BIOL 3044: Bacteriology  
Course Syllabus: Fall 2012

General Information:

Course Meetings: MWF (11:00 – 11:50 am)  Bolin Hall 213

Instructor: James Masuoka, Ph.D.
Office: Bolin Hall 324
Telephone: 397-4181
E-mail: james.masuoka@mwsu.edu

Course Description (from the catalog): Study of prokaryotic cell structure and function, bioenergetics, and regulation of cellular functions; survey of adaptations to diverse environments.

Required Texts:


Course Objectives (Lecture):

- Explain the factors important in microscopy and how each is optimized or controlled
- Describe prokaryotic cell structures and relate these structures to function
- Describe how specific prokaryotic cell structures carry out processes such as motility, nutrient transport, energy production and reproduction
- Describe the environmental factors that affect microbial growth, and relate these factors to specific environments and habitats, and to growth in laboratory culture
- Describe the diverse mechanisms by which prokaryotes have adapted to different environments, and the pathways used to produce reducing power and ATP
- Relate microbial biology to means of identification and classification
- Describe how microbial genetic information flows and is shared
- Describe some of the symbiotic relationships that exist between prokaryotes and other organisms in terms of benefits and potential harm to both parties
• Research and critically evaluate the scientific literature to answer or address a question
• Communicate fundamental concepts of microbiology, both in written and in oral format

**Classroom Expectations and Policies:**

• Students are expected to be prepared for lecture and lab by: 1) reading the text, lab manual and handouts prior to coming to class; 2) having paper and pen at hand
• Students are expected to arrive a few minutes early in order to mentally prepare. If late arrival is unavoidable, the student should enter the class in a manner that creates as little disruption as possible.
• Points will be deducted from assignments turned in late.
• Food and beverages are prohibited in the lab (see the Laboratory Safety section in the Laboratory Manual for additional safety issues).
• Student Conduct: Please refer to the MSU Student Handbook for university policies related to student responsibilities, rights and activities. For example, see page 44 for valid grounds for an instructor drop (excessive absence, indifferent attitude, disruptive conduct, failure to meet class assignments), page 76 for the university's policy on classroom conduct, and page 77 for definitions of academic dishonesty that may be subject to disciplinary action (cheating, plagiarism, and collusion).
• Students with disabilities: It is the responsibility of the student to first contact Disability Support Services and then the instructor to determine what accommodations might be made for a disability. It will be the responsibility of the student to make arrangements to acquire notes. Any requests for accommodations must be made 2 weeks prior to the first exam.
• **CELL PHONES (and other electronic devices): (READ THIS TWICE, PLEASE)**
  There are NO cell phones permitted to be out in this class. This class, as well as your other classes, requires your engagement, and cell phones serve to detract from that engagement. Additionally, your phone should be not only put away, but on “silent” (NOTE: vibrate is NOT silent). If your phone is out and/or in sight, you will be asked to put it away.
• The instructor reserves the right to amend these rules as needed throughout the term.

**E-mail Policy:**

I will respond to e-mail during regular school hours (8:30 am – 5:00 pm M-F). I will make every effort to respond to e-mail sent during the week within 24 hours. Those sent over the weekend will be attended to on Monday.

Always include a subject line in your e-mail messages. It would be particularly helpful to include in the subject line the course number & section if required (*i.e.* BIOL 3044-101).

**Attendance Policy:**

Students are expected to attend all meetings of the classes in which they are enrolled. Although in general students are graded on intellectual effort and performance rather than attendance, absences may lower the student’s grade where class attendance and class participation are deemed essential by the faculty member. In those classes where attendance is considered as part of the grade, the instructor should so inform students of the specifics in
writing at the beginning of the semester in a syllabus or separate attendance policy statement. An instructor who has an attendance policy must keep records on a daily basis. The instructor must give the student a verbal or written warning prior to being dropped from the class. Instructor’s records will stand as evidence of absences. A student with excessive absences may be dropped from a course by the instructor. Any individual faculty member or college has the authority to establish an attendance policy, providing the policy is in accordance with the General University Policies. [MSU Student Handbook, p. 43]

