

BISC 300L INTRODUCTION TO MICROBIOLOGY

Spring 2017

Instructors

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Teaching Assistants

TBA

Meeting times

13017	Lecture	12:30 - 1:50 pm; Tue, Thu	MHP 101
13270	Lab	9:00 - 11:50 am, Tuesday	ZHS 472
13271	Lab	2:00 - 4:50 pm, Tuesday	ZHS 472
13272	Lab	9:00 - 11:50 am, Wednesday	ZHS 472
13273	Lab	9:00 - 11:50 am, Thursday	ZHS 472

Prerequisites

- BISC 320L (Molecular Biology)
- Or permission of instructor.
- Familiarity with basic chemistry, physics, and algebra is assumed (along with prerequisites for BISC 320L). Basic general biology knowledge is also assumed, but also covered in the text.

Text and Laboratory Manual

- *Brock Biology of Microorganisms (14th Edition)* by Madigan, Martinko, Bender, Buckley, Stahl
- *Introduction to Microbiology Laboratory Manual*, 2017 (available at the USC Bookstore)
- Additional readings from the primary literature may also be assigned.

Total points

Exams	400 points (100 points each exam, including final)
<u>Laboratory</u>	<u>240 points</u>
TOTAL	640 points

The final examination will include material composed of questions that integrate concepts developed throughout the course, both in the lecture and the laboratory portions, with extra emphasis on the final lectures of the class not previously covered on exams.

Wk	Day	Date	Topic	Chapter	Lecturer
1	Tuesday	Jan 10	Microbial Cell Structure & Function	1,2	JF
	Thursday	Jan 12	Metabolism & Control	3,4	JF
2	Tuesday	Jan 17	Growth, Genomics I	5,6	JF
	Thursday	Jan 19	Genomics II, Regulation	6,7	JF
3	Tuesday	Jan 24	Viruses 1	8	JF
	Thursday	Jan 26	Viruses 2	9	JF
4	Tuesday	Jan 31	Bacterial & Archaeal Genetics	10	JF
	Thursday	Feb 2	Microb Evolution & Systematics	12	JF
5	Tuesday	Feb 7	Midterm #1		
	Thursday	Feb 9	Metabolic Diversity	13	JF
6	Tuesday	Feb 14	Functional Diversity	14	JF
	Thursday	Feb 16	Eukaryotic Diversity	17	JF
7	Tuesday	Feb 21	Genetic Engineering	11	TBD
	Thursday	Feb 23	Bacterial Diversity	15	EW
8	Tuesday	Feb 28	Archaeal Diversity	16	TBD
	Thursday	Mar 2	Methods in Microbial Ecology	18	TBD
9	Tuesday	Mar 7	Microbial Ecosystems	19	EW
	Thursday	Mar 9	Midterm #2		EW
10	M - F	Mar 13 - 17	Spring Break		EW
11	Tuesday	Mar 21	Nutrient Cycles	20	EW
	Thursday	Mar 23	Microbial Symbiosis	23	EW
12	Tuesday	Mar 28	Microbial Interactions with Humans	22	EW
	Thursday	Mar 30	Microbiology of the Built Environment	21	EW
13	Tuesday	Apr 4	Intro to Immunology	Parts of 24,25,26	EW
	Thursday	Apr 6	Diagnostic Microbiology	27	EW
14	Tuesday	Apr 11	Epidemiology	28	EW
	Thursday	Apr 13	Midterm #3		
15	Tuesday	Apr 18	Person-to-person Disease	29	EW
	Thursday	Apr 20	Person-to-person Disease	29	EW
16	Tuesday	Apr 25	Vectorborne and soilborne disease	30	EW
	Thursday	Apr 27	Water and food as vehicles for disease	31	EW
	Wed	May 10	Final Exam - 2 - 4 pm		

1. EXAM DATES ARE FIRM. An exam can be taken only on the scheduled date and at the scheduled starting time. **There are no makeup exams in the course.** If a student misses an exam due to a true emergency, official written documentation (what you feel is appropriate to demonstrate a legitimate reason for missing said exam) should be submitted to Dr. Chong-Cerrillo *within 3 days* of the missed exam. If it is a medical excuse, you must also state in writing (a) the doctor's name and phone number and (b), a signed statement authorizing us to discuss with the doctor whether you were too ill to take the exam. If you were seen at the Engemann Student Health Center, you must sign an "Authorization for Disclosure of Medical Information" form and list Dr. Chong-Cerrillo's name on the form. (Note that neither you nor the physician needs to tell us the nature of your illness.) Please note that your physician has to be licensed to practice medicine by the State of California

(www.medbd.ca.gov). Also note that it's considered unethical and unwise for a physician to provide medical care for a family member. The recommended sanction for falsification of medical documentation is an F in the course and suspension or expulsion from the university. Your professors may, at their discretion, permit the use of the student's performance on other exams in determining the missed exam grade. If your excuse is judged not to be valid, or you do not provide it within the allotted time, you will receive a score of zero for the missed exam.

