. Labs begin promptly at the start of the session. Any missed quizzes or work (bonus or otherwise) will be forfeited and a grade of zero will be assigned due to tardiness. In addition, second or subsequent lab sessions attended late will result in a five point deduction from one lab exam. Exceptions will be made in an emergency (to be determined by the instructor).
- **Course Work - Incorrect content, formatting, general appearance, spelling, and grammar** will result in point deductions from a student’s work.
- **Cell phones** and other electronic devices must be turned off while you are in class. During assessments electronic devices that are on may result in a forfeiture of the assessment.
- **All email communication** originating from MCC to students will be via their MCC email account. You are **required to check your MCC email account twice weekly.** **Instructor responses to** emails and voicemail messages will be sent within 24 hours after being received Monday through Thursday. Emails received Friday through Sunday will be responded to on the following Monday or sooner if possible. To help instructors prioritize emails, include BIOL 207, course section, and your name in the subject area of each email.
Laboratory Format: Methods of instruction include: lecture format, class discussion, assignments, presentations, experiments, lab reports, quizzes, projects, and external links for self-study review (internet). Assessment formats for your laboratory course grade include:

- 2 Laboratory Exams (100 pts. each) 200 points
- Laboratory Reports 30
- Technique Quizzes*/Pre-labs / & Assignments 80-130
- 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 will result in a drop of one letter grade for the entire course and a grade of zero for the assignment. Grades will be posted in a timely manner. For most:
- Lab reports will be returned at the next lab session.
- Quiz grades will be available within 3 days or sooner.
- Exam scores will be posted on Blackboard within 5 days or sooner.
- Projects/Assignments will be made available as announced.

Success Hints:

1. Complete pre-lab assignments prior to attending lab (includes online quizzes). Failure to complete pre-lab assignments will result in a grade of zero for the assessment.
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 using Active Learning. Start 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, but not limited to: a) rewriting class notes and lab reports, b) forming a study group and meeting once per week. 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 considered a passive learning practice. 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 Assessment and Accreditation
Muskegon Community College is fully accredited by the Higher Learning Commission located in Chicago (http:ncahlc.org/). The Higher Learning Commission accredits degree granting postsecondary educational institutions in the North Central Region. 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 will likely be asked to participate in assessment activities as part of MCC’s assessment of programs and general education.

Statement on MCC Email
All email Communication originating from MCC to students will be via their email account. CHECK YOUR MCC EMAIL FREQUENTLY. For this course twice weekly is required.

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 during or before the first week of the course (contact your instructor also).
All Student Work (exams, reports, projects…) will be held for fourteen days beyond the end of the course before being destroyed. All grade disputes must be made prior or during this period.

**COURSE WEB-SITE**

A web-site has been set-up for both lecture and lab courses on Blackboard (Bb). You must open up both classes the first week of the course and twice weekly after that. Go to [www.muskegoncc.edu](http://www.muskegoncc.edu); open Blackboard, or go directly to [https://blackboard.muskegoncc.edu/](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).

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<thead>
<tr>
<th>Lab/Week</th>
<th>Topic / Week</th>
<th>Textbook References (see Bb)</th>
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<tbody>
<tr>
<td>1</td>
<td>Lab Procedures; Microscopy; Scientific Inquiry; Preparation of Microorganism Stains and Wet Mounts; Sampling Environments.</td>
<td>Ch. 1, 3, 4, and 14</td>
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<td>2</td>
<td>Bacterial Morphology, Structures, Motility; &amp; Culture Techniques</td>
<td>Ch. 3 and 4</td>
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<td>3</td>
<td>Media Preparation; Bacterial Culture Characteristics &amp; ID</td>
<td>Ch. 17</td>
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<td>4</td>
<td>Biochemical Characteristics; Mutations in Microbes; and Special Project (due date: lab 11)</td>
<td>Ch. 9</td>
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<td>5</td>
<td>Fungi and Protozoa</td>
<td>Ch. 5, 22, and 23</td>
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<td>6</td>
<td>Environmental Transfer of Organisms; Indigenous Flora; Culture Handling</td>
<td>Ch. 13</td>
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<td>7</td>
<td>Finish lab 6; Review for lab exam</td>
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<td>8 – Exam</td>
<td><strong>Lab Exam I</strong> (Covers Lab 1 – Lab 7)</td>
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<td>9</td>
<td>Antigen-Antibody Reactions; Agglutination and Precipitation Techniques</td>
<td>Ch. 14, 15, and 17</td>
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<td>10</td>
<td>Effect of Physical and Chemical Agents on Bacteria</td>
<td>Ch. 11 and 12</td>
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<td>11</td>
<td>Microbiology of the Respiratory Tract; <strong>Special Project due.</strong></td>
<td>Ch. 18-21</td>
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<td>12</td>
<td>Microbiology of the Intestinal Tract: Enteric Pathogens</td>
<td>Ch. 18-21</td>
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<td>13</td>
<td>Skin and Wound Pathogens; Urogenital Pathogens</td>
<td>Ch. 18-21</td>
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<td>14- Exam</td>
<td><strong>Lab Exam II</strong> (Covers Lab 9 through Lab 13)</td>
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* 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:
  - Fungi (molds and yeasts)
    - *Streptococcus pyogenes* – strep throat, skin diseases…and sequelae
    - *Streptococcus pneumoniae* – pneumonia and meningitis
    - *Streptococcus agalactiae* – newborn and adult infections
    - *Escherichia coli* – cystitis, traveler’s diarrhea, meningitis…
    - *Neisseria gonorrhoeae* – gonorrhea and gonococcal ophthalmia
    - *Staphylococcus aureus* – wound infections…
    - *Staphylococcus epidermidis* – subacute bacterial endocarditis
    - *Treponema pallidum* – syphilis
  - *Clostridium* sp. – wound infections and foodborne illness
  - *Trichomonas vaginalis* – Trichomoniasis
  - *Mycobacterium tuberculosis* – tuberculosis
  - *Klebsiella pneumonia* – pneumonia
  - *Salmonella* spp. – Salmonellosis and typhoid fever
  - *Shigella* spp. - Shigellosis
  - *Haemophilus influenza, type b* – meningitis
  - *Corynebacterium diphtheriae* – diphtheria
  - *Chlamydia trachomatis* – genital infections and blindness
  - 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.

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