BIOL 3381 Intro Microbiology Lab  
Fall 2012  
Room D104 Cherry Emerson  
Section A: Mondays 12:05 - 2:55 pm  
Section B: Mondays 3:05 – 5:55 pm

Instructors
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Grading
Reports 30% (10% each)  
Quizzes 40%  
Final Report 30%

Course Policies
- There are no “make-up” quizzes. To allow for university excused absences, you will be allowed 2 dropped quiz grades.
- Lab reports will be deducted by 10% for each day they are late. You will be allowed to drop one lab report (not the Final Report).
- If you fail to clean your station, leave lab early without finishing your work, or fail to come to a lab session, your weekly quiz will not be graded and a score of "0" will be recorded.
- Quizzes will cover material 2 weeks prior to, and the week of the quiz. Quizzes will generally be administered prior to the beginning of lab.
- University policy on academic honesty: All students of the university are responsible for abiding by the Georgia Tech Honor Code. Lack of knowledge of this code is NOT an acceptable defense to any charge of academic dishonesty. All members of the academic community are expected to report violations of these standards of academic conduct to the appropriate authorities. The procedures for such reporting are on file in the offices of the deans of each college, the dean of students, and the provost. Please read the university policy on academic honesty at http://www.honor.gatech.edu/honorcode/honorcode.txt. Cheating and/or plagiarism will not be tolerated.
- **Course Description: Please Note:** BIOL 3381 is a "separate course" from the lecture (Biol 3380 Microbiology). **Biol 3381 cannot be taken independent of Lecture.**
Overview
This lab is designed to explore commonly used microbiological techniques, such as culturing microorganisms, conducting microbial isolation techniques, staining, identifying various biochemical properties of different organisms, polymerase chain reaction (PCR), DNA isolations, genetic complementation, transposon mutagenesis, bacterial conjugations and transformations.

Written reports
After the completion of each group of experiments, each student should prepare a journal style article for the lab report. This should include:

- **Abstract:** concise summary of rationale, design and results of experiment (2-3 sentences)
- **Introduction:** provides adequate background to give a biologist the ability to understand why you did the experiment. This should include the hypothesis.
- **Materials and Methods:** concise summary of experimental procedures (should not read like a cookbook)
- **Results:** written and graphical representation of the results
- **Discussion:** analysis of the results and conclusions drawn.
- **References**
<table>
<thead>
<tr>
<th>Date</th>
<th>Experiment</th>
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<tbody>
<tr>
<td>Aug 20</td>
<td>Distribution of paper&lt;br&gt;Lab 1 – Isolation, cultivation and staining</td>
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<tr>
<td>Aug 27</td>
<td>Discussion of paper and quiz&lt;br&gt;Lab 2 - Isolation of <em>Pseudomonas</em> species from soil&lt;br&gt;Lab 3 - Nutritional requirements</td>
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<tr>
<td>Sep 3</td>
<td>NO CLASS – LABOR DAY</td>
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<td>Sep 10</td>
<td>Lab 2 continued - Isolation of <em>Pseudomonas</em> species from soil (II)&lt;br&gt;Lab 4 – Biochemical Activity&lt;br&gt;&lt;strong&gt;Report 1 due&lt;/strong&gt;</td>
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<td>Sep 17</td>
<td>Lab 2 continued – Isolation of <em>Pseudomonas</em> species from soil (III)&lt;br&gt;Lab 4 continued – Biochemical Activity&lt;br&gt;&lt;strong&gt;Report 2 due&lt;/strong&gt;</td>
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<td>Sep 24</td>
<td>Lab 5 - PCR of phzF gene</td>
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<td>Oct 1</td>
<td>Lab 6 - Plasmid DNA isolation and cultivation and transformation of mutant <em>Pseudomonas</em> strains</td>
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<td>Oct 8</td>
<td>Lab 7 – UV Radiation Damage and Repair&lt;br&gt;&lt;strong&gt;Report 2 due&lt;/strong&gt;</td>
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<td>Oct 15</td>
<td>NO LAB – FALL BREAK (OCT 13 – 16)</td>
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<td>Oct 22</td>
<td>Lab 8 – <em>Vibrio harveyi</em> quorum sensing</td>
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<td>Oct 29</td>
<td>Lab 9 – cross feeding by secreted quorum sensing signals</td>
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<td>Nov 5</td>
<td>Lab 10 - complementation of a <em>V. harveyi</em> luciferase mutant&lt;br&gt;Lab 11 – transposon mutagenesis of <em>V. harveyi</em> (screen for Lux´)&lt;br&gt;&lt;strong&gt;Report 3 due&lt;/strong&gt;</td>
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<td>Nov 12</td>
<td>Lab 12 – confirms Lux´ mutant phenotype and genomic DNA prep</td>
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<td>Nov 19</td>
<td>Lab 13 – restriction digest and ligation of genomic DNA</td>
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<td>Nov 26</td>
<td>Lab 14 – transformation of <em>E. coli</em> with ligation</td>
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<td>Dec 3</td>
<td>Lab 15 – miniprep transformants, sequence transposon junction</td>
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<td>Dec 10</td>
<td>Lab 16 - identification of gene disrupted by transposon insertion&lt;br&gt;&lt;strong&gt;Final Report due&lt;/strong&gt;</td>
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**Report 1** - Isolation, cultivation, staining, and nutritional requirements
**Report 2** - Isolation of *Pseudomonas* from soil
**Report 3** - *V. harveyi* quorum sensing
**Final Report** - *V. harveyi* mutagenesis