

**APPLICATION FOR PROGRAM APPROVAL:  
NEW or SUBSTANTIAL CHANGE or LOCALLY APPROVED  
(This application may not exceed 3 pages)**

<u>Biotechnology</u>	<u>M. Kathleen Takahashi, Ph.D.</u>
PROPOSED PROGRAM TITLE <u>Santa Ana College</u>	CONTACT PERSON <u>Professor/Co-Chair Biology</u>
COLLEGE <u>Rancho Santiago Community College District</u>	TITLE <u>714-564-6628</u>
DISTRICT <u>Fall 2014</u>	PHONE NUMBER <u>takahashi_kathleen@sac.edu</u>
PROJECTED PROGRAM START DATE	E-MAIL ADDRESS
<b>GOAL(S) OF PROGRAM (CHECK ALL THAT APPLY):</b>	
<input checked="" type="checkbox"/> CAREER TECHNICAL EDUCATION (CTE) <input checked="" type="checkbox"/> TRANSFER <input type="checkbox"/> OTHER	
<b>TYPE OF PROGRAM (CHECK ALL THAT APPLY):</b>	
<input type="checkbox"/> A.A. DEGREE <input checked="" type="checkbox"/> A.S. DEGREE                      CERTIFICATE OF ACHIEVEMENT: <input checked="" type="radio"/> 18+ semester (or 27+ quarter) units <input type="radio"/> 12-18 semester (or 18-27 quarter) units	
<b>REASON FOR APPROVAL REQUEST: (CHECK ONE)</b>	
<input checked="" type="checkbox"/> NEW PROGRAM <input type="checkbox"/> SUBSTANTIAL CHANGE <input checked="" type="checkbox"/> LOCALLY APPROVED	

<i>Recommended Taxonomy of Program (TOP) Code</i>	0430.00
<i>Units for Major-Degree</i>	31
<i>Total Units for Degree</i>	61
<i>Required Units-Certificate</i>	39

1. Insert the description of the program as it will appear in the catalog.

This certificate program is designed to prepare students for entry level jobs as laboratory assistants, biomanufacturing technicians, research and development technicians, and in quality control biology and microbiology in fields such as biotechnology, medical devices, pharmaceuticals, biological, food safety, biomanufacturing and testing laboratories.

2. Provide a brief rationale for the program.

Santa Ana College (SAC) and our collaborators met with a biotechnology advisory committee in June 2012 which recommended developing a stackable certificate that would provide new students and incumbent workers with skills to enter and advance in this growing industry. Since that meeting, all three community colleges have worked together to research and plan for the implementation of such a certificate. The certificate will be comprised of courses intended to develop and ensure proficiency in specific lab-based skills as well as more traditional basic

biology and chemistry courses. We have proceeded in developing this program with the support of colleagues at Santiago Canyon College, Fullerton College and Wendie Johnson, director of the Pasadena City College LA/OC Biotechnology Economic Workforce Development Program. Considering the new biotechnology courses, the program will work with the campus articulation officer to determine the course transferability and articulation to CSU/UC.

- List all courses required for program completion, including core requirements, restricted electives and prerequisites.

**Certificate of Achievement: Biotechnology Laboratory Technician**

Requirements	Dept/Name#	Name	Units
Required Core (31 units)	<b>Biology 190</b>	<b>Introduction to Biotechnology</b>	3
	<b>Biology 191</b>	<b>Biotechnology A: Basic Lab Skills</b>	4
	<b>Biology 192</b>	<b>Biotechnology B: Proteins</b>	4
	<b>Biology 193</b>	<b>Biotechnology C: Nucleic Acids</b>	4
	<b>Biology 211</b>	<b>Cellular and Molecular biology</b>	5
	<b>Biology 194</b>	<b>Quality &amp; Regulatory Compliance in Bioscience</b>	2
	<b>Chemistry 209</b>	<b>Introduction to Chemistry General</b>	4
	<b>Chemistry 219</b>	<b>General Chemistry &amp; Quantitative Analysis</b>	5
General (8 units)	Biology 177	Human Genetics	3
	Chemistry 229	General Chemistry and Quantitative analysis	5
	Biology 229	General Microbiology	5
	or	or	
	Biology 139	Health Microbiology	4
	Biology 290	Biochemistry and Molecular Biology	5
	Biology 197	STEM Internship	1-4

39 Total Units

**Certificate of Achievement: Biotechnology Laboratory Technician: QC Microbiology Focus**

Requirements	Dept/Name#	Name	Units
Required Core (31 units)	<b>Biology 190</b>	<b>Introduction to Biotechnology</b>	3
	<b>Biology 191</b>	<b>Biotechnology A: Basic Lab Skills</b>	4
	<b>Biology 192</b>	<b>Biotechnology B: Proteins</b>	4
	<b>Biology 193</b>	<b>Biotechnology C: Nucleic Acids</b>	4
	<b>Biology 211</b>	<b>Cellular and Molecular biology</b>	5
	<b>Biology 194</b>	<b>Quality &amp; Regulatory Compliance in Bioscience</b>	2
	<b>Chemistry 209</b>	<b>Introduction to Chemistry General</b>	4
	<b>Chemistry 219</b>	<b>General Chemistry &amp; Quantitative Analysis</b>	5

**Los Angeles and Orange County Regional Consortia**

*“Doing What Matters for Jobs and the Economy”*

QC Microbiology Focus (8 units)	Biology 229 Biology 195 Biology 197	General Microbiology QC Microbiology STEM Internship	5 2 1

39 Total Units

- Summarize the Labor Market outlook (including citation of the source of data) for students exiting the program.  
The skills acquired by students completing this program will enable them to enter a large number of fields. Our interaction with industry indicates that they would hire certified individuals with skills over an individual with a B.S. without the skill-based training. According to the Labor Market Information of Estimated Employment and Projected Growth for industries who would employ completers of this program, the Net Annual Labor Demand is 377. This information was provided by the Center of Excellence. Furthermore, while reviewing the Chancellor’s Office Data Mart for historical completion rates for the community colleges in Los Angeles and Orange counties, the highest number of completions over the past five years for programs with a TOP code of 0430.00 was 20 (2010-2011). The labor market demand for students completing this program is strong.
- List similar programs at other colleges in the Los Angeles and Orange County Region which may be adversely impacted. (complete the chart)

Orange County does not currently have a biotechnology program being offered to students. The only current active biotechnology-related program within the SAC service area is an A.S. degree in Biological Technician at Fullerton College (with a focus in training students as research technicians). Coastline College has a biological technical program on the books but it has not been offered for a number of years.

College	Program	Who you contacted	Outcome of contact
Fullerton College	Biological Technician	Jo Wen Wu, Faculty	Positive--co-collaborator on
			Biotech program
N/A			

- Include other information you would like to share.

Students who complete this stackable program will obtain a Biotechnology Biomanufacturing Technician Certificate of Achievement and either a Biotechnology Technician Certificate of Achievement or a Biotechnology Technician: QC Microbiology Certificate of Achievement. Students will have obtained proficiency in basic and more advanced laboratory skills, and will have been exposed to various aspects of the industry through school-sponsored events and coursework. By having a coordinated collaboration between three campuses in Orange County, students will benefit by having multiple opportunities to seek additional specializations within the field of biotechnology. Additionally, they will obtain real-life experience through internship opportunities. This certificate meets the needs of the emerging and growing biotechnology sector in Orange County.



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Steven Glycer, Chair • Dr. Lynn Shaw, Vice Chair

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