

Los Angeles Mission College, Fall 2012  
Lecture: MW 10:40-12:05 in CMS 002  
Lab: MW 12:10-3:20 in CMS 002  
office hours: MW 9:25-10:40 in CMS 002  
TTh 3:40-5:10 in CMS 227

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## **BIOLOGY 6 (section #0142)**

**PREREQUISITE:** *Chemistry 65 or 101 (or the equivalent)*

**ADVISORY:** *English 28 or ESL 8*

**ARTICULATION:** LAMC Biology 6 & 7 accepted together as CSUN Biology 107 & 106, UCLA Life Sciences 1 & 2

### **STUDENT LEARNING OUTCOMES**

*Biology 6 students will interpret, critique and summarize the components of an experiment or study from an original research journal in biomedical sciences.*

**COURSE DESCRIPTION:** *Biology 6 is an intensive science course designed for students wishing to major in a natural science at the college/university level. Upon completion of this course, the student will be able to describe and identify the unifying principles of biology through the study of biological molecules, cell structure and function, metabolism, inheritance, cellular reproduction, molecular genetics and evolution. The student will apply the concepts learned in lectures through hands-on application in related laboratory exercises. The laboratory experience will allow the student to develop practical knowledge of many fundamental biological principles by employing an *experimental approach* to scientific inquiry. Students will be required to explore their own questions in many of the labs, and will be required to perform a *final project* at the end of the term. Critical analysis and small group collaboration are encouraged throughout the course.*

**COURSE OBJECTIVES:** Throughout the semester the student:

1. Applies and interprets the terminology of biology in both written and oral expression.
2. Demonstrates the ability to read with comprehension current, historical, and popular literature in biology.
3. Develops the ability to use classical and contemporary laboratory methods for studying basic life processes.
4. Applies the general concepts from the textbook and other references to the specific principles which are demonstrated in the laboratories, and shows this in written and oral reports.
5. Develops a practical understanding of the use of the scientific method through experimental design.
6. Expresses an awareness of the complexity and inter-relatedness of organisms and their environment.
7. Identifies the unifying themes throughout all hierarchical levels of the life sciences.

## REQUIRED BOOKS AND MATERIALS

**Biology, 9th ed., Campbell, Reece, et. al. 2011 (ISBN-13: 978-0321558237)**

**Investigating Biology, 7th ed., Morgan and Carter 2011 (ISBN-13: 978-0321668219)**

**Biology 6 Lab Pack - additional lab exercises available at the bookstore (or for download online)**

Bound notebook (graph ruled), 7 Scantron 815-E forms, 5 Scantron 882-E forms & 4 blue books  
(or Scantron 886-E)

## COURSE GRADE

7 Quizzes	<b>10.5% of Grade (105 points)</b>
3 Midterm Exams	<b>30% of Grade (300 points)</b>
Final Exam	<b>12.5% of Grade (125 points)</b>
Case Study Analysis	<b>2% of Grade (20 points)</b>
Article Review/Presentation	<b>5% of Grade (50 points)</b>
Lab Reports/Worksheets	<b>22.5% of Grade (225 points)</b>
5 Lab Quizzes	<b>7.5% of Grade (75 points)</b>
Lab Notebook	<b>5% of Grade (50 points)</b>
Participation	<b>5% of Grade (50 points)</b>
<b>TOTAL 1000 points</b>	

**LECTURE (60% of course points):** Quizzes will be given at the beginning of lecture and are worth 15 points each. The lowest quiz score will be replaced by the average of the other quiz scores. Midterm exams are worth 100 points each. Exams and quizzes will consist of multiple choice, short answer and essay questions. Multiple choice questions are to be answered on **Scantron** forms. Short answer and essay questions are to be answered in Blue Books or on Scantron form 886-E. **There will be NO makeup exams or quizzes except in case of a documented emergency, and any makeups will be more challenging than the original.** Guidelines for the Case Study Analysis and Article Review/Presentation will be detailed in handouts.

**LAB (40% of course points):** Students are expected to read each lab exercise **BEFORE** class. For selected labs students should keep a lab notebook, *independently* write a short lab report in the format of a scientific paper (see handout for guidelines), and answer the associated review questions. For all other laboratories, students are required to complete the corresponding worksheets or questions. All lab reports and worksheets are due within **one week** of completion of the lab. Lab quizzes are worth 15 points each and will be given at the beginning of the lab session. The lowest lab quiz score will be replaced by the average of the other quiz scores. Participation will be based on overall attendance, being on time, and professionalism in both lab and lecture.

<b><u>Grading Scale:</u></b>	<b>900+ pts (90-100%)</b>	<b>A</b>
	<b>780-899 pts (78-89%)</b>	<b>B</b>
	<b>650-779 pts (65-77%)</b>	<b>C</b>
	<b>500-649 pts (50-64%)</b>	<b>D</b>
	<b>0-499 pts (below 50%)</b>	<b>F</b>

## ATTENDANCE POLICY

Attendance is required and roll will be taken. **You are responsible for any information, date changes, etc., presented in class, whether or not you are present.** Students missing more than 2 consecutive classes may be dropped. Students given add slips **must** complete the process by **Friday September 7<sup>th</sup>**. Students withdrawing from the class must do so by:

**Friday September 7<sup>th</sup>** (or \*Sunday September 9<sup>th</sup> via internet) to avoid receiving a “W”

**Monday September 10<sup>th</sup>** to receive a refund

**Friday November 16<sup>th</sup>** (or \*Sunday November 18<sup>th</sup> via internet) to receive a “W”

\* The LACCD website is not always available on Sundays due to routine maintenance.

