Genetics Lab 305L Course Policy, Fall 2015
Sections Tuesday L02/ Wednesday L03.
R. T. Dillon (SCRA Innovation Center, 645 Meeting Street)
953-8087, DillonR@cofc.edu

1. Catalog Description — An introduction to the principles of heredity using common experimental organisms. Recent techniques in molecular genetics are also covered. Biology 211 and 211D (Biodiversity) is a prerequisite, and Genetics Lecture 305 is a pre-requisite or co-requisite. Math 250 (Statistical Methods) is a prerequisite for all 300-level biology classes.

2. Explicit Learning Outcome — “It is the business of a University to impart to the rank and file of the men whom it trains the right thought of the world, the thought which it has tested and established, the principles which have stood through the seasons and become at length part of the immemorial wisdom of the race. The object of education is not merely to draw out the powers of the individual mind: it is rather its right object to draw all minds to a proper adjustment to the physical and social world in which they are to have their life and their development: to enlighten, strengthen and make fit. The business of the world is not individual success, but its own betterment, strengthening, and growth in spiritual insight—'So teach us to number our days, that we may apply our hearts unto wisdom' is its right prayer and aspiration." Woodrow Wilson, 1896.

3. The Genetics Laboratory (Relocated to SSMB 141 during the renovation) is open essentially every day during regular school hours, although the labs for several other courses are sharing our same space. So if you need to work in the lab at some time other than assigned for your class, please be respectful. I will have “office hours” in SSMB 141 on Tuesday and Wednesday 1 – 2:00, and will certainly be present at many other times as well, but it is always best to make an appointment.

4. Lab Manual is available from the College bookstore. Please read the introduction and be familiar with each investigation before coming to class. You will also find it helpful to review the relevant sections of your textbook.

5. Attendance. You are expected to do your share of the work. Many of the investigations (especially the fruit fly ones) can get tedious, and it is unfair to expect your lab partner to do all the work if you miss a class. So if you're sick, please call 953-8087 so arrangements can be made. Some of the investigations may be impossible to make up, although you can get the data later.

6. Lab reports are variably-formatted. There will be questions to answer and analyses to perform after each exercise. You must work closely with your lab partner to gather data for most lab reports, but please think independently. Everyone should submit his own report with his own data analysis. Reports are due one week after the completion of the investigation, unless noted below. Reports not submitted promptly at the start of class are late, and will be marked off 50%. If you are sick, send me your lab report by email or by courier. You have a week-long "grace period" in which to submit your report for half credit, but lab reports will not be accepted thereafter.

7. Practical quizzes do not consume the entire class period and are not comprehensive. Nevertheless, the same policy pertains in lab and lecture. Contact me ASAP if you must miss a quiz. Regardless of your excuse, the later the make-up, the harder the test.

8. You will need a calculator for this course. A smart phone will not suffice. No smart phones or any other device that may be connected to the internet will be allowed during quizzes.

9. Watch the Genetics Lab website for “News, Announcements, and Reminders” as the semester proceeds:
http://dillonr.people.cofc.edu/genelab.htm
Among the many useful resources available from the course site is a pdf download entitled, “Dr. Dillon’s Teaching Philosophy.”
Genetics Lab 305L Course Grading, Fall 2015

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<tr>
<th>LAB REPORT</th>
<th>Due date for Tuesday.L02</th>
<th>Due Date for Wednesday.L03</th>
<th>POINTS</th>
<th>TOTALS</th>
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<tr>
<td>1. Probability and Statistics</td>
<td>Sept 8</td>
<td>Sept 9</td>
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<td>2. Drosophila familiarization</td>
<td>Sept 8</td>
<td>Sept 9</td>
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<td>3. Dihybrid crosses in corn</td>
<td>Sept 22</td>
<td>Sept 23</td>
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<td>4. Variable expressivity</td>
<td>Sept 29</td>
<td>Sept 30</td>
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<td>5. Incomplete penetrance</td>
<td>Oct 13</td>
<td>Oct 14</td>
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<td>7. Human karyotype analysis</td>
<td>Nov 10</td>
<td>Nov 4</td>
<td>12</td>
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<td>8. Chromatography of eye pigments</td>
<td>Nov 17</td>
<td>Nov 11</td>
<td>10</td>
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<td>9. Protein electrophoresis</td>
<td>Dec 1</td>
<td>Dec 2</td>
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<td>10. Selection and genetic drift</td>
<td>Dec 8</td>
<td>Dec 8</td>
<td>24</td>
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TOTAL for lab reports 105
LAB EXAMS, two @ 40 pts ea. 80
Lab performance 15

COURSE TOTAL 200
**Wednesday** Schedule, Fall 2015  
Genetics Lab 305.L03  
R. T. Dillon  
Readings are from my *Genetics Laboratory Manual*, available at the bookstore.

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<tr>
<th>Date</th>
<th>Topic &amp; Exercise</th>
<th>Readings</th>
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<tr>
<td>Aug 26</td>
<td>Introduction</td>
<td>-</td>
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<tr>
<td>Sept 2</td>
<td>Probability &amp; Statistics</td>
<td>Inv. 1</td>
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| Sept 9  | *Drosophila* familiarization  
Set up two experiments with the "Lobed" gene:  
- A comparison of variation in expressivity due to  
genetics and environment ("expressivity")  
- Incomplete penetrance in a monohybrid cross ("penetrance") | Inv. 3  
Inv. 4 |
| Sept 16 | Independent assortment and gene interaction in maize  
Set up selection & drift experiments ("S&D")  
Clear penetrance & expressivity experiments | Inv. 2  
Inv. 5 |
| Sept 23 | Analysis of variable expressivity  
Set up trihybrid cross for gene mapping experiment ("THC")  
Clear S&D experiments | Inv. 6  
Inv. 4 |
| Sept 30 | Count & transfer F1 from S&D experiments  
Clear penetrance experiment  
Clear parentals from THC | Inv. 5   |
| Oct 7   | Analysis of incomplete penetrance in a monohybrid cross  
Make THC test cross  
Clear S&D experiments | Inv. 4 |
| Oct 14  | **Lab Quiz**  
Count & transfer F2 from S&D experiments  
Clear F1 from THC | Inv. 5 |
| Oct 21  | Linkage analysis  
Clear S&D experiments | Inv. 6 |
| Oct 28  | Human cytogenetics  
Count & transfer F3 from S&D experiments | Inv. 7  
Inv. 5 |
| Nov 4   | Chromatography  
Clear S&D experiments | Inv. 8 |
| Nov 11  | Protein electrophoresis | Inv. 9 |
| Nov 18  | Count F4 and terminate S&D experiments  
Selection and genetic drift | Inv. 5 |
| Nov 25  | Thanksgiving Holiday | - |
| Dec 2   | **Lab Quiz** | - |