

Los Angeles Mission College, FALL 2017 (Aug 28-Oct 19)

Lecture: MTWTh 8:00-9:00 in CMS 106

Lab: MTWTh 9:10-11:15 in CMS 106

office hours: MTWTh 7:30-8:00, 11:15-12:15 in CMS 106

Stephen Brown (instructor)

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BIOTECH 2 (sections 28338 & 28339)

PREREQUISITES: *none*

ARTICULATION: This course is not CSU or UC transferrable.

STUDENT LEARNING OUTCOMES

1. Examine and apply the fundamentals of cellular and molecular biology concepts to biotechnology research and its practical applications.
2. Develop and maintain laboratory records according to standard scientific and industrial guidelines.
3. Employ mathematical skills and knowledge of chemistry to accurately prepare an aqueous solution with the desired chemical concentrations and pH.

COURSE DESCRIPTION: *Biotech 2 provides a foundation for the field of biotechnology. Students examine the fundamentals of cellular and molecular biology and are introduced to basic biotechnology laboratory skills, including documentation, safety, solution and buffer preparation, quality control and bioethics. Students develop proficiency in aseptic technique, spectrophotometry, microscopy and centrifugation.*

COURSE OBJECTIVES: By the end of this course each student should be proficient in:

1. Applying principles of lab safety.
2. Keeping accurate records with sufficient information to reproduce what was done.
3. Preparing aqueous solutions of varying composition.
4. Applying core principles of cell and molecular biology.
5. Applying core principles of centrifugation and spectrophotometry.
6. Preparing microbiological media and applying aseptic technique in the culturing of microorganisms.
7. Oral and written communication, maintaining a professional work ethic, and working well with others.

REQUIRED BOOKS AND MATERIALS

Biotechnology: A laboratory Skills Course, J. Kirk Brown 2011 (ISBN-13: 978-0-9832396-0-4)

Methods in Biotechnology, SB Hong, MB Rashid, LZ Santiago-Vazquez 2017 (ISBN-13: 978-1-119-15678-9)

Open Stax – Biology, Rye et al 2017, (ISBN-13: 978-1-119-15678-9) available for free download at:

<https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/Biology-OP.pdf>

MATERIALS: bound lab/computation notebook (graph ruled), *Sharpie* pen (black fine & regular point), ball point blue or black pen, scientific calculator, lab coat, three 882-E Scantrons

COURSE GRADE

Point Distribution:

6 Quizzes	6% of Grade (60 points)
Midterm & Final Exams	20% of Grade (200 points)
Oral Presentation	4% of Grade (40 points)
2 Lab Practical Exams	20% of Grade (200 points)
Homework	10% of Grade (100 points)
Lab Project	10% of Grade (100 points)
Lab Notebook	10% of Grade (100 points)
“Soft Skills”	20% of Grade (200 points)
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TOTAL 1000 points	

ANY makeup quizzes or exams will be more challenging than the original, and there will be a 2 point (quizzes) or 10 point (exams) reduction in the score received for unexcused makeups.

Grading Scale:

900+ pts (90-100%)	A
800-899 pts (80-90%)	B
650-799 pts (65-80%)	C
500-649 pts (50-65%)	D
0-499 pts (below 50%)	F

ATTENDANCE POLICY

Attendance is required and roll will be taken. **Tardiness, leaving early, late assignments and the like will reduce your “soft skills” score.** You are responsible for any information, date changes, etc., presented in class, whether or not you are present (they will be announced in Canvas anyway). Students missing more than 2 consecutive classes without contacting the instructor may be dropped. Students added to the class **must** complete the process by **Sunday September 10th**. Students dropping the class must do so by:

- **Sunday September 10th** to receive a refund and avoid a “W”
- **Sunday November 19th** to receive a “W”

* Keep in mind the LACCD website is not always available on Sundays due to routine maintenance.