***NOTE:** A new state policy in effect as of Summer 2012 limits students 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 September 9<sup>th</sup> (avoiding a “W”) will not count as an attempt.*

## RECOMMENDATIONS FOR SUCCESS

**This is a demanding class covering a lot of information. Here are some suggestions:**

- do **NOT** fall behind in the course, keep up with the material on a weekly basis
- each time you study, spend a few minutes reviewing previous lessons (this is the secret to long term memory)
- **outline** the powerpoint notes, this will help you to mentally organize the large amount of material you will be learning
- use associations, acronyms to help you remember things
- create flash cards and form study groups if you find that helpful
- **know the key terms** (you can't answer questions correctly if you don't!)
- at a **minimum**, you should **learn** the course material **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 text while reviewing your notes
  - 3) **review** your notes and key terms before the exams

**\*\*\*If you don't do at least this much, you won't do well in this class\*\*\***

## 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

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

-this site contains the textbook publisher's online supplemental study material, practice questions and exercises

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

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

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

<http://www.lamission.edu/learningcenter/ssc.aspx>

-this is the website for the Science Success Center (SSC) located in the library

<http://moodle.lamission.edu/login/index.php>

-here you can monitor your scores and standing in the course and engage in discussion forums with the instructor and fellow students

*If you need assistance or feedback while you are studying or working on your assignments, visit the Science Success Center (SSC) at the LRC, located on the 1st floor of the Library building (Room 208). Free tutoring will also be available Monday through Thursday from 11AM-7PM. Enroll in a study group. Check out the schedule for Science related workshops.*

*For details visit the SSC webpage at <http://lamission.edu/learningcenter/ssc.aspx>, call (818)364-7628 or email: [lamcssc@gmail.com](mailto:lamcssc@gmail.com)*

*Join your peers and tutors at LAMC SSC on Facebook for class discussions off campus:*

*Bio6: <http://www.facebook.com/groups/198317193512401/>*

## COLLEGE RESOURCES FOR STUDENTS

**Bookstore:** For hours of operation, book availability, buybacks, and other information call 818-364-7767 or 7768 or visit <http://www.lamissionbookstore.com/>

**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 & Science. Walk-in and appointment services offered. Call 818-364-7754 or visit <http://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

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.

## LECTURE SCHEDULE (tentative)

Week	Date	LECTURE TOPIC (textbook chapter)
1	Aug 27	Introduction; Themes in the Study of Life (ch 1)
	Aug 29	Review: The Chemical Context of Life (ch 2) Review: Water & the Fitness of the Environment (ch 3)
2	Sep 3	<b>HOLIDAY (Labor Day)</b>
	Sep 5	Carbon and the Molecular Diversity of Life (ch 4)
3	Sep 10	<b>*QUIZ:</b> Structure & Function of Large Biological Molecules (ch 5A)
	Sep 12	Structure & Function of Large Biological Molecules (ch 5B)
4	Sep 17	A Tour of the Cell (ch 6)
	Sep 19	<b>*QUIZ:</b> Membrane Structure & Function (ch 7)
5	Sep 24	Introduction to Cellular Metabolism (ch 8)
	Sep 26	Cellular Respiration: Harvesting Chemical Energy (ch 9)
6	Oct 1	<b>EXAM #1 on chapters 1-8</b>
	Oct 3	Photosynthesis (ch 10)
7	Oct 8	Cell Communication (ch 11)
	Oct 10	<b>*QUIZ:</b> The Cell Cycle (ch 12)
8	Oct 15	Meiosis and Sexual Life Cycles (ch 13)
	Oct 17	Mendel and the Gene Idea (ch 14)
9	Oct 22	<b>*QUIZ:</b> The Chromosomal Basis of Inheritance (ch 15)
	Oct 24	The Molecular Basis of Inheritance (ch 16)
10	Oct 29	<b>EXAM #2 on chapters 9-15</b>
	Oct 31	From Gene to Protein (ch 17)
11	Nov 5	Control of Gene Expression (ch 18) <b>***Case Study Due***</b>
	Nov 7	<b>*QUIZ:</b> Viruses (ch 19)
12	Nov 12	<b>HOLIDAY (Veteran's Day)</b>
	Nov 14	Biotechnology (ch 20)
13	Nov 19	The Immune System (ch 43)
	Nov 21	<b>*QUIZ:</b> Genomes and Their Evolution (ch 21)
14	Nov 26	<b>EXAM #3 on chapters 16-21 &amp; 43</b>
	Nov 28	Descent with Modification: A Darwinian View of Life (ch 22)
15	Dec 3	The Evolution of Populations (ch 23)
	Dec 5	<b>*QUIZ:</b> Origin of Species (ch 24); History of Life on Earth (ch 25)
16	Dec 12	<b>Comprehensive Final Exam</b> (10:00-12:00 in CMS 002)

