**Molecular Genetics PCB4522** (Revised 5Jan12)

Course/Section Information: PCB4522 Spring 2012-section 4229; Final exam Group 3D

**Course Requirements:** MCB3020 or MCB3023 (Botany, Zoology and Biology majors may be able to get a waiver to substitute other advanced biology, biochemistry or molecular biology courses)

**Instructor:** William B. Gurley

**Textbook:** Genes X, Benjamin Lewin

**Introduction:** This course will discuss the synthesis and manipulation of DNA and the principles of gene expression at the molecular level in both prokaryotes and eukaryotes. The topics covered will include an introduction to the concepts of DNA replication, repair and the packaging of the genome into chromosomes. In preparation for this course you should have an understanding of basic college level introductory biology and at least one other more specialized biology course such as Microbiology, Botany, Zoology, Genetics or Biochemistry.

**Presentation Format:** This course will be a hybrid between an online course and a traditional lecture style course. The goal is to have all lecture material prerecorded and posted here at the Sakai website. There will be approximately 3 hours of recorded lecture material available each week. On some occasions the class may only meet on Thursday for a discussion and review of the lecture material. All meetings in the classroom will be recorded for later viewing.

**Office hours:** Fridays 4-6 (also after the Thursday discussion sessions in the classroom)

**Laptop computer requirement:**

All exams will be administered through E-learning in Sakai with students using personal laptop computers. The exams will be given during regularly scheduled class time in the regular lecture hall room (CSE room A101).

1) Students are required to have, or have access to, a laptop computer that has been configured with the **lockdown browser**.

2) In addition, the student is expected to have sufficient **battery life** to last for the entire 50 min exam.

The 5 major exams can only be taken at the appointed time with the student in attendance (not at a remote location). All exams will be **proctored** by the instructor with help from graduate student teaching assistants.

Anyone not able to meet the above laptop computer requirements should contact the instructor as soon as possible.

**Spring 2012 Exam Calendar:**

- Jan 24 Exam 1
- Feb 16 Exam 2
- Mar 22 Exam 3
- Apr 19 Exam 4

May 3 Cumulative Final*
*Optional Cumulative Final (Friday May 3 from 3:00 PM to 5:00 PM; in the regular classroom)

Note: You can substitute this grade for the regular exam having the lowest score. However, if the score on the cumulative final is lower than your lowest grade, your original grade will stand. There is no penalty for taking the cumulative final and obtaining a grade too low to substitute.

Grading Policies:

Major Exams: 98.5 points.
There will be four major exams plus an optional cumulative final exam. Any of the four exams can be substituted by the score on the optional cumulative exam.

Homework assessments: 1.5 points.
A perfect score will equal 1.5 points on all homework assessments. Homework assessments are open book exercises to encourage you to read the lecture material before or during the week the topic is covered in lecture.

Optional Genome Project: 2 points extra. This will begin after Exam 3. You will be assigned an unknown cDNA and expected to identify the gene and organism. In addition, you will learn how to conduct a multiple sequence alignment using web-based tools.

How to calculate your grade:

Exam 1 = %grade x 16.36 pts
Exam 2 = %grade x 27.38 pts
Exam 3 = %grade x 27.38 pts
Exam 4 = %grade x 27.38 pts

Total from regular exams* = 98.5 pts

Homework assessments = 1.5 pts

Total = 100 pts

(Genomics Project = 2 pts) Note: these points will be added to the final, final grade. There is no penalty for not participating in the optional Genomics project.

*The optional Cumulative Final will substitute for the lowest exam grade. If it is lower than all others, there is no penalty. If Exam 1 is the lowest grade, the final grade will be calculated two ways: 1) substitute the cumulative final for Exam 1, and 2) substitute the cumulative final for the second lowest grade. The higher grade of these two possibilities will be the final grade.
There will be no grade curve.

<table>
<thead>
<tr>
<th>UF Minus Grading Scale Numerical Equivalents</th>
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<tbody>
<tr>
<td><strong>A</strong> = 90 or above</td>
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<tr>
<td><strong>A-</strong> = 87 - 89</td>
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<tr>
<td><strong>B+</strong> = 84 - 86</td>
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<td><strong>B</strong> = 80 - 83</td>
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<tr>
<td><strong>B-</strong> = 77 - 79</td>
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<td><strong>C+</strong> = 74 - 76</td>
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3:00 p.m. - 5:00 p.m.
Exam Group D

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<thead>
<tr>
<th>Group 28D</th>
<th>Group 30D</th>
<th>Group 1D</th>
<th>Group 2D</th>
<th>Group 3D</th>
<th>Group 4D</th>
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</thead>
<tbody>
<tr>
<td>Assembly</td>
<td>Time of Class</td>
<td>Time of Class</td>
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<td>Conflict</td>
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<tr>
<td>MAC 1105</td>
<td>Exams: 1, T R</td>
<td>2, M W F</td>
<td>4, T R</td>
<td>7, T R</td>
<td>Makeup</td>
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<tr>
<td>MAC 1140</td>
<td>Assembly</td>
<td>Exams:</td>
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<td>MAC 1147</td>
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<td>MCF 1106</td>
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UF Minus Grading Scale Numerical Equivalents

**A** = 90 or above
**A-** = 87 - 89
**B+** = 84 - 86
**B** = 80 - 83
**B-** = 77 - 79
**C+** = 74 - 76
**C** = 70 - 73
**C-** = 67 - 69
**D+** = 64 - 66
**D** = 60 - 63
**D-** = 57 - 59
**E** = 56 or below
**Schedule of lecture topics:**

**Exam 1 Text Material**

**Genes X** (current text)
Chapter 11 (The Replicon)
Chapter 12 (Extrachromosomal replicons)
Parts of Chapter 13 (Bacterial replication connected to cell cycle) as follows:

- **Introduction**
- Section 13.1-2 (replication is connected to the cell cycle),
- Section 13.7 (Segregation may require site-specific recombination)
- Section 13.10 (plasmid incompatibility is determined by the replicon, and
- Section 13.11 (The Coli E1 compatibility system is controlled by an RNA regulator).