Absences will be excused for:

a. **Death of an immediate family member.** An immediate family member is considered to be a grandparent, parent, sibling, spouse, in-law, aunt, uncle, or child.

b. **Summons to appear in court or jury duty.** A copy of the summons is required.

c. **Call to military service.** A copy of your orders to report is required.

d. **University sponsored event.** Members of athletic teams, college bowl participants, etc. will be excused with proper notification.

e. **Debilitating illness or disability.** Illnesses will be addressed on an individual basis. If a student is affected by an illness that is not debilitating, (i.e. flu, virus infection) which may result in the student missing one or more consecutive class sessions, that student will be marked as unexcused for the amount of days missed unless a doctor’s note is provided.

**Exam Policies:**

- **No make-up exams will be given in this course.** If you must miss class during a midterm exam period, and it is an excusable absence (see above), then the cumulative portion of the final exam will be used to determine the missed midterm score. You must notify the instructor of problems prior to the start of the exam, and provide the appropriate documentation as soon as possible. Only one midterm exam will be substituted for in this manner.

- Exams are not moved for congested midterm or finals schedules.

- **All electronic devices,** including cell phones, must be completely turned off during exam periods. I will keep track of time and relay the information to the class. If you must keep track of time yourself, invest in a wristwatch.

**Grading:**

All exams and assignments count toward your final grade in the course and so it is important to do the best that you can on everything you turn in. If you find yourself having difficulties, please come to me for help early in the semester so that you give yourself time to improve.

Attendance is not a direct component of your course score. However, continual tardiness – and the subsequent class disruption due to coming in late – will be taken into account and may have an effect on your final points awarded.
This course is not graded on a traditional curve, but it is scaled to where the students are. This allows for any adjustments that the instructor deems necessary. The course is worth approximately 1000 points. Grade categories and equivalent percentages are as indicated: A (90-100%); B (80-89.9%); C (70-79.9%); D (60-69.9%); F (59.9% and below). Passing requires 60% of the points (unadjusted) for the course, or 600. Fractional percentages will be rounded at the end.

Lab constitutes approximately 40% of the BIOL 3044 grade. Lecture constitutes approximately 60% of the BIOL 3044 grade. There are three midterm exams, each worth 80 points. Each exam will be based on what was covered since the previous exam. There is a comprehensive final exam worth 160 points. In particular, any material that requires review following an exam (i.e. the vast majority of the class got it wrong) will show up on the final exam.

Throughout the semester we will be reading three primary research articles. Along with these readings, several questions will be assigned. The answered questions will be due the day we discuss the papers. The final reading-type assignment will be a printout and result list of a search related to your term paper. Each reading assignment will be worth 25 points.

The last assignment is a term paper worth 100 points. Details regarding the term paper topic are given below. More detailed information on the paper and a rubric of scoring guidelines will be provided separately.

**Note:**
1) No regrades will be provided for exams done in pencil.
2) Misspelled words (esp. organism names) and incorrect taxonomic nomenclature will result in ¼ point deductions for each instance.

**Assignment Summary:**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm exams</td>
<td>240</td>
</tr>
<tr>
<td>Term paper</td>
<td>100</td>
</tr>
<tr>
<td>Readings</td>
<td>100</td>
</tr>
<tr>
<td>Final exam</td>
<td>160</td>
</tr>
<tr>
<td>Laboratory</td>
<td>400</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
</table>