NOTE: The lecture notes and various handouts will be available in PDF format on the instructor's LAMC web page:

<http://www.lamission.edu/~brownst/2456>

## LABORATORY SCHEDULE

Week	Date	LAB TOPIC (exercise #)
1	Aug 27	Scientific Investigation (Morgan/Carter #1)
	Aug 29	The Metric System & Graphing
2	Sep 3	<b>HOLIDAY (Labor Day)</b>
	Sep 5	*Gel Filtration Chromatography (Edvotek #108)
3	Sep 10	Macromolecules
	Sep 12	**Purification of Green & Blue Fluorescent Proteins (Edvotek #255)
4	Sep 17	<b>QUIZ:</b> Microscopes & Cells (Morgan/Carter #2)
	Sep 19	Diffusion & Osmosis (Morgan/Carter #3)
5	Sep 24	Enzymes (Morgan/Carter #4)
	Sep 26	*Restriction Enzyme Digestion of DNA
6	Oct 1	*Restriction Enzyme Digestion of DNA (cont'd); **Restriction Enzyme Mapping
	Oct 3	**Restriction Enzyme Mapping (cont'd)
7	Oct 8	<b>QUIZ:</b> Fermentation & Respiration
	Oct 10	Photosynthesis
8	Oct 15	Mitosis & Meiosis (Morgan/Carter #7)
	Oct 17	Principles of Genetic Inheritance
9	Oct 22	Mendelian Genetics of Drosophila (Morgan/Carter #9)
	Oct 24	<b>QUIZ:</b> **DNA Cloning: Ligation and Transformation
10	Oct 29	**DNA Cloning: Inoculation of Bacterial Clones
	Oct 31	**DNA Cloning: Plasmid Mini-preps & Digests
11	Nov 5	**DNA Cloning: Gel Electrophoresis of Digested Plasmid Mini-preps
	Nov 7	DNA and Gene Expression
12	Nov 12	<b>HOLIDAY (Veteran's Day)</b>
	Nov 14	<b>QUIZ:</b> *Sickle Cell Genotype by Southern Blot (Edvotek #315)
13	Nov 19	*Sickle Cell Genotype by Southern Blot (Edvotek #315); **PCR Amplification of DNA
	Nov 21	**PCR Amplification of DNA (cont'd); *Introduction to ELISA Reactions (Edvotek #269)
14	Nov 26	**RT-PCR (Edvotek #335)
	Nov 28	Natural Selection
15	Dec 3	<b>QUIZ:</b> Oral Presentations of Reviewed Papers
	Dec 5	Oral Presentations of Reviewed Papers <b>***Article Review Due***</b>

\* *These labs should be recorded in your lab notebook.*

\*\* *These labs should be recorded in your lab notebook and require a formal written lab report.*

*NOTE: Morgan/Carter labs are from the Morgan/Carter lab manual, all other labs are available in the lab pack or can be downloaded from the instructor's LAMC web page:*

<http://www.lamission.edu/~brownst/2457>

## SCORE SHEET

LECTURE POINTS	
Quiz #1	Exam 1
15	100
Quiz #2	Exam 2
15	100
Quiz #3	Exam 3
15	100
Quiz #4	Final
15	125
Quiz #5	Case Study
15	20
Quiz #6	Article Rvw
15	25
Quiz #7	Oral Pres
15	25

LABORATORY POINTS		
M/C #1	M/C #7	Quiz #1
10	10	15
Metric System	Genetics	Quiz #2
10	10	15
*Edvotek #108	M/C #9	Quiz #3
5	10	15
Macromolecules	**DNA Cloning	Quiz #4
5	20	15
**Edvotek #255	DNA/Gene Expr.	Quiz #5
20	5	15
M/C #2	*Edvotek #315	
10	5	
M/C #3	**PCR	
10	20	
M/C #4	*Edvotek #269	
10	5	
*Restriction Enzymes	**Edvotek #335	
5	20	
**Restriction Mapping	Natural Selection	
20	5	
Respiration	PARTICIPATION	
5	50	
Photosynthesis	Notebook	
5	50	

*\* records should be kept in lab notebook*

*\*\* records should be kept in lab notebook and a formal lab report should be written*

### LECTURE possible points:

- quizzes – 15 points each (lowest quiz replaced with average)
- midterm exams – 100 points each
- final exam – 125 points
- case study analysis – 20 points
- article review – 50 points (25 points each for written paper and oral presentation)

### LAB possible points:

- lab reports/worksheets – points for each lab vary (see possible points for each above)
- lab quizzes – 15 points each (lowest quiz replaced by average)
- lab notebook – 50 points (25 points each for completeness and quality of notebook)
- participation – 50 points (lecture/lab attendance, timeliness, professionalism)

To keep track of your performance throughout the course, enter your scores in the chart above as you receive them. At any point you can add up your total points earned and divide by the total points possible at that stage of the course. Multiply this by 100% and then compare with the grade scale on page 3 of the syllabus to see how you are doing.