NOTE: *You are limited to **3 attempts per course**. Receiving a grade or “W” for a course counts as an attempt, **regardless of when the course was taken**. Withdrawal by February 20th (avoiding a “W”) will not count as an attempt.*

RECOMMENDATIONS FOR SUCCESS

Think of this class as a job from which you don't want to get fired. Here are some suggestions:

- be on time, stay in class until dismissed
- do **NOT** fall behind in the course, study on a daily basis
- do the assigned reading and turn in assignments on time
- get help when you don't understand something
- take notes, this will help you to mentally organize the material you will be learning
- **know the terminology**
- at a **minimum**, **learn** each concept **3 times** in order to retain it well for the exams and quizzes:
 - 1) **comprehend** the class material during the lecture
 - 2) **read** the corresponding material in the texts
 - 3) **review** your notes and terminology

*****If you don't do at least this much, you might get fired*****

SPECIAL ACCOMMODATIONS

If you require special accommodations for a disability, religious holiday, etc, please inform me within the first week of the course and I will accommodate you if at all possible. For accommodations due to disability, you must consult the Disabled Student Programs and Services office after which we will abide by their recommendations.

IMPORTANT WEBSITES

<https://ilearn.laccd.edu/login/canvas>

-here you can monitor your scores and standing in the course, engage in discussion forums with the instructor and fellow students, and **submit assignments electronically**

<http://www.lamission.edu/~brownst>

- your instructor's website where you can download course notes and various handouts

<http://www.pearsonmylabandmastering.com/northamerica/masteringbiology/>

-this site contains the textbook publisher's online supplemental study material, practice questions and exercises, all of which are optional

-access requires a code you will receive when purchasing the textbook in the bookstore, or you can purchase access online

COLLEGE RESOURCES FOR STUDENTS

STEM Office: For information on free tutoring, resources and academic counseling for STEM (Science, Technology, Engineering, and Technology) students visit the STEM Center in CMS 014.
<http://www.lamission.edu/stem>

Admissions and Records: Students can register for classes, request transcripts, file petitions for graduation, and drop classes at this office. For more information call 818-833-3322 or visit:
<http://www.lamission.edu/admissions/>

Assessment Center: Offers student assessments in English, English-as-a-Second-Language (ESL) and Mathematics. Please contact the Assessment Center at (818) 364-7613 for more information or visit
<http://www.lamission.edu/assessment/>

Bookstore: For hours of operation, book availability, buybacks, and other information call 818-364-7767 or 7768 or visit <http://eagleslanding.lamission.edu/default.asp>

Counseling Department: For appointments and information call 818-364-7655 or visit
<http://www.lamission.edu/counseling/>

Disabled Students Programs and Services (DSP&S): For appointments, eligibility and information call 818-364-7732 or visit <http://www.lamission.edu/dsps/>

Extended Opportunity Programs and Services (EOPS): For appointments, eligibility and information call 818-364-7645 or visit <http://www.lamission.edu/eops/>

Financial Aid: For information and applications call 818-364-7648 or visit
<http://www.lamission.edu/financialaid/>

Library: For information on hours, resources, workshops, and other services contact 818-364-7106 or visit <http://www.lamission.edu/library/>

Tutoring Services in Learning Center: Laboratories for Learning, Writing, & Math. Walk-in and appointment services offered. Call 818-364-7754 or visit www.lamission.edu/learningcenter/

Code of Honor and Integrity Los Angeles Mission College Department of Life Sciences

Students at Los Angeles Mission College, because they are members of an academic community dedicated to the achievement of excellence and the pursuit of honor, are expected to meet high standards of personal, ethical, and moral conduct. These standards require personal integrity and a commitment to honesty without compromise. Without the ability to trust in these principles, an academic community and a civil society cannot exist. Los Angeles Mission College students and faculty are as committed to the development of students with honesty and integrity as they are to the academic and professional success of its students.

The Code of Honor and Integrity is an undertaking of the students, first and foremost, both individually and collectively, that they will:

1. Not give or receive dishonorable aid during exams, quizzes or assignments
2. Do their share and take an active part in seeing to it that fellow students, as well as themselves, uphold the spirit and letter of the Code of Honor and Integrity.