**Important Dates (Fall 2012):**

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classes begin</td>
<td>August 27</td>
</tr>
<tr>
<td>Labor Day Holiday (no classes)</td>
<td>September 3</td>
</tr>
<tr>
<td><strong>Midterm Exam 1</strong></td>
<td><strong>September 21</strong></td>
</tr>
<tr>
<td><strong>Midterm Exam 2</strong></td>
<td><strong>October 15</strong></td>
</tr>
<tr>
<td>Last day to drop with a “W”</td>
<td>October 22</td>
</tr>
<tr>
<td><strong>Midterm Exam 3</strong></td>
<td><strong>November 9</strong></td>
</tr>
<tr>
<td>Term paper due</td>
<td>November 20 (by 8:00 pm)</td>
</tr>
<tr>
<td>Thanksgiving Holiday (no classes)</td>
<td>November 21 – 26</td>
</tr>
<tr>
<td>Classes end</td>
<td>December 7</td>
</tr>
</tbody>
</table>
| **Final Exam**                | **December 10 (M) (10:30 am – 12:30 pm)**
# Tentative Course Lecture Schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Topic</th>
<th>Readings</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 27 – 31</td>
<td>1</td>
<td>Introduction, Microscopy; Cell Structure &amp; Function</td>
<td>Ch 2 (24 – 31)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ch 3</td>
<td></td>
</tr>
<tr>
<td>Sept. 3</td>
<td>2</td>
<td></td>
<td></td>
<td><strong>Labor Day – No Class</strong></td>
</tr>
<tr>
<td>Sept. 5 – 7</td>
<td>2</td>
<td>Cell Structure &amp; Function</td>
<td>Chapter 3</td>
<td></td>
</tr>
<tr>
<td>Sept. 10 – 14</td>
<td>3</td>
<td>Paper discussion; Bacterial Nutrition &amp; Culture; Bacterial Growth</td>
<td>Ch 4 (85 – 92) Ch 5 (117 – 132)</td>
<td>Paper 1 (9/10)</td>
</tr>
<tr>
<td>Sept. 24 – 28</td>
<td>5</td>
<td>Metabolism; Catabolism of Organics; Paper discussion</td>
<td>Ch 4 (92 – 116) Ch 14</td>
<td>Paper 2 (9/28)</td>
</tr>
<tr>
<td>Oct. 1 – 5</td>
<td>6</td>
<td>Catabolism of Organics; Phototrophy</td>
<td>Ch 14</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Ch 13 (341 – 353)</td>
<td></td>
</tr>
<tr>
<td>Oct. 8 – 12</td>
<td>7</td>
<td>Phototrophy; Autotrophy</td>
<td>Ch 13</td>
<td></td>
</tr>
<tr>
<td>Oct. 15 – 19</td>
<td>8</td>
<td>Synthesis &amp; Anabolism; Paper discussion</td>
<td>Ch 13</td>
<td><strong>Exam 2 (10/15)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Paper 3 (10/19)</td>
</tr>
<tr>
<td>Oct. 22 – 26</td>
<td>9</td>
<td>Prokaryotic Molecular Biology</td>
<td>Ch 6</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Ch 7</td>
<td></td>
</tr>
<tr>
<td>Oct. 29 – Nov. 2</td>
<td>10</td>
<td>Horizontal Gene Transfer; Gene Regulation in Prokaryotes</td>
<td>Ch 10</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Ch 8</td>
<td></td>
</tr>
<tr>
<td>Nov. 5 – 9</td>
<td>11</td>
<td>Gene Regulation; Adaptations</td>
<td>Ch 8</td>
<td><strong>Exam 3 (11/9)</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Ch 5 (132 – 149)</td>
<td></td>
</tr>
<tr>
<td>Nov. 12 – 16</td>
<td>12</td>
<td>Adaptations; Nutrient Cycling</td>
<td>Ch 5 (132 – 149) Ch 24 (698 – 710)</td>
<td></td>
</tr>
<tr>
<td>Nov. 19</td>
<td>13</td>
<td>Ecosystems</td>
<td>Ch 23</td>
<td></td>
</tr>
<tr>
<td>Nov. 20</td>
<td>13</td>
<td></td>
<td></td>
<td><strong>Term paper due</strong></td>
</tr>
<tr>
<td>Nov. 21 - 23</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Thanksgiving Holiday – No Class</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov. 26 – 30</td>
<td>14</td>
<td>Ecosystems; Symbioses</td>
<td>Ch 24 (698 – 710) Ch 25</td>
<td></td>
</tr>
<tr>
<td>Dec. 3 – 7</td>
<td>15</td>
<td>Symbioses; Current Topics</td>
<td>Ch 25</td>
<td></td>
</tr>
<tr>
<td><strong>Dec. 10</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Final Exam (Monday) 10:30 am – 12:30 pm</strong></td>
</tr>
</tbody>
</table>

**Note:** Specific organisms and groups will be used to illustrate and provide examples for concepts. These organisms are described in Chapter 2 (38 – 44), Chapter 17, Chapter 18, and Chapter 19.
Bacteriology Laboratory Information

Course Description:
This laboratory section complements the lecture portion of the course as a study of prokaryotic structure and physiology. Students will learn and apply practical laboratory techniques to the identification and characterization of bacteria.

