

BISC 325 – Genetics (Fall 2023)

Instructors:

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TAs:

Luke Genutis, genutis@usc.edu

Chris Neville, cjneville@usc.edu

Maeve Secor, msecor@usc.edu

Brandon Vong, bvong@usc.edu

Meeting times:

Lecture	1:00-1:50pm	MWF	
Discussion	3:30-4:50pm	M	Brendan Vong
Discussion	9:30-10:50am	T	Luke Genutis
Discussion	12:30-1:50pm	T	Maeve Secor
Discussion	3:30-4:50pm	T	Luke Genutis
Discussion	3:30-4:50pm	W	Brendan Vong
Discussion	3:30-4:50pm	W	Maeve Secor
Discussion	12:30-1:50pm	Th	Christopher Neville
Discussion	3:30-4:50pm	Th	Christopher Neville

Overview and Course:

Content:

The aim of this course is to introduce students to the fundamental aspects of genetics, from the molecular level to the level of the organism and populations, including:

- * Fundamentals of gene structure, function, and transmission
- * Methods of genetic manipulation
- * Systems genetics
- * Genetic analysis of populations and evolution

Prerequisites:

Biological Sciences 120/121 and 220/221 (the First-year Biology sequence)

Permission of instructor can be requested if you have not met the prerequisites. Familiarity with basic chemistry and physics is assumed. Facility with algebra is recommended.

Text: Introduction to Genetic Analysis. 12th Edition. A. Griffiths, J. Doebley, C. Peichel, D. Wassarman. Published by W.H. Freeman and Company

Web Site: Course materials and announcements will be posted to Blackboard. You are responsible for checking the website.

Emails: Course E-mails will be sent only to your official USC email address.

Course Credit:

Section Quizzes	10%
Midterm Exam 1	30%
Midterm Exam 2	30%
Final Exam	30%

Sections will be led by Teaching Assistants and will supplement and complement lectures. Review questions will be discussed in section. The syllabus may change slightly during the semester. Exam dates are firm.

Week	Day	Date	Topics	Reading	Faculty
1	Mon	21-Aug	Introduction to Genetics / Single-Gene Inheritance 1	Chapter 1, 2	IE

