



Bachelors in Biomanufacturing Frequently Asked Questions

In 2015 the California State legislature voted to allow some community colleges in California the opportunity to grant Bachelor degrees for the first time in the history of the state. After an extensive and competitive application process, Solano Community College was approved in May 2015 as one of the 15 colleges chosen to pilot this program. Solano College's degree will be in biomanufacturing.

1. What is Biomanufacturing?

Biomanufacturing means growing living cells (bacterial, yeast, and animal cells) in large tanks called bioreactors and inducing them to produce a protein that serves as a medicine. That protein then must be separated from other cellular components and purified by using techniques that exploit its properties to isolate it away from other cellular proteins. Then technicians use analytical techniques to prove the purity of the isolated protein. In the future Biomanufacturing will be expanded to include the industrial production of biofuels, biomaterials, stem cells, and other products currently manufactured using chemical rather than biological techniques. Solano Community College is exploring the addition of these elements to its program.

2. When will the program start and when can I apply?

College freshmen admitted in Fall 2015 can begin their first two years in this degree. The upper division courses will begin to be offered in Fall 2017. The first Bachelor's degree class with a Bachelors of Science in Biomanufacturing will graduate in Spring 2019. Applications will begin to be accepted Fall 2016.

3. How does this new Bachelor degree program fit with the current Industrial Biotechnology program or the Biotech programs at other colleges?

The current Industrial Biotechnology program offers a Certificate of Achievement for completing the Biotechnology courses or an Associate degree (if all of the General Education courses are completed.) The new Bachelors of Biomanufacturing will add an additional two years on top of these courses; the design of the program will assure that every unit can be applied to the degree. The biotech courses are aligned with state Course Identification Numbers, so students completing a biotech program at another community college, and completing either the IGETC or CSU General Education course pattern, can seamlessly transfer into the program.

4. Where will the program be held?

The Biotechnology Certificate/Associate courses are current offered in the biotechnology laboratory at the Fairfield (Main) Campus, however, Solano Community College is building a \$ 34.5 million Biotechnology/Science building as an addition to our existing Vacaville Center. The anticipated building completion is Fall 2017. The new upper division (Bachelor degree) curriculum will be held in the new Biotechnology/Science building.

3/10/2017

5. How much will it cost?

The fees are determined by the Community College Board of Governors and the same fees apply to all 113 community colleges in California. The lower division component of the program (the first two years) will continue to have the same fees of any community college class, \$46 per unit. The upper division classes (the third and fourth years) will have fees of \$ 130 per unit. (The additional fee for upper division units, \$84, cannot be covered by the Board of Governors fee waiver). This means that the total four years of the Bachelor degree will cost approximately \$10,500 total, a fraction of the cost at the California State University or University of California systems, allowing many students the potential to graduate without student loan debt.

6. Will I be able to just take one class and not the whole program?

Unlikely. The courses, including the General Education courses, will only be open to students in the cohort who will take all of the courses together.

7. Will I be able to work part-time while I attend?

Unlikely. This program will be very challenging – it’s similar to the Solano College nursing program in that way. All students will be full time students and will be taken several very challenging classes together.

8. What are the courses?

Tentative Schedule

Lower Division	
CSU General Education pattern or IGETC GE pattern	39 units
Lower Division Major Units:	28 units
<ul style="list-style-type: none"> • Chemistry 1 – General Chemistry 1 (C-ID Chem 110) • Biological Sciences 2 – Cell/Molecular Biology (C-ID Bio 190) • Mathematics 11 – Statistics or Biostatistics (C-ID Math 110) • Business and Regulatory Principles of Biotechnology (C-ID Biot 210) • Principles in Biotechnology (C-ID Biot 101) • Cell Culture and Protein Recovery (C-ID Biot 220 + 230) • Quality Control and Genetic Engineering (C-ID Biot 150) 	
Upper Division Majors Program: 3-5 Units Each	39 units
<ul style="list-style-type: none"> • Biomanufacturing Process Sciences and Engineering Principles (BIOT 401) • Design of Experiments for Biomanufacturing (BIOT 402) • Design of Biomanufacturing Facilities, Critical Utilities, Processes, and Equipment (BIOT 403) • Bioprocess Monitoring and Control (BIOT 404) • Emerging Biomanufacturing Technologies (Seminar) (BIOT 405) • Supply Chain and Enterprise Resource Planning in Biomanufacturing (BIOT 406) 	

<ul style="list-style-type: none"> • Advanced Topics in Quality Assurance and Regulatory Affairs (BIOT 407) • Six Sigma and Lean Manufacturing (BIOT 408) • Methods in Quality Improvements, Investigations, and Audits (BIOT 409) • Emerging Trends in Biomanufacturing Quality (Seminar) (BIOT 410) 	
<p>Upper Division General Education</p> <ul style="list-style-type: none"> • Advanced Technical Writing: Writing for the Sciences (ENGL 400) • Project Management (BUS 400) • Bioethics (PHIL 400) 	9 units
Electives	12 units