

GEN 4210 Fundamentals in Genetics II lab syllabus

Poole D-134

Section

001 Wed 12:20-3:20 PM
002 Thur 12:30-3:30 PM
004 Wed 3:35-6:35 PM
003 Thur 3:35-6:35 PM

Instructor: Dr. Julia Frugoli
Email JFRUGOL@clemsn.edu
Phone 864-656-1859
Office 206 BRC
Office hours by email appointment
please see TA FIRST

Teaching Assistants:

Section 1 Grace Kisirkoi gnkisir@clemsn.edu (asst-Yuqing Hang)
Section 2 Yuqing Hang yhang@clemsn.edu (asst-Grace Kisirkoi)
Section 4 Sirjan Sapkota ssapkot@clemsn.edu (asst Christina Wilkinson)
Section 3 Christina Wilkinson cwilki7@clemsn.edu (asst Sirjan Sapkota)

Course Goals: Successful completion of this course includes proficiency in some basic molecular techniques used by geneticists, demonstration of the proper keeping of a laboratory notebook (data management skills) and the ability to write effective and correctly formatted scientific manuscripts.

Required Texts: Laboratory exercises will be posted on Blackboard the Friday before we do them. Please read them thoroughly before class, as each lab will begin with a short quiz on the upcoming experiments. A loose-leaf notebook with lined paper will be required for keeping records and will be handed in for grading at various points in the term.

Required Equipment:

Safety glasses Long pants
Lab coat Closed shoes

You will be barred from participating in the laboratory and will not be allowed to make up the work missed if you arrive improperly dressed for lab.

Attendance: **Mandatory.**

If an absolutely unavoidable conflict occurs, **prior** arrangements might be made for you to switch temporarily into another lab section, but note that we only have lab Wednesday & Thursday. Such arrangements can ONLY be made by Dr. Frugoli, not the TAs. Most labs require the coordinated assembly of a large number of reagents, many of which have to be grown and remain useful only for a period of hours, thus we cannot offer "make-up" labs. SERIOUS illness, or deaths in the family will be dealt with on a case-by-case basis, but immediate notification is required. Notify Dr. Frugoli within a day of missing the lab and provide Redfern or Student Life documentation, and we will work together to attempt to come up with a solution. Note that work schedules, common colds, family vacations and grad school/med school interviews are **NOT** acceptable reasons for missing a lab- these cases result in a zero.

Grading: 70% of your grade is divided equally across three lab reports, while 10% is your performance on the weekly quizzes and another 10% is performance on the final exam.

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The last 10% is based on the TA's evaluation of your neatness & efficiency in the lab, your attitude, and your upkeep of the notebook ("lab citizenship").

All lab reports are due at the beginning of the lab period noted below in an electronic format as well as in print. A guideline for the format of the reports and how they are graded is posted on Blackboard and before the each one is due, the questions that should be answered in the discussion section will be posted as well. These are major papers (around 10 pages) in journal article format, with figures, figure legends, and references in a scientific citation style. The penalty for handing in the lab reports late is 10% off of the earned grade on the assignment per day (or part thereof) by which it is late. This means a perfect report 4 days late is a D. Save your work early & often as computer excuses are not considered valid (like the real world). If you cannot get your report to print, at least email it to the Teaching Assistant on time.

ePortfolio If you choose to keep a General Education e-Portfolio that demonstrates a variety of competencies over your academic career at Clemson, this course is certified to specifically help you meet the following competency:

C- Natural Sciences

Demonstrate Scientific Literacy by explaining the process of scientific reasoning and applying scientific principles inside and outside of the laboratory or field setting.

Successful completion and posting of a lab report assignment to your e-Portfolio should demonstrate this competency.

Fundamentals in Genetics II lab outline

There are 3 projects that each will have a lab report. **DNA & PCR**, **Gene Expression Analysis**, and **Mapping a Eukaryotic Gene**. Lab work that will be reported in a single lab report is noted by the colors that go with the names above. Any date where something is handed in is in **yellow**. Please note that you may often have experiments for more than one lab report running on the same day-this is the way real science works and it will teach you project management skills.

August 24 & 25 Lab Intro/ Safety training

You must complete the training & pass the test to take course

August 31 & Sept 1 **make DNA from wt, run gel**

September 7 & 8 **Spec DNA, PCR for genes**

September 14 & 15 **run PCR gel, Discussion of how to write a lab report.**

LAB NOTEBOOK CHECK

September 21 & 22 **Screen plants**

September 28 & 29 **Make RNA from wt & mutant, run RNA gel, Hand in DNA & PCR**

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October 5 & 6 cDNA synthesis, Semi-quantitative PCR

October 12 & 13 Semi-quantitative PCR gels, GUS staining of plant

October 19 & 20 image GUS stain, quantify gels

October 26 & 27 DNA from mapping plants, run gel

LAB NOTEBOOK CHECK

November 2 & 3 marker PCR, marker digest Hand in Gene Expression Analysis

November 9 & 10 run DNA gels,

November 16 & 17 marker gel analysis

November 23 & 24 **NO LAB THANKSGIVING BREAK**

November 30 & Dec 1 Final exam, survey, Hand in Mapping a Eukaryotic Gene

LAB NOTEBOOK CHECK

Official stuff:

Academic Integrity

"As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a 'high seminary of learning.' Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately to charges of violations of academic integrity."

Please refer to the graduate academic integrity policy at

<http://gradspace.editme.com/AcademicGrievancePolicyandProcedures#intergritypolicy> . Each graduate student should read this policy annually to be apprised of this critical information

Disabilities

Student Disability Services coordinates the provision of reasonable accommodations for students with physical, emotional, or learning disabilities. Accommodations are individualized, flexible, and confidential and are based on the nature of the disability and the academic environment, in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Students are encouraged to consult with the Disability Services staff early in the semester, preferably prior to the first day of class. Current documentation of a specific disability from a licensed professional is needed. Additional information or appointments are available from Student Disability Services, Suite 239 in the Academic Success Center, 656-6848. Details on policies and procedures are available at www.clemson.edu/sds. Students with disabilities requesting accommodations should make an appointment with Disability Services to discuss specific needs within the first month of classes. Students should present a Faculty Accommodation Letter from Student Disability Services when they meet with instructors.

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Accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

Title IX

Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. The policy is located at <http://www.clemson.edu/campus-life/campus-services/access/non-discrimination-policy.html>. Jerry Knighton serves as Clemson's Title IX coordinator and he may be reached at knightl@clemson.edu or 656-3181.