	Wed	23-Aug	Single-Gene Inheritance 2	Chapter 2	IE
	Fri	25-Aug	Single-Gene Inheritance 3	Chapter 2	IE
2	Monday	28-Aug	Independent Assortment of Genes 1	Chapter 3	IE
	Wed	30-Sep	Independent Assortment of Genes 2	Chapter 3	IE
	Fri	1-Sep	Independent Assortment of Genes 3 / Mapping Eukaryote Chromosomes by Recombination 1	Chapter 3, 4	IE
3	Mon	4-Sep	Labor day		
	Wed	6-Sep	Mapping Eukaryote Chromosomes by Recombination 2	Chapter 4	IE
	Fri	8-Sep	Mapping Eukaryote Chromosomes by Recombination 3	Chapter 4	IE
4	Mon	11-Sep	Gene Interaction 1	Chapter 5	IE
	Wed	13-Sep	Gene Interaction 2	Chapter 5	IE
	Fri	15-Sep	The Genetics of Bacteria and Viruses 1	Chapter 6	IE
5	Mon	18-Sep	Midterm 1		IE
	Wed	20-Sep	The Genetics of Bacteria and Viruses 2	Chapter 6	IE
	Fri	22-Sep	DNA Structure and Replication 1	Chapter 7	IE
6	Mon	25-Sep	DNA Structure and Replication 2	Chapter 7	IE
	Wed	27-Sep	RNA: Transcription, Processing, and Decay 1	Chapter 8	IE
	Fri	29-Oct	RNA: Transcription, Processing, and Decay 2	Chapter 8	IE
7	Mon	2-Oct	Proteins and Their Synthesis	Chapter 9	IE
	Wed	4-Oct	Gene Isolation and Manipulation 1	Chapter 10	IE
	Fri	6-Oct	Gene Isolation and Manipulation 1	Chapter 10	IE
8	Mon	9-Oct	The emerging CRISPR/Cas bioeconomy		IE
	Wed	11-Oct	Gene Expression, Bacterial	Chapter 11	SN
	Fri	13-Oct	Fall recess		
9	Mon	16-Oct	Gene Expression, Eukaryotes 1	Chapter 12	SN
	Wed	18-Oct	Gene Expression, Eukaryotes 2	Chapter 12	SN
	Fri	20-Oct	Midterm 2		Both
10	Mon	23-Oct	Genetic Control of Development 1	Chapter 13	SN
	Wed	25-Oct	Genetic Control of Development 2	Chapter 13	SN
	Fri	27-Oct	Genomes and Genomics 1	Chapter 14	SN
11	Mon	30-Nov	Genomes and Genomics 2	Chapter 14	SN
	Wed	1-Nov	The Dynamic Genome 1	Chapter 15	SN
	Fri	3-Nov	The Dynamic Genome 2	Chapter 15	SN
12	Mon	6-Nov	Mutations, Repair, Recombinations 1	Chapter 16	SN
	Wed	8-Nov	Mutations, Repair, Recombinations 2	Chapter 16,	SN
	Fri	10-Nov	Large Scale Chromosomal Changes 1	Chapter 17	SN
13	Mon	13-Nov	Large Scale Chromosomal Changes 2	Chapter 17	SN
	Wed	15-Nov	Quantitative Genetics 1	Chapter 18	SN
	Fri	17-Nov	Quantitative Genetics 2	Chapter 18	SN
14	Mon	20-Nov	Population Genetics 1	Chapter 19	SN
	Wed	22-Nov	Thanksgiving		
	Fri	24-Nov	Thanksgiving		
15	Mon	27-Nov	Population Genetics 2	Chapter 19	SN
	Wed	29-Dec	Evolution 1	Chapter 20	SN
	Fri	1-Dec	Evolution 2	Chapter 20	SN

Final Exam: Wednesday, Dec. 13th 11 am to 1 pm

Course Policies:

- 1) Short quizzes will be administered in section most, if not all, weeks. Each quiz will be worth an equal portion of the 10% of the course credit resulting from quizzes. No makeup quizzes will be administered, so section attendance is critical.
- 2) Exam dates are firm. There are no makeup exams in the course. Performance on the final may be prorated to substitute for a missing midterm exam, if an excuse considered valid by faculty is presented in a timely fashion. An acceptable written excuse or documentation must be provided to the faculty. The final exam will be administered only on the date and time set by the University.
- 3) Midterm exams will be returned to students by the TAs during discussion section. The final examination will not be returned but will be retained for one semester by the faculty.

4) Regrades: If you think an answer you have provided was graded incorrectly or if there is an arithmetic error, you may seek a regrade. You must provide a written explanation of why you think your answer was graded incorrectly. Regrade requests are to be submitted to your TA. If a regrade is agreed upon, then the ENTIRE EXAMINATION may be subject to a regrade. Your grade may therefore go up, go down, or remain the same. Regrade requests must be received within one week of when the exam key is posted for midterms, or by the second week of classes the following semester for the final exam.

5) No special assignments for extra credit are permitted.

6) Academic integrity policies of the University will be strictly followed. Infractions can result in severe penalties. There may be assigned seating for exams. No student may be admitted to an exam after the first student has left the exam.

7) It may be necessary to make adjustments to the syllabus during the semester. Check the course web site or class announcements on Blackboard for updates. **Exam dates will not be changed.**

8) Any questions or concerns regarding these policies should be addressed to the faculty.

9) Students are expected to comply with all aspects of USC's COVID-19 policy. Failure to do so may result in removal from the class and referral to Student Judicial Affairs and Community Standards.

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Course Evaluations

Course evaluation occurs at the end of the semester university-wide. Students should receive an email from the university to complete the course evaluation.

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, Behavior Violating University Standards <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity <http://equity.usc.edu/> or to the Department of Public Safety <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.