

BISC 325 – Genetics (Fall 2014)
Syllabus – 24 August 2014

Instructors:

Steven Finkel, Ph.D. Office: RRI 319B Office Hours: Mondays, 4-5pm Office Phone: 213.821.1498 E-mail: sfinkel@usc.edu	Matthew Dean, Ph.D. Office: RRI 304A Office Hours: Mondays, 12-1pm Office Phone: 213.740.5513 E-mail: matthew.dean@usc.edu	Sergey Nuzhdin, Ph.D. (course chair) Office: RRI 304C Office Hours: Fridays, 2-3:30pm Office Phone: 213.740.5773 E-mail: snuzhdin@usc.edu
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Mehmet Cetin mccetin@usc.edu	TBD	Office hours: TBD
Scott Czopek sczopek@usc.edu	213-821-2230	Office hours: Tuesdays 11am-12noon
Anthony Fernandez fernanam@usc.edu	213-740-3079	Office hours: Tuesdays 11am-12noon
Dana Lynn danalynn@usc.edu	213-740-9026	Office hours: Mondays, 2-3pm
Min-Gyoung Shin mingyous@usc.edu	213-740-2410	Office hours: Mondays, 9-10am

Meeting times:

Lec	13340R	1:00-1:50pm	MWF	THH 101	TA
Dis	13341R	09:30-10:50	T	ZHS 360	Tony
Dis	13342R	12:30-01:50pm	T	ZHS 360	Dana
Dis	13343R	12:30-01:50pm	Th	ZHS 360	Mehmet
Dis	13344R	03:30-04:50pm	M	VKC 111	Dana
Dis	13345R	03:30-04:50pm	W	VKC 111	Min
Dis	13346R	09:30-10:50	Th	ZHS 360	Tony
Dis	13347R	08:30-09:50	M	ZHS 360	Mehmet
Dis	13348R	08:30-09:50	W	ZHS 360	Min
Dis	13349R	03:30-04:50pm	T	VKC 205	Scott
Dis	13350R	03:30-04:50pm	Th	VKC 157	Scott

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)
Biological Sciences 311 -or- 320, Molecular Biology (co-registration allowed)
Organic Chemistry 322a/325a and 322b/325b, (co-registration allowed)

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. 10th Edition. A. Griffiths, S. Wessler, R. Lewontin, S. Carroll. 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.

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

Course Credit:

Midterm Exam 1 30%
Midterm Exam 2 30%
Final Exam 40% (10% cumulative)

Discussion 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	25-Aug	Introduction to genetics	Chapter 1	SF
	Wed	27-Aug	Single gene inheritance	Chapter 2	SF
	Fri	29-Aug	Mendelism, Segregation ratios	Chapter 2	SF
2	Monday	1-Sep	Labor Day-University Holiday	---	---
	Wed	3-Sep	Multiple gene inheritance, Segregation ratios	Chapter 2	SF
	Fri	5-Sep	Independent assortment	Chapter 3	SF
3	Mon	8-Sep	Chromosomal basis of inheritance	Chapter 3	SF
	Wed	10-Sep	Polygenic inheritance	Chapter 3	SF
	Fri	12-Sep	Linkage mapping in eukaryotes	Chapter 4	SN
4	Mon	15-Sep	Mapping with molecular markers	Chapter 4	SF
	Wed	17-Sep	Genetic screens, inborn errors	Chapter 4	SF
	Fri	19-Sep	Genetics of bacteria and their viruses	Chapter 5	SF
5	Mon	22-Sep	Horizontal gene transfer in bacteria	Chapter 5	SF
	Wed	24-Sep	Prokaryotes Dominance and recessiveness	Chapter 11	SF
	Fri	25-Sep	Prokaryotes Gene interactions	Chapter 11	SF
6	Mon	29-Sep	Midterm Exam #1	---	---
	Wed	1-Oct	Regulation of expression	Chapter 6	SN
	Fri	3-Oct	Regulation of expression	Chapter 6	SN
7	Mon	6-Oct	DNA structure and Replication	Chapter 7	SN
	Wed	8-Oct	DNA structure and Replication	Chapter 7	SN
	Fri	10-Oct	RNA Transcription and Processing	Chapter 8	SF
8	Mon	13-Oct	RNA Transcription and Processing	Chapter 8	SN
	Wed	15-Oct	Proteins and their synthesis	Chapter 9	SN
	Fri	17-Oct	Proteins and their synthesis	Chapter 9	SN
9	Mon	20-Oct	Regulation of expression; Eukaryotes	Chapter 12	SN
	Wed	22-Oct	Regulation of expression; Eukaryotes	Chapter 12	SN
	Fri	24-Oct	Genetic control of development	Chapter 13	SN
10	Mon	27-Oct	Genetic control of development	Chapter 13	SN
	Wed	29-Oct	Genomes and Genomics	Chapter 14	SN
	Fri	31-Oct	Genomes and Genomics	Chapter 14	SN
11	Mon	3-Nov	Midterm Exam #2	---	---
	Wed	5-Nov	The dynamic genome	Chapter 15	MD
	Fri	7-Nov	The dynamic genome	Chapter 15	MD
12	Mon	10-Nov	Mutation, Repair, Recombination	Chapter 16	MD
	Wed	12-Nov	Mutation, Repair, Recombination	Chapter 16	MD
	Fri	14-Nov	Large Scale Chromosomal Changes	Chapter 17	MD
13	Mon	17-Nov	Large Scale Chromosomal Changes	Chapter 17	MD
	Wed	19-Nov	Population Genetics	Chapter 18	MD
	Fri	21-Nov	Population Genetics	Chapter 18	MD
13	Mon	24-Nov	Quantitative Genetics	Chapter 19	MD
	Wed	26-Nov	Thanksgiving	---	---
	Fri	28-Nov	Thanksgiving	---	---
14	Mon	1-Dec	Mutation - genetic variation - molecular evolution	Chapter 20	MD
	Wed	3-Dec	Regulatory evolution, origin of new genes	Chapter 20	MD
	Fri	5-Dec	Regulatory evolution, origin of new genes	Chapter 20	MD

Final Exam: Wednesday, December 17, 11am - 1p.m.

Course Policies:

- 1) 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.
- 2) 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.
- 3) 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.
- 4) No special assignments for extra credit are permitted.
- 5) 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.
- 6) Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to one of the Professors as early in the semester as possible. DSP is located in STU 301 and is open 8:30 AM – 5:00 PM, Monday thru Friday, Phone number: 213-740-0776.
- 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.