BIOL 4021: Immunology Laboratory  
Course Syllabus: Spring 2011

General Information

Course Meetings: M (2:00 – 4:50 pm) Bolin Hall 223

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

Required Materials:
- Laboratory notebook
  - composition-type book, bound
  - (preferably grid-ruled rather than lined)
- Laboratory exercises (purchase in the Biology Office)
- Sharpie-style marker, wax pencil, etc.

Course Description (from the catalog):
This course introduces microscopic, molecular and serological techniques used in basic and clinical immunology.

Course Objectives:
- To enhance your skills and abilities as laboratory scientist
- To develop proper habits to become an effective and safe laboratory worker
- To develop technical skills with various materials and methods used in clinical and basic research laboratories
- To enhance understanding of immune system function
- To demonstrate how immune system components can be harnessed to become useful tools in various areas of biological research
Classroom expectations and policies:

- You are expected to be prepared for lab by: 1) reading the text, lab manual and handouts prior to coming to class; 2) having paper and pen at hand
- You are expected to arrive a few minutes early in order to mentally prepare.
- Personal electronic devices (cell phones, pagers, MP3 players, etc.) are to be turned off/silenced and stowed out of sight for the duration of class or lab.
- Food and beverages are prohibited in the lab. [See also safety section below]
- Points will be deducted from assignments turned in late.
- Student Conduct: Please refer to the MSU Student Handbook for university policies related to student responsibilities, rights and activities. For example, see page 41 for valid grounds for an instructor drop (excessive absence, indifferent attitude, disruptive conduct, failure to meet class assignments), page 70 for the university's policy on classroom conduct, and page 71 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.
- It is NOT possible to make up missed labs.

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 (i.e. BIOL 4021).

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. 39]
Attendance Policy (cont.):

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 Make-Up Policy:

Because of the nature of the exams – laboratory practical – that require set up of equipment and assays, make-up exams cannot be provided except for extraordinary circumstances. Should these circumstances arise, the content and format of the make-up exam will be at the discretion of the instructor.

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.

This course is not graded on a traditional curve, but it is scaled to where the students are/end up. This allows for any adjustments that the instructor deems necessary. The course is worth approximately 500 points. Grade categories and equivalent percentages are as indicated: A (90-100%); B (80-89%); C (70-79%); D (60-69%); F (59% and below). Passing requires 60% of the points (unadjusted) for the course, or 300. Fractional percentages will be rounded at the end of the semester.

**Note:** No regrades will be provided for exams or assignments done in pencil. In addition, misspelled words and incorrect 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>Weekly quizzes/questions:</td>
<td>100</td>
</tr>
<tr>
<td>Exams</td>
<td>200</td>
</tr>
<tr>
<td>Notebooks</td>
<td>50</td>
</tr>
<tr>
<td>Experimental Critique:</td>
<td>50</td>
</tr>
<tr>
<td>Participation</td>
<td>100</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>500</strong></td>
</tr>
</tbody>
</table>

**Quizzes** will be given in the first 10 minutes of the laboratory period. If you are late, you will have whatever time remains to complete the quiz. If you are more than 10 minutes late, you will not be able to take the quiz that week. 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.

**Exams** will focus on what was covered since the previous exam. The exams will primarily be in a practical-type format, emphasizing application and problem-solving. However, additional questions following a more typical written exam format may also be included.

As stated in the Laboratory Manual, laboratory notebooks are considered to be the property of the laboratory in a research, industrial or clinical setting. In these cases, notebooks are to remain in the lab.

Notebooks will be collected periodically throughout the semester for assessment and to provide comments on what you are doing or what you are including. Notebook assessment will be based on organization, legibility, and completeness, and is an important part of your grade! You will be checked for completion of data collection and interpretation. Additional information on keeping laboratory notebooks is provided in the Laboratory Manual introductory materials.

The experimental critique assignment involves a short paper analyzing data presented in a journal article. The objective of this assignment is to identify the specific question(s) being asked in the paper, and to describe and critique the experimental approach the authors use to address their question or test their hypothesis. A more detailed description of the assignment and a grading rubric will be provided separately.

The laboratory participation/safety grade is based on adherence to laboratory safety and attendance policies (see below and in Laboratory Manual). Everyone starts the semester with 100 points. During the first week of lab, 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.
Affective Domain:

Development of professional attributes goes beyond technical competency. It also includes compliance with safety regulations, considerate behavior towards patients, co-workers, supplies & equipment, as well as ethical conduct. In addition, a subjective assessment of preparation, initiative and resourcefulness may be applied. During EACH laboratory period the following behaviors should be observed.

