

Florida Biotech Day

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Biotechnology Degrees/Certs

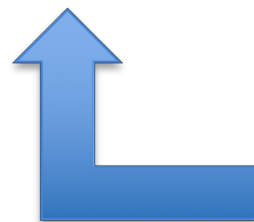
BS Degree in
Biomanufacturing

Workforce and/or
Transfer to 4-year
Institution

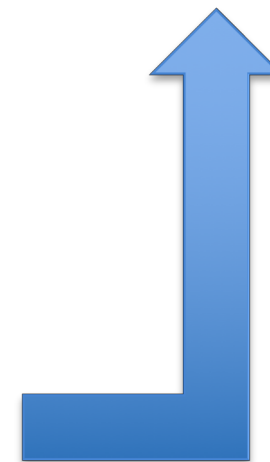
AS Degree &
Certificate of
Achievement in
Biomanufacturing

AS Degree &
Certificate of
Achievement in
Research &
Development

Certificate of
Achievement in
Bioprocess Technology



Certificate of
Proficiency in
Laboratory Skills



How it came to be....

- * In September 2014 Governor Brown signed SB850 that provided the authority for 15 community colleges to pilot baccalaureate degree programs**

Applications for new programs were solicited (late fall 2014):

- * “to meet the need for graduates **in high demand technical disciplines** which are increasingly requiring bachelor’s degrees”
- * “to **improve workforce training opportunities** for local residents unable to relocate”
- * “that **do not duplicate** a Baccalaureate degree program already offered by the CSU or UCs”
- * “**only one program per college**”
- * “for programs that will **begin by fall 2017 and have graduates by spring 2023**”

Board of Governors approved the following 15 programs (2015):

- * Antelope Valley - Airframe Manufacturing Technology
- * Bakersfield - Industrial Automation
- * Cypress - Mortuary Science
- * Feather River - Equine and Ranch Management
- * Foothill - Dental Hygiene
- * **MiraCosta - Biomanufacturing**
- * Modesto - Respiratory Care
- * Rio Hondo - Automotive Technology
- * San Diego Mesa - Health Information Management
- * Santa Ana - Occupational Studies
- * Santa Monica - Interaction Design
- * Shasta - Health Information Management
- * Skyline - Respiratory Therapy
- * **Solano - Biomanufacturing**
- * West Los Angeles - Dental Hygiene

Biomanufacturing Degree at MiraCosta College

- * **Built on the associates degree in biomanufacturing that includes foundational coursework in**

General Biology (non-majors), General Chemistry, Biostatistics, Data Analysis, Technical Writing, and Bioprocessing

- * **And elective biotechnology-specific coursework in**

Cell Culture, PCR, Immunochemistry, Recombinant DNA tech and Internship/Work Experience

Biomanufacturing Degree at MiraCosta College

Followed by:

- * **36 units** of upper division coursework in biomanufacturing and
- * **9 units** of upper division General Education courses that support the major:
 - * **Bioethics (Philosophy)**
 - * **Leadership and Personal Development (Business)**
 - * **Molecular Mechanisms of Disease (Biology)**
- * **And additional elective coursework to reach 120 units**

Bachelor's degree program specifically addresses the later stages of development and production when the focus is on process understanding and regulatory compliance.

- * ***BTEC 300* Supply Chain and Enterprise Resource Planning**
- * ***BTEC 310* Biomanufacturing Process Science/LAB**
- * ***BTEC 320* Design of Experiments for Biomanufacturing/LAB**
- * ***BTEC 330* Advanced Topics in Quality Assurance and Regulatory Affairs**
- * ***BTEC 340* Six Sigma and Lean Manufacturing**
- * ***BTEC 360* Design of Biomanufacturing Facilities, Critical Utilities, Processes & Equipment**
- * ***BTEC 400* Bioprocess Monitoring and Control/LAB**
- * ***BTEC 410* Methods in Quality, Improvements, Investigations, and Audits**
- * ***BTEC 460/470* Capstone Seminars in Biomanufacturing Technologies/Quality**

Lessons Learned...so far

- * **Cohorts** are an excellent model, but there are unique challenges
- * **Industry professionals** can be excellent partners for course development with mentoring
- * Involve **counseling and student services** to deal with issues that arise (Veterans, International students, Financial aid)
- * Must consider **transfer pathways** from other biotech programs
- * Develop **admission criteria & review process** for popular program
- * Need to **reevaluate lower division coursework** to support upper division and workforce gaps
- * Important to plan how to provide **credit for prior learning**