

Pathway Map

College: **Berkeley City**
Sector: **Biosciences**

East Bay Regional Core Competency Categories ²

1. Comply with applicable regulations and standards
2. Maintain a safe and productive work environment
3. Manage and communicate information
4. Perform mathematical manipulations
5. Perform measurements/tests/assay
6. Provide routine facility (media prep) support



NOTES	ACADEMIC PROGRAM OF STUDY	COMPETENCIES BY CATEGORY AND LEVEL	JOBS & WAGES
<p>ADVANCED LEVEL</p> <p>Transfer to the CSU/UC system requires completing articulated coursework.</p>	<p style="text-align: center;"><i>University Degree</i></p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px dashed black; padding: 5px;">BS Biomufacturing Solano Community College</div> <div style="border: 1px solid black; padding: 5px;">BS Biotechnology UC Davis</div> </div> <p style="text-align: center;"><i>Advanced Level Certificate /A.A. / A.S. / Degree</i></p> <div style="border: 1px solid black; padding: 5px;"> <p>AS Biotechnology (55 units)</p> <p>BIOL 3 Microbiology (5 units)</p> <p>BIOL 10 Introduction to Biology (4 units)</p> <p>BIOL 32 Scientific Literature (2 units)</p> <p>BIOL 33 Applied Immunology (6 units) ⁵</p> <p>BIOL 34 Applied Molecular Genetics (6 units)</p> <p>BIOL 230B Introduction to Instrumentation II (2 units)</p> <p>CHEM 30A Introductory Inorganic Chemistry (4 units)</p> <p>CHEM 30B Introductory Organic and Biochemistry (4 units)</p> <p>CIS 1 Introduction to Computer Information Systems (4 units)</p> <p>ENGL 1A Composition and Reading (4 units)</p> <p>ENGL 53 Technical Writing (3 units)</p> <p>HUMAN 30A/PHIL 30A Human Values - Ethics (3 units)</p> <p>MATH 1 Pre-Calculus (4 units)</p> <p>PHYS 10 Introduction to Physics (4 units)</p> <p>Plus General Education Requirements (6 units)</p> </div>	<p>Comply with applicable regulations and standards</p> <ul style="list-style-type: none"> - Aseptic technique - Basic microscopy <p>Manage and communicate information</p> <ul style="list-style-type: none"> - Presentations <p>Perform measurements/tests/assay</p> <ul style="list-style-type: none"> - Test specific math (analysis, stat) <p>Provide routine facility (media prep) support</p> <ul style="list-style-type: none"> - MEDIA solutions prepared correctly 	<p>Advanced Level Employment¹:</p> <p>\$18-28/hr</p> <ul style="list-style-type: none"> ▸ Laboratory Technician ▸ Quality Control Analyst ▸ Lab Manager ▸ Quality Control Inspector ▸ Quality Specialist <p>\$18-23/hr</p> <ul style="list-style-type: none"> ▸ Biotechnician ▸ Research Associate
<p>MID LEVEL</p> <p>The Course Identification Numbering System (C-ID) is a statewide numbering system independent from the course numbers assigned by local California community colleges. A C-ID number signals that participating California colleges and universities have determined that courses offered by other California community colleges are comparable in content and scope to courses offered on their own campuses, regardless of their unique titles or local course number.</p> <ul style="list-style-type: none"> 1 C-ID BIOT 101 2 C-ID BIOT 150 3 C-ID BIOT 210 4 C-ID BIOT 220 5 C-ID BIOT 230 	<p style="text-align: center;"><i>Mid Level Certificate</i></p> <div style="border: 1px solid black; padding: 5px;"> <p>Certificate of Achievement: Biotechnology (48 units)</p> <p>BIOL 3 Microbiology (5 units)</p> <p>BIOL 10 Introduction to Biology (4 units)</p> <p>BIOL 32 Scientific Literature (2 units)</p> <p>BIOL 33 Applied Immunology (6 units) ⁵</p> <p>BIOL 34 Applied Molecular Genetics (6 units)</p> <p>BIOL 230B Introduction to Instrumentation II (2 units) ²</p> <p>CHEM 30A Introductory Inorganic Chemistry (4 units)</p> <p>CHEM 30B Introductory Organic and Biochemistry (4 units)</p> <p>CIS 1 Introduction to Computer Information Systems (4 units)</p> <p>ENGL 53 Technical Writing (3 units)</p> <p>MATH 1 Pre-Calculus (4 units)</p> <p>PHYS 10 Introduction to Physics (4 units)</p> </div> <p style="text-align: center;"><i>Entry Level Certificate/Entry Level Course</i></p> <div style="border: 1px solid black; padding: 5px;"> <p>Certificate Of Proficiency: Biotechnology (17.5 units)</p> <p>BIOL 230A Scientific Instrumentation I (2 units) ²</p> <p>BIOL 232 Readings in Science (2 units)</p> <p>CIS 200 Computer Concepts and Applications (1.5 units)</p> <p>COPED 484A Occupational Work Experience, Biotechnology (2 units)</p> <p>COUN 224 College Preparedness (2 units)</p> <p>ENGL 201B Preparation for Composition and Reading (3 units)</p> <p>MATH 201 Elementary Algebra (4 units)</p> <p>MATH 218 Math Workshop (1 unit)</p> </div> <p style="text-align: center;"><i>BRIDGE</i></p>	<p>Comply with applicable regulations and standards</p> <ul style="list-style-type: none"> - Work in manner and regulatory expect - Good documentation standards - Items labeled appropriately and trackable <p>Maintain a safe and productive work environment</p> <ul style="list-style-type: none"> - Hazards - Safe Chemical Handling <p>Manage and communicate information</p> <ul style="list-style-type: none"> - Errors in tech documents reports and changes suggested - Recognize when information is necessary and respond to appropriate personnel - Inefficiencies are recognized/continuous improvement occurs - Presentations <p>Perform mathematical manipulations</p> <ul style="list-style-type: none"> - Multiple solutes - Dilutions - Serial dilutions <p>Perform measurements/tests/assay</p> <ul style="list-style-type: none"> - Choose and use appropriate MEAS tools - Data presented in appropriate manner <p>Provide routine facility (media prep) support</p> <ul style="list-style-type: none"> - Equip inventory/calibrated - Materials stored and expired - MEDIA solutions prepared correctly 	<p>Intermediate Level Employment¹:</p> <p>\$18-23/hr</p> <ul style="list-style-type: none"> ▸ Research Technician ▸ Manufacturing Technician ▸ Production Technician <p>\$18-20/hr</p> <ul style="list-style-type: none"> ▸ Instrumentation and Calibration ▸ Media Prep Technician ▸ Quality Control Technician or Assistant
<p>ENTRY LEVEL</p>	<p style="text-align: center;"><i>BRIDGE</i></p>	<p>Maintain a safe and productive work environment</p> <ul style="list-style-type: none"> - Waste disposal - identify procedures (biohazards) - Maintain clean clutter free workplace/contamination free - Personnel Protective Equipment - Safe Chemical Handling <p>Manage and communicate information</p> <ul style="list-style-type: none"> - Recognize when information is necessary and respond to appropriate personnel - Inefficiencies are recognized/continuous improvement occurs - Word processing and spreadsheets <p>Perform mathematical manipulations</p> <ul style="list-style-type: none"> - Ratios and Proportions - Units measure/conversions - Graphing <p>Perform measurements/tests/assay</p> <ul style="list-style-type: none"> - Sample labeling - Test performed by procedure - Notebooks <p>Provide routine facility (media prep) support</p> <ul style="list-style-type: none"> - MEDIA solutions prepared correctly - Appropriate glassware 	<p>Entry Level Employment¹:</p> <p>\$16-18/hr</p> <ul style="list-style-type: none"> ▸ Glassware Washing ▸ Documentation Support ▸ Laboratory Support Workers <p>\$15-18/hr</p> <ul style="list-style-type: none"> ▸ Laboratory Assistant ▸ Media Prep Assistant