Personal safety:

1. No food or drinks are to be taken into or consumed in the laboratory.
2. Do not apply cosmetics or handle contact lenses in the laboratory.
3. Wash your hands thoroughly with soap and water before leaving the laboratory – even if 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. Wear a lab coat, gloves and protective eyewear when indicated.
7. Identify the location of safety devices in the laboratory.

Laboratory Supplies & Equipment:

1. Use lab supplies efficiently. You are allotted supplies as necessary to perform each lab exercise.
2. You should use glassware, pipets, etc. safely to minimize breakage. Broken glassware should be handled according to safety procedures. The instructor must be notified.
3. Dirty reusable glassware and lab equipment should be washed, rinsed with tap and then DI water and placed in the designated area when the lab exercise is complete.
4. Use lab equipment appropriately and safely. Prior to usage you should familiarize yourself with operation procedures.

Laboratory work area:

1. Keep bench-top work area clean and uncluttered. Maintain lab supplies in neat and orderly arrangement in work area.
2. Backpacks and other materials should not be within the immediate working lab area. These should be placed in a non-working area. Use ONLY pens and pencils provided in the lab. We don’t want you to take contamination home with you.
3. Clean bench-top with disinfectant before leaving the lab.
4. While working in the lab and before leaving, place chair under the bench.
5. Minimize clutter of notebooks, papers, etc. around work area.
6. Clean and properly store microscopes at end of session, if used.
7. Dispose of contaminated materials appropriately.

(adapted from D. Berson, Advanced Clinical Microbiology Laboratory, UNLV)
Important Dates (Spring 2011):

Classes begin: January 15
Martin Luther King Jr. Birthday (no classes): January 17
Midterm Exam: March 7
Spring Break (no classes): March 14 – 18
Last day to drop with a “W”: March 21
Experimental Critique Assignment due: March 21
Spring Research Colloquium: April 8
Easter Break (no classes): April 21 – 22
Final Exam: May 2
Classes end: May 6

Tentative Laboratory Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Exercise</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/17</td>
<td>1</td>
<td></td>
<td>No Lab – MLK, Jr. Day</td>
</tr>
<tr>
<td>1/24</td>
<td>2</td>
<td></td>
<td>Introduction: Safety, requirements, notebooks</td>
</tr>
<tr>
<td>1/31</td>
<td>3</td>
<td>2</td>
<td>Cells of the Immune System</td>
</tr>
<tr>
<td>2/7</td>
<td>4</td>
<td>3</td>
<td>Innate/Natural Resistance</td>
</tr>
<tr>
<td>2/14</td>
<td>5</td>
<td>1</td>
<td>Dilutions &amp; Standard Curves</td>
</tr>
<tr>
<td>2/21</td>
<td>6</td>
<td>4, 5</td>
<td>Precipitin ring; RIA; Ouchterlony</td>
</tr>
<tr>
<td>2/28</td>
<td>7</td>
<td>6</td>
<td>Agglutination: typing, titer</td>
</tr>
<tr>
<td>3/7</td>
<td>8</td>
<td>[1 – 6]</td>
<td>Midterm Exam</td>
</tr>
<tr>
<td>3/14</td>
<td>9</td>
<td></td>
<td>Spring Break – No Lab</td>
</tr>
<tr>
<td>3/21</td>
<td>10</td>
<td>7</td>
<td>Agglutination: diagnostic assays</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Written assignment due</td>
</tr>
<tr>
<td>3/28</td>
<td>11</td>
<td>12</td>
<td>Immunofluorescence</td>
</tr>
<tr>
<td>4/4</td>
<td>12</td>
<td>8, 9</td>
<td>ELISA: Epidemiology study, titer setup</td>
</tr>
<tr>
<td>4/11</td>
<td>13</td>
<td>9</td>
<td>ELISA: Antiserum titering</td>
</tr>
<tr>
<td>4/18</td>
<td>14</td>
<td>10</td>
<td>Western blot: electrophoresis &amp; transfer</td>
</tr>
<tr>
<td>4/25</td>
<td>15</td>
<td>11</td>
<td>Western blot: Probe &amp; detect</td>
</tr>
<tr>
<td>5/2</td>
<td>16</td>
<td>[7 – 12]</td>
<td>Final Exam</td>
</tr>
</tbody>
</table>