NOTE: Bacteriology relies on studying living organisms. As a result, time is required for organisms to grow after inoculation into growth medium. Thus, students will be required at times to come into the lab outside of the scheduled laboratory period to collect data and interpret results.

Course objectives (Laboratory):
1. Practice general laboratory safety
2. Practice safe handling of microorganisms, including aseptic technique
3. Recognize various cellular and colony morphologies of prokaryotes
4. Correctly use and maintain a compound microscope
5. Use differential and selective growth media to obtain pure cultures
6. Correctly perform and interpret Gram Stains and other staining techniques
7. Interpret and analyze results from various assays used to identify bacteria and apply these methods to other situations
8. Enrich, isolate and characterize prokaryotes based on the various metabolic strategies by which they adapt to their environment
9. Communicate fundamental concepts of microbiology, both in written and in oral format

General Course Policies:
1. Laboratory safety rules must be followed at all times (see following section). Safety violations will result in deductions from the laboratory participation grade (see below).
2. Cell phones and pagers are to be turned off before lab begins.
3. Students are expected to read the introductory material prior to each lab session.
4. Cheating will not be tolerated. Anyone suspected of cheating will be subject to the consequences outlined in the University’s academic honesty policy.
5. All lab sessions must be attended. We will not offer make-up labs.
6. Punctuality is expected at all times. If you are more than 10 minutes late, you will miss the quiz for the day and be counted as absent.
7. Absences may be excused only by prior arrangement with the laboratory or course instructor. Absences will be excused for:
   a. Death of an immediate family member. An immediate family member is considered to be a grandparent, parent, sibling, spouse, in-law, aunt, uncle, or child.
   b. Summons to appear in court or jury duty. A copy of the summons is required.
   c. Call to military service. A copy of your orders to report is required.
   d. University sponsored event. Members of athletic teams, college bowl participants, etc. will be excused with proper notification.
   e. Debilitating illness or disability. Illnesses will be addressed on an individual basis. If a student is affected by an illness that is not debilitating, (i.e. flu, virus...
infection) which may result in the student missing one or more consecutive class sessions, that student will be marked as unexcused for the amount of days missed unless a doctor’s note is provided.

8. All quizzes, exams, or assignments missed due to unexcused absences will be recorded as zeros.
9. If you have a documented disability that will impact your work in this class, please contact the TA or instructor to discuss your needs.
10. Each group is responsible for proper clean up at the end of the laboratory period. This includes proper cleaning and storage of microscopes, proper disposal of contaminated materials, disinfection of benches and workspaces, etc. (see Waste Disposal Guidelines & Clean-up below)
11. Three unexcused lab absences will result in failure (receiving 0 points) of the laboratory portion of the course.

**Attendance Policy:**

General and specific policies regarding attendance in BIOL 3044 Laboratory sections are provided in the sections above.

**Grading:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation/safety</td>
<td>50</td>
</tr>
<tr>
<td>Quizzes</td>
<td>100</td>
</tr>
<tr>
<td>Laboratory Practical</td>
<td>100</td>
</tr>
<tr>
<td>Project: collection sheet</td>
<td>50</td>
</tr>
<tr>
<td>Project: poster</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>

Lab constitutes approximately 40% of the BIOL 3044 grade.

The laboratory participation/safety grade is based on adherence to laboratory safety and attendance policies. Everyone starts the semester with 50 points. During the first two lab periods, students will be given gentle reminders regarding lab safety and attendance as needed. After that, points will be deducted for each violation. The severity of the deduction is at the discretion of the instructor. The exception to this regards appropriate dress. As stated above, students wearing open-toed shoes or short pants/skirts will not be permitted to enter the laboratory.