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**Earlier editions:**

**Genes IX,**
Chapter 15
Chapter 16
and parts of Chapter 17 as follows:

- **Introduction**
- Section 17.1-2 (replication is connected to the cell cycle),
- Section 17.7 (Segregation may require site-specific recombination)
- Section 17.10 (plasmid incompatibility is determined by the replicon, and
- Section 17.11 (The Coli E1 compatibility system is controlled by an RNA regulator).

**Genes VIII:**
Chapter 13
- Sections 13.8-13.14; 13.22, 13.23
- Sections 18.13-18.15

**Genes VII:**
Chapter 13.1-3; 13.5-13.7
Chapter 14.18-4.21

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**Exam 2 Text Material**

**Genes X** (current text)
Chapter 14 (DNA Replication)
- Sections 14.1-14.16 (skip 14.15)
Chapter 15 (Homologous and site-specific recombination)
- Sections 15.1-15.14
Chapter 17 (Transposable elements and retroviruses)
- Sections 17.1-17.20, skip 17.17 (**revised 14Feb2011**)

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**Earlier editions:**

**Genes IX**
chapter 18
- sections: 18.1-18.13 (skip 18.14); 18.15-18.18
Chapter 19
Sections: 19.1-19.15
Chapter 21: entire chapter except skip sections 6, 9, 10 and 13.
Chapter 22 (Retroviruses & Retrotransposons) 22.1-22.12 (SKIP 22.8, 22.11) (Revised 14FEB2011)

Exam 3 Text Material (subject to revision; check Announcements)
Genes X (current text)
Chapter 16 Repair Systems (all sections)
Chapter 19 Prokaryotic Transcription
Chapter 26 The Operon (all sections except 26.15)

Earlier editions: ________________
Genes IX
Chapter 20 Repair (all sections)
Chapter 11 Transcription (all sections)
Chapter 12 The Operon (sections 12.1 through 12.21)
Chapter 28 Chromosomes (all sections except skip 28.8)

Spring Break (March 5-12)

Exam 4 Text Material (subject to revision; check Announcements)
Genes X (current text)
Chapter 9 Chromosomes (all sections except 9.8)
Chapter 10 Chromatin (sections 10.1-10.8; 10.10)
Chapter 20 Eukaryotic Transcription (all sections)
Transcription Factors (PowerPoint slides)

Earlier editions: ________________
Genes IX chapter 29 Nucleosomes
sections:
29.1 through 29.4
29.7 through 29.9
29.11 through 29.13

Genes VIII chapter 20 Nucleosomes
sections:
20.1 through 20.4
20.7 through 20.10 (skip 20.9)
20.12 through 20.13

Genes IX chapter 24 Promoters and Enhancers
Sections:
24.1 through 24.20 (all sections)
Notes:
1) For the last lecture section (Activating Transcription), the exam questions will all come from the lecture notes. The textbook is still relevant, but only as a resource if there are topics in the slides that are unclear.

2) The topic selection for lecture is subject to change at the instructor discretion. Students will be given advance notice of changes to accommodate their study and exam preparation.

Policy regarding letters of recommendation 2012
The Department of Microbiology & Cell Science policy on letters of recommendation advises instructors not to provide letters in classes of 50 or more students due to the impossibility of providing meaningful evaluations.

Unfortunately, due to the large number of students enrolled in this course (180), I will not be able to provide letters of recommendation. This is a reversal of my past policy where letters were usually provided upon request. The demand for spring 2009 (PCB4522) was for 78 letters. Each letter was allotted a 30 min interview where I tried to assess qualities such as leadership, motivation, integrity, research potential, teaching potential, intelligence, analytical and written communication skills, and appropriate dress. This is not possible based solely on student performance on 5 multiple choice exams. In order to truly evaluate each of the 78 students for whom I provided letters, it was clear that I needed a full time staff of investigators, councilors and psychologists. Needless to say, the Department was unable to furnish me with the staff required.

ACADEMIC HONESTY: As a result of completing the registration form at the University of Florida, every student has signed the following statement: “I understand that the University of Florida expects its students to be honest in all of their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University”.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES: Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodations.

UF COUNSELING SERVICES: Resources are available on campus for students having personal problems or lacking clear career and academic goals, which interfere with their academic performance. These resources include:

1. University Counseling Center, 301 Peabody Hall, 2-1575, personal and career counseling;
2. Student Mental Health, Student Health Care Center, 2-1171, personal counseling;
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 2-1161, sexual assault counseling;
4. Career Resource Center, Reitz Union, 2-1601, career development assistance and counseling.

After your Grading heading:
Information on current UF grading policies can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx