DEGREES, CERTIFICATES, AND TRANSFER PREPARATION INFORMATION

BIOTECHNOLOGY

For additional career possibilities, visit the Career Services Center on the main campus to utilize computerized career information systems and other valuable career resources.

Programs Offered

- Transfer Preparation
- Certificate of Achievement
    - Biotechnology/Life Sciences Laboratory
    - Biotechnology and Cell Science Laboratory Technician
- Career Opportunities

Certificate of Achievement Requirements

A Certificate of Achievement is granted upon successful completion of a program of study with a minimum overall grade point average (GPA) of 2.0 (C) and a **designated minimum number of units**, including:

- Completion of the area of emphasis with a grade of C or higher in each course, or with a P if the course was taken on a Pass/No Pass basis, and the P is equal to a C or higher;
- Completion of at least 50% of area of emphasis units at Santa Monica College. Department Chairs have the discretion to waive the 50% minimum units required at SMC to meet the major or area of emphasis. All major coursework must be completed with a "C" or better grade.

Catalog Rights

A student may satisfy the requirements of a degree that were in effect at any time of the student's ***continuous*** enrollment. Continuous enrollment means attendance in at least one semester (Fall or Spring) in each academic year.

Transfer Preparation

Many colleges/universities offer baccalaureate degrees in this field. Students planning to transfer to a four-year college or university should complete the lower-division major requirements and the general education pattern for the specific transfer institution. SMC has articulation agreements with the many UC and CSU campuses, as well as several private and out-of-state institutions.

Exact major requirements for UC and CSU campuses can be found online at *assist.org*.

A listing of private, nonprofit California colleges and universities can be found online at *aiccu.edu*. For articulation agreements between SMC and some of these institutions see *smc.edu/articulation*.

Biotechnology/Life Sciences Laboratory Assistant, Certificate of Achievement

The life sciences/biotechnology sector has remained resilient during the COVID-19 pandemic, with the Los Angeles region generating $60.8 billion in economic activity in 202 and hosting more than 1,000 life science innovation companies. It is projected that 16,000 technical jobs will be added to this rapidly growing sector within the next three years. The acceleration of the widening supply-and-demand gap, along with the need for highly skilled technicians, emphasizes the necessity to prepare students to become the next generation of highly skilled workers in this dynamic sector. The stackable Biotechnology Certificate program focusing on cell science and immunological testing will align academic offerings with industry needs and students will be trained in a curriculum that focuses on essential knowledge, state-of-the-art technical skills, and industry-required soft skills. Students will also receive an introduction to nanobiotechnology concepts and their applications in the biomedical, cell therapy, and immunological testing industries.

Program Learning Outcomes: Upon completion of this program, students will demonstrate knowledge of the broad scope of the biotechnology industry as well as the structure of a company and the importance of project management, workflow, and ethical practices. Students will also be able to describe and perform foundational molecular biology techniques that introduce quantifying, manipulating, and purifying biological molecules. Students will be able to demonstrate and articulate the importance of aseptic techniques. Through these cumulative laboratory experiences, students will be able to apply the scientific method to design controlled experiments and perform data analysis and graphing skills to generate quality figures. Students will also demonstrate their technical knowledge of the different types of documents and records used in a regulatory environment and communicate novel scientific findings through written and oral communication. Finally, students will become more aware of equipment and laboratory space modifications that will promote inclusivity and accommodations for scientists living with disabilities.

Area of Emphasis: (24 units)

Required Courses: (24 units)

BIOL 30, Fundanmentals of Biotechnology I (5)
BIOL 31, Fundamentals of Biotechnology 2: From Genes to Proteins (5)
BIOL 34, Science Communication for Regulated Environments (3)
BIOL 90B, Life Science Internship (2)
CHEM 10, Introductory General Chemistry (5)
MATH 54, Elementary Statistics (4)

Biotechnology and Cell Science Laboratory Technician, Certificate of Achievement

The life sciences/biotechnology sector has remained resilient during the COVID-19 pandemic, with the Los Angeles region generating $60.8 billion in economic activity in 202 and hosting more than 1,000 life science innovation companies. It is projected that 16,000 technical jobs will be added to this rapidly growing sector within the next three years. The acceleration of the widening supply-and-demand gap, along with the need for highly skilled technicians, emphasizes the necessity to prepare students to become the next generation of highly skilled workers in this dynamic sector. The stackable Biotechnology Certificate program focusing on cell science and immunological testing will align academic offerings with industry needs and students will be trained in a curriculum that focuses on essential knowledge, state-of-the-art technical skills, and industry-required soft skills. Students will also receive an introduction to nanobiotechnology concepts and their applications in the biomedical, cell therapy, and immunological testing industries.

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Area of Emphasis: (40 units)

Required Courses: (40 units)

BIOL 30, Fundamentals of Biotechnology 1 (5)
BIOL 31, Fundamentals of Biotechnology 2: From Genes to Proteins (5)
BIOL 32, Cell Culture Methods and Techniques (4)
BIOL 33, Immunoassay Methods (4)
BIOL 34, Science Communication for Regulated Environments (3)
BIOL 35, Nanobiotechnology (3)
BIOL 90B, Life Science Internship (2)
CHEM 10, Introductory General Chemistry (5)
MATH 54, Elementary Statistics (4)
MCRBIO 1, Fundamentals of Microbiology (5)