

Syllabus

GENE4200/GENE6200

Fall Semester Every Year

Instructors Richard Meagher and Jeff Bennetzen

Course Objectives

After completion of the course, students should be well grounded in the basics of molecular genetics with skills to continue learning and understanding new advances in this rapidly moving and evolving field. Specific objectives are:

1. To study at least 6 model genetic organisms (*E. coli* & its viruses, *S. cerevisiae*, *C. elegans*, *D. melanogaster*, *Arabidopsis thaliana*, and *M. musculus* or bugs, yeast, worms, flies, plants, and mice) in depth to understand how their special properties have been exploited to solve problems in molecular, cellular and developmental biology. You will learn advanced genetic methods of each model system and develop critical thinking tools in analyzing complex problems.
2. To deepen your knowledge of current topics in biology where genetic approaches are taken. These include protein localization and targeting, the cell cycle, genome organization and evolution, and development.
3. To develop your ability to read, understand, and critically evaluate published scientific papers on which our understanding of biology is based. You will be expected to understand what question(s)/hypothesis(es) were posed, what experiments were done to test the hypotheses, how the experiments were done, what the results were, and how the results led to the conclusions that were drawn. To achieve this we will read and discuss in depth one or more critical papers from the literature each week.

Exams and Grading Policy

Three exams will be given during the semester including the final (at approximately the 1/3, 2/3, 3/3 points of the quarter) each counting 100 points. The third of these exams is given during finals week. An additional 100 points are available for classroom participation in discussion of papers from the literature. The final grade will therefore be based on 400 points from the three exams and class participation. There will be no make up exams given and missing two exams for legitimate reasons will result in an automatic "Incomplete" requiring that you retake the course in its entirety the following year.

Exam format (Meagher) Dr. Meagher will test your understanding of his lecture material by providing several questions in class a week prior to the exam. On the day of the exam, a student in the class will draw numbers that will be the questions that you will answer on the exam. Answers are to be written in Standard English essay format using clear sentences, and well constructed paragraphs. The limit is usually 300 words per answer (approximately 2-3 pages hand written depending on how large you write). It is your responsibility to figure out how much writing 300 words is. Anything longer than this will not be graded in your answer.

GENE4200 Honor Credit students and GENE6200 students will be expected to turn in extra written assignments pertaining to the same reading material a week after each exam.

Exam format (Bennetzen) Dr. Bennetzen will examine your understanding of the material by short answer/essay questions, and definitions. Students will receive a practice exam before each Bennetzen exam, and the questions on the exam will be closely related to these practice exam questions. Questions will be based on lectures and scientific papers covered in class.

Attendance and class participation policy

While formal attendance is not always taken, the Socratic teaching method used includes randomly calling on students to answer questions posed in class. Students will be given a zero grade for a portion of their class participation grade if they are frequently absent when called upon, without giving legitimate cause for their absence.

Course Materials and Socratic Method

Materials from a textbook are used to supplement published, peer-reviewed papers from the scientific literature. The primary text is Lewin's *Genes VIII*, which can be purchased from the UGA Bookstore (new) or Off Campus Bookstore (used). All papers from the literature have been provided as pdf files linked to the [class schedule](#). A typical reading assignment for one hour and 15 min of lecture includes part of a chapter from Lewin's text and one or two scientific papers assigned for that day. Parts of the lectures are taught in the Socratic Method, where students are called on to elaborate on specific information from the scientific papers assigned to be read that day.