

Fall 2017 Santa Ana College Math, Science & Health Sci. Div.
Bio 193 - Biotech C: Nucleic Acids Section - 40289
Lecture Online Lab M 3-6:10pm R-228 Open Lab W 3-6:10pm R-228

Instructor: Kathy Takahashi **Email: Takahashi_kathleen@sac.edu

****Please** put the **Bio 193** in the subject line of your email to insure your message is read promptly.

Off. Hours: M&W 12:15 - 12:45pm R-224 W 3-5pm, 6:00-6:30pm R-228/online

Phone: 714-564-6628

Course Description:

(4 units) This course introduces the fundamental skills in applied biotechnology focusing on the upstream research and development process. Skills include maintenance of an industry standard notebook, preparation and sterilization of solutions, reagents and media, utilization of good aseptic technique, proper use and maintenance of laboratory equipment, adherence to quality control protocols, lab safety regulations, DNA/RNA extraction and purification, bioinformatics, polymerase chain reaction, electrophoresis, DNA sequencing, recombinant DNA technology, DNA cloning, fluorescence in situ hybridization, and Southern blot analysis and in vitro transcription. Compliance with industry standards and regulations will be incorporated into course procedures.

We will meet for lab on Mondays from 3:00pm to 6:10pm. Plan on being in lab the entire time specified. **Leaving early or arriving late will cost you points.**

NOTE: In this class, we work with potentially dangerous microorganisms and chemicals. Students who are pregnant or have depressed immune systems are advised not to take this course without first consulting their doctor.

Attendance: Regular class attendance is required by the college, mandatory to ensure safety in the lab, and is virtually essential to academic success. Any student who misses TWO LAB PERIODS ANYTIME THROUGHOUT THE COURSE WILL BE DROPPED at the instructor's discretion. Two tardies count as an absence. Please contact me ahead of time if you foresee any legitimate attendance problems. Ultimately, you are responsible to add or drop yourself from any class.

Learning Outcomes to be Assessed:

Students will know how to subclone a gene into a cloning or expression vector.
Students will know how to express and detect a gene.

Textbook:

Lisa A. Seidman and Cynthia J. Moore. *Basic Laboratory methods for Biotechnology: Textbook and Laboratory Reference*, 2 ed. Prentice-Hall Inc., 2009, ISBN: 9780321570147. \$65.86

Materials to be Supplied by the Student

Lab Notebook (comp book type). Please bring a lab coat and goggles if you have them. If you do not, you can borrow some.

Grading: Grading for this course is based on the total number of points you earn in the class.

Exams (150 pts each)	300 pts
Quizzes or Homework (best of 10/11 - 10pts @)	100 pts
Soft Skills	180 pts
Weekly Assessments (16 weeks x 6.25 pts)	
360 Assessment (80 pts)	
Lab Notebook	100 pts
Initial Assessment (20 pts)	
Periodic Assessments (20 pts @x4)	
Lab Skill Tests	200 pts
Transformation (40 pts)	
DNA prep (40 pts)	
Plasmid Map (40 pts)	
PCR (40 pts)	
CRISPR Design (40 pts)	
Final Project	120 pts
Project Design (30 pts)	
Lab Notebook (Project) (30 pts)	
Data (30 pts)	
Formal Write-Up (30 pts)	
Total	1000 pts

Points will be deducted if protective clothing & equipment are not worn.

Grading Scale: **A = 100-90%** (1000-900 pts) **B = 89-80%** (899-800 pts) **C = 79-70%** (799-700 pts)

D = 69-60% (699-600 pts) **F = Less than 60%** (< 600 pts)

(To determine your grade at any time, divide the total points possible (to date) into the number of points that you have, and then move the decimal point two spaces to the right. Check your percentage against the scale above.)

Grading

Assignments are due on time. Late work will lose 5% for each day it is late. Course grades are earned based on the percentage of total points accumulated versus the total number of points possible. Points are earned by each student not given by the instructor and are therefore not negotiable.

Examinations and Quizzes: Lecture exams will be a mixture of objective questions and short answer questions. Many of the assessments will occur online. Lab Skills Assessments will occur in person.

Laboratory evaluations (Final Assessment). Laboratory evaluations of student lab skill proficiency, professionalism, communication, teamwork, attitude, critical thinking, knowledge of equipment, procedures and SOPs will be evaluated by the instructor and all other students in the class. This is called a 360 evaluation and is very similar to job performance evaluations conducted in industry. Please note, also, that **there are no special make-up for the lab evaluations for a student regardless of the cause.**

Regrades: ALL requests for regrades on quizzes or exams **must be submitted in writing within one week of the items return.** Indicate which question should be regraded, what the problem is, and why you feel your answer is correct. I reserve the right to regrade the entire test to the key for all regrade requests submitted.

Mistakes made in entering scores into Blackboard or Canvas are not considered regrades. Just show the instructor the item that was entered in error, fillout a regrade form with the info and the mistake will be corrected.

Make-Ups for Examinations or Quizzes: Make-Ups are only granted with advance consent of the instructor and a valid documented reason for the make-up (ei. Surgery or court date. Not birthday or assignment in another class.).

Cell Phone Policy: Classroom disruption by cell phones or other electronic devices is prohibited. All cell phones and similar electronic devices must remain turned off and out of sight for the duration of the lecture portion of class. Failure to do this will result in your being asked to leave the class immediately. Electronic devices utilized in a learning context, such as laptops, audio recording devices and language interpreters are permitted during lecture. They are not permitted during exams and quizzes. The use of an electronic device during an exam or in class quiz will result in a “0” for that assignment and will result in the loss of all extra credit points. The use of electronic devices in class is a privilege, and should be used by students for course specific work only. The professor reserves the right to ban their use at any time.

