BSC 304 Genetics Lab Syllabus (CRN 22332)
Spring 2013

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Office Hours:Tue, 10.00 AM – 11.00 AM and Thu 9 AM – 10 AM
Or by appointment, include BSC 303 in subject line of E-mails.

Course Time: Wednesdays, 1 – 3.50 PM or 4.00 – 6.50 PM
@STC – 324

Course Objectives and Student Learning Outcomes:
This laboratory course is designed to familiarize you with various tools and techniques employed in molecular genetics. By the end of this course you should be able to: transform bacterial cells, isolate DNA, analyze DNA by restriction enzymes, PCR amplification of DNA, transfection and overexpression proteins in mammalian cells.

Laboratory and Safety Conduct:
*Failure to comply with safety conduct will result in immediate expulsion from lab for the day and a zero will be given for the day’s assignments.*

1) Food and drinks are NOT allowed in the lab
2) Closed toed shoes that completely cover the foot must be worn at all times in lab.
   (Ballet flats or similar shoes the expose the top of the foot are not allowed)
3) Long jeans or pants must be worn. Shorts and capris are not allowed.
4) Long hair must be tied back and kept away from flame
5) Latex or Vinyl gloves must be worn while conducting experiments or handling reagents or organisms
6) Spills or broken glass must be reported immediately
7) Biological wastes must be disposed of correctly. (Micropipette tips in the red boxes, pipette tips in the cream cylinders, culture dishes, test tubes, etc. in the biological waste/glass container boxes)
8) Avoid breathing in or tasting chemicals – never pipette by mouth
9) No unauthorized experiments are allowed
10) Culture tubes are to be placed in a rack, never on the counter
11) Cell phones should be placed on silent or be turned off
12) Disruptive behavior will result in expulsion from lab
13) Remember to use caution when handing glassware or sharp tools.
14) At the start of each lab the bench top must be wiped off with disinfectant.
15) You must wash your hands after working with organisms and before you leave the laboratory.

**Policies and Procedures:**

1. Attendance is MANDATORY and will be taken every day. Makeup labs will only be arranged in the event of an EXCUSED absence (as defined by the Student’s Guidebook/Undergrad Catalog). An unexcused absence will result in a zero for attendance and any assignments completed that day.
2. Students may only attend the lab session they have registered for unless previously discussed and approved by their instructor BEFORE the lab session starts.
3. Students must be on time for lab. You will not be given extra time on an assignment if you are late.
4. A quiz will be taken at the start of every lab over the previous lab’s material. These quizzes will be started promptly at the beginning of class and you will be allowed 10 minutes to complete the quiz. If you arrive late you will not be given extra time to work on the quiz.
5. Before leaving lab each day you must: (groups who do not complete these tasks before leaving will lose point from that day’s attendance)
6. Wash and clean all glassware and workbenches, making sure to remove any ink with alcohol
7. Put away all materials and glassware in their proper place
8. Throw away any paper towels, kim wipes, etc. you have used.
9. Place all materials for disposal in the appropriate containers.
10. Clean all bench tops with disinfectant.

**Grading:**

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<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>10%</td>
<td>25 Points</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20%</td>
<td>50 Points</td>
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<tr>
<td>Lab Reports (2 total)</td>
<td>20%</td>
<td>50 Points</td>
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<tr>
<td>Midterm-25%</td>
<td></td>
<td>62.5 Points</td>
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<tr>
<td>Final-25%</td>
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<td>62.5 Points</td>
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<td><strong>Total</strong></td>
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<td><strong>250 Points</strong></td>
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**Formal Lab Write-up:**

Scientific journal format

- 12 point Arial or Times New Roman, double spaced
- **Abstract** - short summary of your experiment, include hypothesis
- **Introduction** - introduce the topic, provide background information, tell purpose for the experiment, include hypothesis
• **Methods and Materials** - describe all methods and materials used in the experiment; should describe them in enough detail that another investigator could duplicate the experiment

• **Results** - include all data derived from the experiment; refer to figures and tables used to illustrate data

• **Discussion** - interpret data, relate your results to that of other studies, describes potential weaknesses in experiment

• **References** - all sources are properly cited here as well as within the body of your paper

**Obligatory Statements:**

*Plagiarism is a criminal activity. You must cite all sources of information. Copying of material, whether, parts of sentences, whole sentences, paragraphs, or entire articles, will result in a grade of zero for your essay and can result in further disciplinary action.*

*All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment (see Student’s Guide Handbook, Policies and Procedures, Conduct.)*

*The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have disability requiring accommodations please contact: Office of Student Disability Resources and Services, Texas A&M University-Commerce, Gee Library, Room 132, phone (903) 886-5150 or (903) 886-5835, fax (903) 468-8148, StudentDisabilityServices@tamu-commerce.edu.*

**Lab Schedule**

Each week a quiz will be given at the beginning of each lab covering the material presented from the previous lab.

Laboratory Schedule:

1/16: Syllabus, Safety Contract
1/23: Genetics Problems
1/30: Bacterial Transformation
2/6: Plasmid Isolation and Quantitation
2/13: Agarose Gel Electrophoresis
2/20: Restriction Digest
2/27: Restriction mapping, Plasmid isolation and Electrophoresis Lab Report Due

**3/6: MIDTERM**

3/13: Spring Break
3/20: PCR overview, DNA Sequencing Overview
4/3: Cell culture overview
4/10: GFP plasmid transfection
4/17: Bacterial mutagenesis
4/24: DNA Search and Analysis (online), Cell culture and transfection lab report due

**5/1: FINAL EXAM**

*ALL DATES AND ASSIGNMENTS ARE TENTATIVE AND MAY SUBJECT TO CHANGE*