¹ Based on Supply and Demand Analysis: Life Sciences & Biotech Middle Skills Workforce in California, September, 2014.
² Common Core Technical Skills and Standards for the Bioscience Laboratory Submitted by Bio-Link



BIOTECHNOLOGY

The Biotechnology Sector translates into high paying jobs for individuals with post-secondary education.

**HIGH DEMAND
HIGH GROWTH
HIGH WAGE**

What is driving growth in the Biotechnology Sector?

Investments in bioscience development initiatives

Advancing commercialization of research discoveries

Building research and development capacity

Actively addressing bioscience's need for early-stage capital

Biotechnology Workers EARN MORE:



\$7.25/hr

National Minimum Wage



\$8.00/hr

California Minimum Wage



\$23.23/hr

Median Wage for Biotechnology Occupations* in SF Bay Area

*those occupations that require more than a high school degree and less than a 4-year degree

Biotechnology is GROWING FAST



What jobs are in the Biotechnology Sector?

Research



Pharmaceuticals



Medical Devices

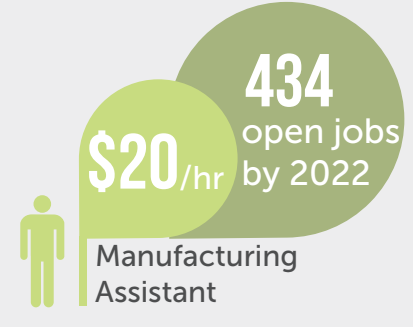
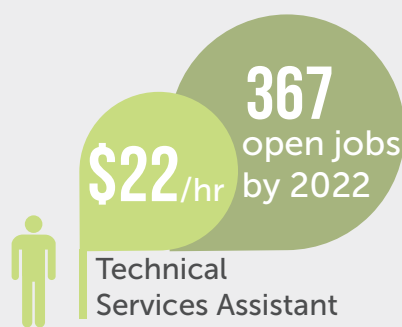
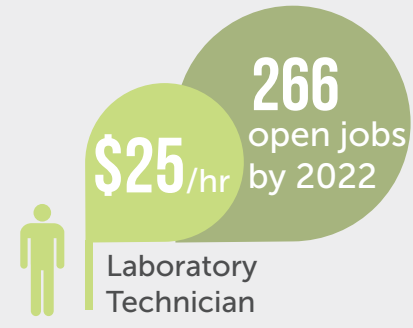


Distribution



BAY AREA SNAPSHOT

What can workers with some post-secondary experience expect?



June 2014

Data and information sources: CCC Doing What Matters for Jobs and the Economy, California Employment Development Department, Economic Modeling Specialists International (EMSI), Alameda County WIB