ACADEMIC HONESTY POLICY:

From the 2016/2017 Santa Ana College Catalog, pg. 20.

Students at Santa Ana College are expected to be honest and forthright in their academic endeavors. To falsify the results of one's research, to steal the words or ideas of another, or to cheat on an examination, corrupts the essential process by which knowledge is advanced. Academic dishonesty is seen as an intentional act of fraud, in which a student seeks to claim credit for the work or efforts of another without authorization, or uses unauthorized materials or fabricated information in any academic exercise. As institutions, we also consider academic dishonesty to include forgery of academic documents, intentionally impeding or damaging the academic work of others, assisting other students in acts of dishonesty or coercing students into acts of dishonesty.

Procedures – In cases where a violation of academic honesty is discovered, the faculty member is encouraged to file an “Academic Misconduct Incident Report” form and distribute the form to the appropriate offices listed.

There are two categories of sanctions: Limited and College-wide. Limited sanctions include an academic action such as assigning a lower grade or a grade of “F” for the assignment, project, or test. College-wide sanctions include any sanction that will affect a student's standing with the college-at-large, up to and including suspension or expulsion from the College.

In matters relating to academic honesty violations, the primary responsibility for disciplinary proceedings rests with the instructor and the academic division where the violation allegedly occurred. The Dean of Student Affairs will assist in all College-wide sanctions.

Academic dishonesty or cheating is defined as an intentional act of fraud in which a student seeks to claim credit for the work or efforts of another without authorization. This includes assisting other students in acts of dishonesty or coercing students into acts of dishonesty, whether it is in coursework or on exams. There is absolutely **NO tolerance** for cheating in this class. All forms of extra credit will be stripped from any student found participating in academic dishonesty directly or indirectly as well as the opportunity to make-up a missed examination regardless of the reason. A student will face a "0" for the use of an electronic device for cheating during an exam or in class quiz. Any student caught cheating or assisting another student in the act of cheating, will receive a "0" points. **Plagiarism** is using someone else's words or ideas without giving that source credit. Any assignment turned in without citing your source or if it appears that the information you presented is not entirely your own and is not cited will be an automatic "0" for that assignment.

ACADEMIC ACCOMMODATIONS STATEMENT (Required):

A student with a disability, who would like to request an academic accommodation, is responsible for identifying herself/himself to the instructor and to the Disabled Student Programs and Services (DSPS). To make arrangements for academic accommodations, contact the Learning Disabilities Program in Johnson Center, U-103, or phone (714) 564-6264, TTY (714) 564-6284 for a referral to the appropriate DSPS Department. If you would like more information, visit <http://sac.edu/StudentServices/DSPS>,

For **Important Semester Dates** refer to the Fall Schedule of Classes.

FALL 2017

DESCRIPTION

August 28, 2017

INSTRUCTION BEGINS

September 4, 2017

Labor Day

September 10

Last day to Add or Drop full-term classes without "W" grade & w/ refund.

September 15, 2017

Last day to file Pass/No Pass for first GR8 Weeks classes

September 29, 2017

Last day to file Pass/No Pass for full-semester classes

Deadline for CSU and IGETC petition

October 20, 2017

Deadline for December graduation petition

Deadline for December certificates

October 23, 2017

Second GR8 Weeks classes begin

November 10, 2017

Veterans Day Observed

November 19, 2017

Last day to drop a full-semester class with a "W" grade

November 23 - 26

Thanksgiving - Holiday

December 11-17

Final Exams Week

SAC Fall 2017 Bio 193 - Biotech C: Nucleic Acids TENTATIVE Schedule

	Date	Laboratory	Lecture
1	M 8/28	Orientation/Safety/Rules/Supplies Micropipetting Review Solutions and Reagent Prep	Syllabus/ Molecular Cell Biology Overview Nucleic Acid Extractions
2	M 9/4	Labor Day	HOLIDAY
3	M 9/11	DNA Prep Competent Cells	Transformations Restriction Endonucleases
4	M 9/18	Transformation Restriction Digests	Restriction Mapping Nucleic Acid Modifying Enzymes
5	M 9/25	Transformation Efficiencies Agarose Gel Electrophoresis	Model Systems
6	M 10/2	DNA Extraction & Clean-Up DNA Ligations & Modifications	PCR
7	M 10/9	PCR PCR Troubleshooting	Primer Design DNA Sequencing/Fingerprinting
8	M 10/16	PCR Primer Design	Exam I RNA Silencing
9	M 10/23	NSF-ATE Meeting DNA Sequencing - online activity	NSF-ATE Meeting RNA Silencing/Interference
10	M 10/30	DNA Fingerprinting	CRISPR/Cas 9
11	M 11/6	RNA Interference w <i>C. elegans</i>	CRISPR Projects
12	M 11/13	CRISPR/Cas 9	CRISPR Projects
13	M 11/20	CRISPR/Cas 9 Projects	Model Systems Bioreactors
14	M 11/27	CRISPR/Cas9 Projects Bioreactor	Bioreactors - Culture Conditions
15	M 12/4	Culture Conditions in Bioreactor	Exam II
16	M 12/11	Detection of Gene & Expression Product	Final Projects - Lab Notebook Formal Lab Write-Up