

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

**Fill In Form**

Biotechnology Proposed Program Title	Fall 2017 Projected Program Start Date
Los Angeles Mission College College	Los Angeles Community College District District

**Contact Information**

Stephen Brown Voting Member	Vice Chair, Life Science Department, LAMC Title
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**Goal(s) of Program (Check all that apply):**

Career Technical Education (CTE)       Transfer       Other

**Type of Program (Check all that apply):**

Certificate of Accomplishment 12-17 (or 17-27 quarter) units       Certificate of Achievement 18+ semester (or 27+ quarter) units  
 Associate of Science Degree       Associate of Arts Degree

**Reason for Approval Request (Check One):**

New Program       Substantial Change       Locally Approved

**Program Information**

0430      Recommended [Taxonomy of Program \(TOP\) Code](#)  
 25      Units for Major-Degree  
 60      Total Units for Degree  
 \_\_\_\_\_      Required Units-Certificate

**Written Form**

**1. Insert the description of the program as it will appear in the catalog. (See PCAH pp. 142 and 170)**

This program is designed to prepare students for a career in quality control and quality assurance in the field of biotechnology. Upon successful completion of the required coursework, students will have acquired skills in basic laboratory techniques, safety, documentation, data presentation, quality control, and good manufacturing practices. The curriculum is not aligned to transfer to a specific major at a four-year college or university.

**2. Provide a brief rationale for the program.**

The Biotechnology industry is one of the most rapidly growing industries in the United States. This rapid growth has created many employment opportunities in the biotechnology field. Consequently, there is a need to introduce students to the broad range of job opportunities in the biotechnology occupations.

**3. Summarize the Labor Market Information (LMI) and employment outlook (including citation for the source of the data) for students exiting the program. (See PCAH pp. 85-88, 136, 147, 148, 165, 168, and 176)**

The AS degree in Biotechnology will prepare students for entry-level employment opportunities in many industries. The Centers for Excellence, in its report Supply and Demand Analysis LIFE SCIENCES & BIOTECH in California October 2014 identified the following occupations as comprising the biotechnology workforce: Biological Technicians (19-4021), Chemical Technicians (19-4031), Medical and Clinical Laboratory Technicians, Quality Control Analysts (*part of SOC 19-4099 Life, Physical, and Social Science Technicians, All Other*), Manufacturing Production Technicians (*part of SOC 17-3029 Engineering Technicians, Except Drafters, All Other*), and Inspectors, Testers, Sorters, Samplers, Weighers (51-9061). The following summarizes the LMI in LA and Orange County combined:

- The 2015-2016 the job change is projected to be 465 jobs (1% growth). Annual openings are projected to be 1,855.
- Average entry-level wage is \$15.86/hr with a median wage of \$20.54/hr
- There were 2,812 regional completions in 2,812 in 2015 (CIP codes 51.0000, 51.0713, 51.0707, 15.0401, 15.000)

While on first examination the number of regional program completions is greater than number of openings, a couple of mitigating factors apply. First, the Health Services/Allied Health/Health Sciences, General (CIP 51.0000) program is included in the completions number (1335 in 2015) which skews the number much higher than may be warranted. This program prepares students for a number of allied health occupations, and overstates the number of biotechnology completers. Second, the field of Biotechnology is emerging, and as such accurate LMI is hard to find. Given the positive input from the Biotechnology Advisory Committee, which met on 7/11/16, the department was moving forward with the Biotechnology program was indicated.

Source: EMSI

**4. List similar programs at other colleges in the Los Angeles and Orange County Region which may be adversely impacted. (There is space for 10 listings, if you need more, please contact [laocrc@rscdd.edu](mailto:laocrc@rscdd.edu))**

College	Program	Who You Contacted	Outcome of Contact
LA Valley College	Biotechnology	Dr. Chander Arora	She serves on our advisory board ; provided feedback on the curriculum.
LA Trade Tech College	Biotechnology	Dr. Makarem	Glad to assist us
Pasadena City College	Biotechnology	Pamela Eversole-Cire, Ph.D.	Shared information on their program with us
Irvine Valley College	Biotechnology	Emalee MacKenzie	Shared information on their program with us
Santa Ana College	Biotechnology	Kathy Takahashi, PhD	Shared their course outlines with us
Santiago Canyon College	Biotechnology	Denise Foley	They are happy to help.
Citrus College	Biotechnology	Barbara Juncoso	Very supportive
Coastline Community College	Biotechnology	Nancy Jones	Coastline is fine with our moving ahead
Fullerton College	Biotechnology	Richard Hartmann, Ph.D.	Contacted via email

5. List all courses required for program completion, including core requirements, restricted electives and prerequisites. (There is space for 20 listings, if you need more, please contact [laocrc@rscsd.edu](mailto:laocrc@rscsd.edu)).  
 (See PCAH pp. 143 and 171)

Courses	Course Number	Course Title	Units
Biotech	2	Biotechnology I	3
Biotech	3	Biotechnology II	4
Chemistry	51	Fundamentals of Chemistry I	5
Microbiology	20	General Microbiology	4
Biotech	6	Biotechnology: Quality Control	2
Biotech	8	Elementary Statistics for the Life Sciences	2
Biotech	9	Biological Research Internship	5

6. Include any other information you would like to share.

Offering short-term stackable certificate programs in Biotechnology will encourage students to enroll in these programs and find a job in a short period of time while having the opportunity to advance to higher degrees in this field.

**Certificate Options:**

**Biotechnology Lab Assistant Certificate of Accomplishment (16 units)**

College Survival Skills Development (Counsel 017 – 1 unit)

Fundamentals of Biotechnology (Biotech 001 – 3 units)

Biotechnology I (Biotech 002 – 2 hrs lecture, 4 hrs lab – 3 units)

Biotechnology II (Biotech 003 – 2 hrs lecture, 6 hrs lab – 4 units)

Fundamentals of Chemistry I (Chem 51 – 5 units)

**Biotechnology Research Lab Assistant Certificate of Achievement (23 units)**

Biotechnology I (Biotech 002 – 2 hrs lecture, 4 hrs lab – 3 units)

Biotechnology II (Biotech 003 – 2 hrs lecture, 6 hrs lab – 4 units)

Fundamentals of Chemistry I (Chem 51 – 5 units)

General Microbiology (Micro 20 – 4 units)

Elementary Statistics for the Life Sciences (new course Biotech 008 – 2 units)

Biological Research Internship (new course Biotech 009 – 5 units)

**A.S. in Biotechnology (25 units + electives = 60 units)**

Biotechnology I (Biotech 002 – 2 hrs lecture, 4 hrs lab – 3 units)

Biotechnology II (Biotech 003 – 2 hrs lecture, 6 hrs lab – 4 units)

Fundamentals of Chemistry I (Chem 51 – 5 units)

General Microbiology (Micro 20 – 4 units)

Elementary Statistics for the Life Sciences (new course Biotech 008 – 2 units)

Biological Research Internship (new course Biotech 009 – 5 units)

Biotechnology: Quality Control (Biotech 006 – 2 units)

