

# Laney College

## Biomanufacturing

### Overview

College	Laney - Mathematics and Sciences
Originator	Leslie Blackie
Award Type	Certificate of Achievement

### Codes and Dates

State Approval Date	2/16/2021
Curriculum Committee Approval Date	5/08/2020
Board of Trustees Date	10/13/2020
Current Effective Date	1/01/2021
Program Control Number	30965
Top Code	0430.00* - Biotechnology and Biomedical Technology

### Description

The Certificate of Achievement in Biomanufacturing is designed to provide students with the knowledge and skills necessary for employment in the biomanufacturing/pharmaceutical industry. Students study basic biotechnology and biomanufacturing skills in one semester, earning a Certificate of Proficiency in Biomanufacturing Skills. Students may then continue their academic training by taking additional courses to earn a Certificate of Achievement in Biomanufacturing gaining the skills and knowledge necessary for a higher level of employment within the manufacturing sector of the pharmaceutical industry.

### Career Opportunities

Manufacturing and production ex. material handlers, manufacturing assistant, instrumentation and calibration technicians, media prep assistant Research and Development ex. laboratory assistant, green house worker, animal caretakers Quality control/Quality Assurance (QA/QC) ex. QC technician, QA specialist or assistant

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Setup and manipulate laboratory equipment, carry out experimental procedures and identify possible sources of error.
2. Maintain a laboratory notebook according to standard scientific guidelines or write clear, well-documented lab reports using the language of science.
3. Explain and discuss both verbally and in writing the science concepts listed in the course content, as well as their relevance to everyday events and circumstances in a broad interdisciplinary context.

### Degree Requirements:

<b>First Semester (4-7 units):</b>	<b>Credit Hours:</b>	(0 Required)
BIOL 075      Fundamentals of Biotechnology *		2
CHEM 030A or    Introductory General Chemistry		4
CHEM 001A      General Chemistry		5
<b>Second Semester (7-10 units):</b>	<b>Credit Hours:</b>	(0 Required)
BIOL 076 or      Principles of Biomanufacturing *		3
BIOL 078 or		5

Applied Biomanufacturing Technology with Laboratory \*

BIOL 003 or	Microbiology	5
BIOL 073	Cell Culture Principles and Techniques	4

**Credit Hours:** (13 - 15 Required)

Total Units: 13 - 15

**Credit Hours:** (0 Required)

Recommended: any transfer level MATH course

**Total: 13.000 - 15.000**

\*: BIOL 78 can be taken in lieu of all three of the following courses: BIOL 75, BIOL 76

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# Laney College

## Biomanufacturing Production

### Overview

College	Laney - Mathematics and Sciences
Originator	Leslie Blackie
Award Type	A.S. Degree

### Codes and Dates

State Approval Date	4/09/2018
Curriculum Committee Approval Date	5/08/2020
Board of Trustees Date	10/13/2020
Current Effective Date	1/01/2021
Program Control Number	30965
Top Code	0430.00* - Biotechnology and Biomedical Technology

### Description

The Associates of Science in Biomanufacturing Production degree continues to build on the courses taught for the Certificates of Proficiency and Achievement to prepare graduates to work in the biomanufacturing/pharmaceutical industry as technicians. Students will learn how to operate and maintain the equipment used to manufacture protein pharmaceutical products; culture bacterial, yeast and mammalian cells and recover the proteins that those cells produce. Students will follow good manufacturing practices by maintaining records in order to comply with quality assurance procedures and government regulations.

### Career Opportunities

Manufacturing Technician, Production Technician, Laboratory Technician, Quality Control Technician

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. PLO # 1 Set up and manipulate laboratory equipment, carry out experimental procedures and identify possible sources of error as well as practice laboratory safety guidelines relating to working with laboratory equipment.
2. PLO # 2 Communicate using industry standard documentation of laboratory notebooks, SOPs or batch records or write clear well documented lab reports as appropriate.
3. PLO # 3 Explain and discuss both verbally and in writing the science concepts listed in the course content, as well as their relevance to everyday events and circumstances in a broad interdisciplinary context.