Some examples of conduct that are regarded as being in violation of the Honor Code include:

- Copying from another's examination or quiz, or allowing another to copy from one's own papers
- Using any unpermitted source of information, human or other, during an exam, quiz or assignment that influences the grade; **this includes the use of technological devices**
- Any student-to-student collaboration that is unpermitted
- Plagiarism (plagiarism is defined as the use, without giving reasonable and appropriate credit to, or acknowledging the author or source, of another person's original work)
- Representing the work of another as one's own work
- Giving or receiving aid on an academic assignment under circumstances in which a reasonable person should have known that such aid is not permitted (e.g., online quizzes)

As a part of the effort to promote an environment of honesty and integrity during quizzes and examinations, the following guidelines will apply for any courses in the Department of Life Sciences:

1. Students will leave all books and all other non-essential items (e.g. paper, electronic devices) on the floor so that they are not useable nor block the sight line between professor and student. No electronic devices will be in reach.
2. Students will not communicate in any way that will dishonorably assist themselves or another student.
3. Students will leave the room during an exam only if permitted by the professor's policy. If permitted, only one student may leave the room at any time and be gone for only the average length of time needed for the stated purpose. Students will leave all purses, bags, books, phones, jackets, etc., in the classroom during the absence.
4. Students will promote the spirit and letter of the Code of Honesty and Integrity by dissuading fellow students from dishonest activity and, when such casual persuasion does not work, informing the professor of the possible dishonest activity, either anonymously, or otherwise.
5. Students will make every effort to avoid even the appearance of dishonesty or lack of integrity.

Violation of this policy will not be tolerated and violators will be subject to severe penalties. The success of the Code of Honor and Integrity is based upon the collective desire of students, faculty and the community to live in an environment that embraces respect for that which is right – both in the college and in society as a whole.

Biotech 2 COURSE SCHEDULE – Fall 2017 (tentative)

BR = Bio-Rad text

MB = Methods in Biotechnology text

OS = Open Stax text

WEEK	DATE	LECTURE TOPIC (textbook reading)
1	Aug 28	The Field of Biotechnology (BR 2-11)
	<i>LAB</i>	Lab Orientation
	Aug 29	Governmental Regulation, Health & Safety (BR 15-16, 23-25)
	<i>LAB</i>	Lab Safety
	Aug 30	Documentation (BR 25-26, 33-35)
	<i>LAB</i>	Lab Notebook (BR 25); *Standard Operating Procedures (SOPs) (BR 56-57: Activity 2.6)
1	Aug 31	Laboratory Math (BR 33-35)
	<i>LAB</i>	*Lab Math (handout)
2	Sep 4	<i>HOLIDAY (Labor Day)</i>
	Sep 5	Metrology (BR 26-30, MB 3-4)
	<i>LAB</i>	Metrology – Measuring Weight, Distance & Temperature (handout)
	Sep 6	QUIZ: Atomic & Molecular Structure (OS 34-46)
	<i>LAB</i>	Metrology – Measuring Volume (BR 42-45: Activity 2.2)
	Sep 7	Properties of Water & pH (OS 47-53)
3	<i>LAB</i>	*Measuring and Adjusting pH (handout)
	Sep 11	The Scientific Method (OS 8-15)
	<i>LAB</i>	*Percent and “X” Solutions (handout, BR 49-51: Activity 2.4)
	Sep 12	Macromolecules & Polymers (OS 53-59, 66-67)
	<i>LAB</i>	*Volume/Volume & Mass/Volume Solutions (handout)
	Sep 13	QUIZ: Carbohydrates (OS 67-75)
<i>LAB</i>	*Molar Solutions (BR 51-53: Activity 2.4)	
4	Sep 14	Lipids (OS 76-82)
	<i>LAB</i>	*Making pH Buffered Solutions (MB 15-18: Ex. 3)
	Sep 18	Amino Acid & Proteins (BR 215-217, OS 83-86)
	<i>LAB</i>	*Making Serial Dilutions (handout)
	Sep 19	Protein Structure (BR 215-217, OS 87-91)
	<i>LAB</i>	PRACTICAL EXAM 1
5	Sep 20	Enzymes (BR 217-218, OS 180-186)
	<i>LAB</i>	Bacterial Media Preparation (BR 75-82: Activity 3.1)
	Sep 21	QUIZ: Nucleic Acids – DNA & RNA (BR 103-105, OS 92-96)
	<i>LAB</i>	Yeast Media Preparation (MB 77-78: Ex. 17)
	Sep 25	MIDTERM EXAM
	<i>LAB</i>	Centrifugation: Using a Microcentrifuge (handout)
6	Sep 26	Principles of Centrifugation (handout)
	<i>LAB</i>	*Centrifugation: Using a Large Centrifuge (handout)
	Sep 27	Spectrophotometry (MB 9-10)
	<i>LAB</i>	Spectrophotometry: Beer’s Law (MB 10-13: Ex.2)
	Sep 28	Prokaryotic Cell Biology (BR 58-62, OS 106-109)
	<i>LAB</i>	Spectrophotometry: Enzymatic Reactions (MB 67-70: Ex. 15)
6	Oct 2	QUIZ: Viruses (pp. OS 537-541)
	<i>LAB</i>	*Spectrophotometry: Measuring DNA & Protein Concentrations (BR 166-167, 169-172: Activity 5.4/BR 230-233: Activity 7.1)
	Oct 3	Eukaryotic Cell Biology (BR 69-71, OS 109-121)
	<i>LAB</i>	Aseptic Techniques: Inoculation (MB 73-75: Ex. 16)
	Oct 4	Cell Division & DNA Replication (OS 273-277, 376-378)
	<i>LAB</i>	Aseptic Techniques: Analysis of Cultures
6	Oct 5	Principles of Microscopy (handout, OS 103-105)
	<i>LAB</i>	Gram Stain of Bacteria (BR 92-94: Activity 3.4)