Quizzes will be given in the first 10 minutes of the laboratory period (see General Course Policies). Quizzes will cover the exercises from the previous week and material from the upcoming exercises. Thus, it is important both to understand your previous results and to have read the exercises for the week so that you are prepared.
The major project for this semester will be to assemble a bacteria collection. Various methods for enrichment and isolation of bacteria and other microbes from the environment will be introduced. Students will use these various methods to assemble a collection of bacteria. The identity of each member of the collection will be supported by morphological or biochemical testing. Completion of the collection checklist accounts for 50 points of the total. In addition, the information obtained from the collection will serve as the basis of a poster presentation. Each group of students will create and present a poster, which accounts for 100 of the total points, during the final laboratory period. A more detailed description of the project will be handed out later in the semester.

During the last laboratory session, a laboratory final exam will be given. This exam will be a combination practical/written exam and cover techniques, assay interpretation and data interpretation.

### Tentative Schedule of Laboratory Exercises
(Exercises referred to by page number in the laboratory manual)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Exercise</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug. 27</td>
<td>Introduction, safety 1, 5, 11, 51, 59</td>
<td>Lab Check-in, Introduction, Laboratory Safety; Aseptic technique; Microscopy; Collection</td>
</tr>
</tbody>
</table>
| 2    | Sept. 3| None              | Labor Day – No Lab
Homework: Consider and plan isolate collection |
| 3    | Sept. 10| 17, 65, 69, 75    | Streak plate; Smears; Simple stains; Quiz 1
Homework: Collect mud for Winogradsky column |
| 4    | Sept. 17| 47, 81            | Set up Winogradsky columns; Gram stain; Quiz 2 |
| 5    | Sept. 24| 103, 109          | Culture characteristics; Nutritional needs; Quiz 3 |
| 6    | Oct. 1  | 115, 121, 125, 131, 213 | Effect of temperature, pH & oxygen on growth; Isolation of antimicrobial-producers (I); Quiz 4 |
| 7    | Oct. 8  | 213               | Starch/cellulose degrader enrichment; Isolation of antimicrobial-producers (II); Quiz 5 |
| 8    | Oct. 15| 93                | Spore stain; Capsule stain; Quiz 6
Continue isolations |
| 9    | Oct. 22| 137, 139, 145, 151, 155, 167 | Differential tests (I); Quiz 7
Continue isolations |
| 10   | Oct. 29| 171, 175, 181, 185, 189, 193 | Differential tests (II); Quiz 8
Continue isolations |
<table>
<thead>
<tr>
<th>Date</th>
<th>Assignment</th>
</tr>
</thead>
</table>
| Nov. 5 | Enzyme induction; **Quiz 9**  
Continue isolations |
| Nov. 12 | Conjugation; **Quiz 10**  
Continue isolations |
| Nov. 19 | Continue work on isolates (if needed); Poster development; **Quiz 11** |
| Nov. 26 | **Poster Presentations** |
| Dec. 3 | **Laboratory Final Exam**  
**Last day to check-out** |

*Note on experimental cultures:* As noted in your lab manual, growth or other results should be read after 24 – 48 hours (although some slow growers may require 72 hours). All members of the group should have the opportunity to observe the results. If this becomes problematic, after the required growth period the cultures can be transferred to the refrigerator (4°C) until the following Monday. Keep in mind, however, that even with the lower temperature, the organisms will continue to metabolize and your results may change.

**Laboratory Safety:**

Microbes are found everywhere within the environment – in the air, on surfaces, on your body. In the Bacteriology Laboratory, we deal with microbes at higher concentrations than found in the environment. We will also be dealing with organisms that are potentially pathogenic to humans – thus we treat EVERY organism as if it were pathogenic.