### Degree Requirements:

<b>First Semester (4-7 units):</b>	<b>Credit Hours:</b>	(0 Required)
BIOL 075            Fundamentals of Biotechnology *		2
CHEM 030A or    Introductory General Chemistry		4
CHEM 001A        General Chemistry		5
<b>Second Semester (7-10 units):</b>	<b>Credit Hours:</b>	(0 Required)
BIOL 003 or        Microbiology		5
BIOL 073           Cell Culture Principles and Techniques		4
BIOL 076           Principles of Biomanufacturing *		3

BIOL 078	Applied Biomanufacturing Technology with Laboratory *	5
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**Third Semester (7 units):****Credit Hours:** (0 Required)

BIOL 072A	Biotech Instrumentation: Good Manufacturing Practices and Safe Chemical Handling	1
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BIOL 072B	Biotech Instrumentation: Clean Room	1
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BIOL 072C	Biotech Instrumentation: PCR	1
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BIOL 072D	Biotech Instrumentation: Protein Purification and Quality Control	1
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BIOL 074	Scientific Communication	3
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**Fourth Semester (7 units):****Credit Hours:** (0 Required)

BIOL 077	Business and Regulatory Practices in Biomanufacturing	3
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BIOL 079	Bioreactor Cell Culture and Protein Recovery	4
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Total Major Units:

27 - 29

**Credit Hours:** (0 Required)

Recommended: any transfer level MATH course

**Credit Hours:** (0 Required)

General Education Requirements:

19

**Credit Hours:** (0 Required)

Electives to meet 60 units:

**Credit Hours:** (60 Required)

Total Units:

60

**Total: 60**

\*: BIOL 78 can be taken in lieu of all three of the following courses: BIOL 75, BIOL 76

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# Berkeley City College

## School Readiness Teacher

### Overview

College	BCC - Liberal Arts and Social Sciences
Originator	Jenny Lowood
Award Type	Certificate of Achievement

### Codes and Dates

Curriculum Committee Approval Date	10/15/2020
Current Effective Date	8/01/2021
Top Code	0899.00* - Other Education

### Description

The School Readiness Teacher Certificate of Achievement Program is a 24-unit certificate designed for students who plan to pursue a career as a public school teacher. This program is designed for students interested in teaching early primary aged children. This program also prepares students to qualify for the California Child Development Permit, which authorizes work in the instruction of children in before-school, after-school, and other school age or publicly funded programs.

### Career Opportunities

Students who complete this program will be eligible to work in preschool settings as teachers or resource and referral counselors; in elementary school settings as before-school, after-school teachers, and instructional assistants or paraprofessional educators, or in transitional kindergartens, K-3 as aides or special education aides.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Integrate understanding of the needs, the characteristics and multiple influences on development of children birth to age eight as related to high quality care and education of young children.
2. Design, implement and evaluate environments and activities that support positive, developmental play and learning outcomes for all children.
3. Apply effective guidance and interaction strategies that support all children's social learning, identity and self-confidence.
4. Develop strategies that promote partnerships between programs, teachers, families and their communities.
5. Apply ethical standards and professional behaviors that demonstrate understanding of the needs, the characteristics and multiple influences on the development of children birth to age eight as related to high quality care and education of early primary aged children.

### Degree Requirements:

#### Course Requirements

**Credit Hours:** (24 Required)

#### Course Requirements

CHDEV 051 and	Child Growth and Development	3
EDUC 002 and	Child, Family, Community, and Schools	3
EDUC 003 and	Introduction to Curriculum	3
EDUC 004 and	Principles and Practices of Teaching Early Childhood and Early Primary Children	3
EDUC 005 and	Observation, Assessment and Documentation Tools, Methods, and Strategies	3

EDUC 006 and	Health, Safety and Nutrition	3
EDUC 007 and	Teaching in a Diverse Society	3
EDUC 008	Practicum in Early Childhood and Early Primary Education	3

**Total: 24**

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