7	Oct 9	Mutation & DNA Repair (OS 381-384)
	LAB	Microbial Growth Curve (MB 79-81: Ex. 18)
	Oct 10	QUIZ: Gene Expression – Transcription (BR 212-214, OS 389-395)
	LAB	Quantitating Bacteria (BR 95-97: Activity 3.5)
	Oct 11	Gene Expression – Translation (BR 214-215, OS 405-410)
	LAB	Viewing & Quantitating Eukaryotic Cells (BR 98-100: Activity 3.6/handout)
8	Oct 12	Quality Control Quality Assurance (handout)
	LAB	PRACTICAL EXAM 2
	Oct 16	Written & Oral Skills (handout)
	LAB	GFP Project: Quadrant Streak of Bacteria
	Oct 17	QUIZ: Oral Presentations on biotech company
	LAB	GFP Project: Inoculate Small Overnight Culture
	Oct 18	Bioethics (BR 3, 72, 73, 104, 136, 189, 218, 282)
LAB	GFP Project: Scale Up & Induce Culture	
Oct 19	FINAL EXAM	
LAB	GFP Project: Centrifuge & Freeze Bacterial Pellet	

QUIZ: A short 10 point quiz will be given at 8:00 sharp.

*This lab has a homework assignment that is due the next class meeting.

NOTE: ALL reading assignments are to be completed before the corresponding lecture or lab.

Course files are available for download on my web page: <http://www.lamission.edu/~brownst/915>

SCORE SHEET

Quiz #1	10	Midterm	100
Quiz #2	10	Final	100
Quiz #3	10	Practical 1	100
Quiz #4	10	Practical 2	100
Quiz #5	10	Oral Pres	40
Quiz #6	10		

Homework 1	10	Lab Notebook	100
Homework 2	10	Lab Project	100
Homework 3	10	Soft Skills	200
Homework 4	10		
Homework 5	10		
Homework 6	10		
Homework 7	10		
Homework 8	10		
Homework 9	10		
Homework 10	10		

To keep track of your performance, enter your scores in the chart above. Add up your total points earned and divide by the total points possible. Multiply this by 100% and then compare with the grade scale on page 2 of the syllabus. You can also check your scores and percentages on Canvas.