1. No food or drinks are to be taken into or consumed in the laboratory. Further, ANY activity that involves hand-to-face contact (applying cosmetics, handling contact lenses, etc.) should be avoided.
2. Disinfect the work area before starting lab, after completing lab, and after any spills that occur. Do not assume that the lab members before you cleaned up after themselves.
3. Wash your hands thoroughly with soap and water before leaving the laboratory – even if you need to leave only for a short time.
4. Open-toed shoes, sandals or similar footwear are not appropriate and should not be worn in the laboratory. Shorts and short skirts are also inappropriate in terms of laboratory safety. These regulations are for your personal safety. Students wearing inappropriate dress will not be permitted to enter the laboratory.
5. Long hair must be tied back as it is not only a potential source of contamination, but also a fire hazard.
6. Be aware of the location of safety equipment such as fire extinguishers, eyewashes, showers, First Aid kits, etc.
7. Follow all waste disposal guidelines. (see below)
8. Refer to the Introduction section of your lab manual for additional discussion of laboratory safety issues.
9. When in doubt, ASK!
**Waste Disposal and Cleanup:**
Proper cleanup of the laboratory is essential to reduce contamination and to ensure that subsequent lab sections have a clean and organized work area. The following guidelines must be observed during each lab session. Each student must take an active role in proper cleanup and waste disposal. Do not leave it for someone else.

**Lab benches:** There are squirt bottles of disinfectant (Cidecon) located on the lab benches. You must clean the lab bench before AND after each lab. If you should run out of disinfectant, refill the bottle from the large carboy next to the microscope cabinet. The best technique for disinfection is to stream disinfectant over the surface, then use a paper towel to even the fluid over the surface so that a light film remains. Do not wipe to dryness, but allow the disinfectant to air dry. The extended contact of the fluid to the surface increases effectiveness.

**Paper towels** and **soap** are located next to the sink.

**Waste material:** Bacterial cultures must be killed prior to disposal. Each group must dispose of their cultures once they have obtained and recorded their results. Dispose of each type of waste according to the following guidelines.

- **Liquid cultures:** add bleach to the tube. Squirt bottles containing bleach (1:2 dilution of household bleach in water, 2.5% final) are kept next to the sink. Add 1/5 the culture volume (usually about 1 cm) and place the tube into the holding racks next to the sink. The tube cap should go into the appropriately marked basket. **NEVER** pour your cultures down the drain or into the trash.
- **Solid cultures (plates):** All cultures on plastic Petri plates are disposed of in the Contaminated Material Container (CMC, large box with the red plastic bag) next to the sink.
- **Solid cultures (slants):** For cultures on agar slants – remove the cap and place the cap in the appropriate basket. The tube is disposed of in the CMC. **DO NOT** bleach your slants.
- **Semi-solid cultures:** Some growth media are termed semi-solid because they do not contain enough agar to completely solidify. These media are treated like agar slants.
- **Additional note on CMCs:** Only materials that are visibly contaminated are to be put into CMCs. Paper towels used for washing hands go into the trash, as do transfer pipette wrappers, sterile swab wrappers and the like. If the organisms are dead/killed – as with paper towels used to wipe up Cidecon from the benches – the material still goes into the trash.
Acknowledgement of Laboratory Policies and Safety Practices
Bacteriology – BIOL 3044

I _________________________________ (name of student) have received a copy of the syllabus, laboratory schedule and policies of James Masuoka for Biology 3044.

__________________________________ (Signature)

__________________________________ (Date)

Student Safety Contract

To emphasize the importance of biological safety and security concerns, all students taking a course in the Microbiology Teaching Laboratory (Bolin 223 & 225) must sign this student safety contract. No student will be allowed to work in the laboratory without turning in a signed contract.

I _________________________________ (name of student) understand that Bolin 223/225 is a laboratory room in which exercises are performed using viable microorganisms. As stated above, in the Bacteriology Laboratory, we deal with microbes at higher concentrations than are found in the environment. We will also be culturing organisms that are potentially pathogenic to humans, such as Escherichia coli, Salmonella sp., Streptococcus sp. and Staphylococcus sp. Although not every organism is a known pathogen, we treat EVERY organism as if it were pathogenic. I understand that I should not eat food, drink beverages, chew gum, or apply cosmetics (including contact lenses) while I am in the room.

I understand that this room contains hazardous chemicals and valuable equipment. I understand that I am not to use chemical reagents or equipment until I have received instruction in the proper utilization, safety precautions, etc. for each reagent or piece of equipment. I realize that following these safety rules insures my own safety and that of my fellow students and instructors. I cooperate with my instructors and fellow students to maintain a safe laboratory environment. I will closely follow my instructors’ oral and written instruction.

__________________________________ (Signature)

__________________________________ (Date)

(Adapted from Bauman, R.; Amarillo College)