2. A student is not allowed to start an exam after the first student has left any exam room. You may be required to write your full name on EACH page of an exam. If you fail to do so, ½ point will be deducted for each page missing a full name. Seating arrangements may be specified by the faculty. No writing is allowed after the instructors/TAs say the exam period has ended.
3. Regrading of exams will be managed only by Dr. Chong-Cerrillo. Exams submitted for regrading must be turned in along with a Regrade Request Form which should have a concise **typewritten** explanation of the problem. Regrade requests will be accepted by a TA or Dr. Chong-Cerrillo only within one week of the day when the exam is initially returned to the class (regardless of whether you were present that day). The entire answer will be re-graded, not just the part you think deserves more credit. Your score may increase or decrease as a result of a re-grade. Regrade requests will not be honored if the exam was taken in pencil or if white out was used.
4. No special assignments for extra credit can be offered to an individual student or subset of students, because that would be considered unethical.
5. Final grades are assigned on a curve, based entirely on the total number of points earned in the course. Please remember that (1) the course mean given on Blackboard is NOT authoritative, and (2) that only the total number of points earned determines your course grade. We will be glad to discuss your performance, and your possible grades, at any time throughout the course. Help provided in this way should be considered only provisional, however: your later performance may change (sometimes dramatically) the best-meant extrapolation.
6. Final exams will be kept on file for one semester. Challenges to the final grade must be made within 3 weeks of the beginning of the Fall 2017 semester.
7. Exceptions to the grading policy are not expected, and any student believing they have been granted a deviation from the grading policies defined in this syllabus must have a written agreement signed by Dr. Fuhrman & Dr. Heidelberg.
8. During lecture you will not be able to use your cell phone – please silence it and keep it either in your backpack/purse. We reserve the right to collect your cell phones during exam days, both in lecture and lab. Similarly no calculators, tablets, smart watches, Google glasses, etc. will be allowed.
9. It may be necessary to make adjustments to the syllabus during the semester; check BLACKBOARD for updates.
10. Students requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to Dr. Chong-Cerrillo as early in the semester as possible. DSP is open

Monday-Friday, 8:30AM-5:00PM, GFS 120, Email: ability@usc.edu, Phone: 213-740-0776. Please note that any accommodation based on a disability has to be made through DSP. Your professors and TAs are not allowed to make additional accommodations.

11. Statement on Academic Integrity - USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Academic Integrity policies of the University will be strictly followed. SCampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00 (<http://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>), while the recommended sanctions are located in Appendix A: https://studentaffairs.usc.edu/files/2015/09/appendix_a.pdf. **(may be updated in more recent versions)** Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>

Microbiology Laboratory Schedule

Unit	Wk	Date	Chapter	Laboratory	Lab Events
I	1	1/10-12	- 1 2	Lab Orientation Lab Fundamentals in Microbiology Spontaneous Generation of Microbes-TA	
	2	1/17-19	3 4 5 6	<i>Isolation of Microorganisms from the Environment/Manipulation of Cultures</i> Microscopy Determination of Bacterial Motility <i>Winogradsky Column</i>	
II	3	1/24-26	3 7 8 9	Macroscopic Observation of Microorganisms (from Environment)/ Manipulation of Cultures (cont'd) Preparation of Smears and The Gram Stain Endospore Stain Acid-Fast Stain	
III	4	1/31 -2/2	7 - 9 10 11	Analysis of Stains (if necessary) <i>Nutrition and Growth of Bacteria</i> Anaerobic Culture Techniques	Chapter 3 Lab Report Due
IV & V	5	2/7-9	10 11 12 13 14 15 16 17 18	Nutrition and Growth of Bacteria (cont'd) Anaerobic Culture Techniques (cont'd) Casein Hydrolysis Fat (Lipid) Hydrolysis Deoxyribonuclease Catalase Test Coagulase Test Hemolysin Production 6.5% NaCl Assay	
VI	6	2/14-16	12 13 14 16 17 18 19 20	Casein Hydrolysis (cont'd) Fat (Lipid) Hydrolysis (cont'd) Deoxyribonuclease (cont'd) Coagulase Test (cont'd) Hemolysin Production (cont'd) 6.5% NaCl (cont'd) Coliform Analysis Wine Production	Lab Exam 1
VII	7	2/21-23	19 21 22 23 24	Coliform Analysis (cont'd) Carbohydrate Fermentation IMViC Test Oxidase Test <i>API Unknown</i>	Chapter 10 Formal Lab Report Due Friday, 2/24, 5 pm
VIII	8	2/28-3/2	21 22 24	Carbohydrate Fermentation (cont'd) IMViC Test (cont'd) API Unknown (cont'd)	API Unknown Report Due
	9	3/7-9	25 25 26	<i>Bacterial Transformation</i> Carbohydrate Fermentation (cont'd) - Alkaline Swing Bacterial Transformation (cont'd) Ames Test for Detection of Chemical Carcinogenicity	

Labs in *blue italics* require Lab Reports.

Unit	Wk	Date	Chapter	Laboratory	Lab Events
	10	3/13-17	<i>Spring Recess</i>		
IX	11	3/21-23	26	Ames Test for Detection of Chemical Carcinogenicity (cont'd)	Chapter 25 Lab Report Due
			27	Antimicrobial Testing. The Kirby-Bauer Method	
			28	Effects of Commercially Available Disinfectants and Antiseptics	
			29	Lethal Effects of Ultraviolet Light	
X	12	3/28-30	27	Antimicrobial Testing. The Kirby-Bauer Method (cont'd)	
			28	Effects of Commercially Available Disinfectants and Antiseptics (cont'd)	
			29	Lethal Effects of Ultraviolet Light (cont'd)	
			30	Protists	
XI	13	4/4-6	31	Mycology - Introduction to Filamentous Fungi	Lab Exam 2
			32	The Cultivation and Enumeration of Bacterial Viruses	
			-	Review for Lab Final Exam	
XII	14	4/11-13	32	The Cultivation and Enumeration of Bacterial Viruses (cont'd)	
			33	ELISA	
			-	Review for Lab Final Exam	
	15	4/18-20	33	ELISA (cont'd)	
XIII	16	4/25-27		LAB FINAL EXAM (cumulative)	Winogradsky Column Lab Report Due