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### **Biotech Program Profiles**

*Contributed by Community Members of the National Biotechnology Education Center*

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Austin Community College Biotechnology Program (TX)

Contact

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Institution Details

* School: Austin Community College
* Program: Biotechnology
* Website: <https://sem.austincc.edu/biotech/>

Industry Sectors

* Biomanufacturing
* Pharmaceutical
* Biomedical Research

Target Population & Recruitment

* High school students (dual-credit enrollment)
* Traditional college students
* Career changers and upskilling industry professionals

Program Offerings

* [Dual credit (high school co-enrollment)](https://docs.google.com/document/d/1uiUuFnaqJMDA2f4jKu3qLtiqnJQFUOd5Mcxbx2gfL7c/edit?usp=sharing)
* Entry-Level Certificate (30 credit hours) – Prepares students for biomanufacturing roles
* Associate of Applied Science in Biotechnology (60 credit hours) – Advanced coursework and specialization
* Advanced Technical Certificate (for students with prior degrees)

Educational Partners

* Local high schools offering dual-credit biotechnology courses
* University of Texas at Austin – Articulation agreement for credit transfer

Program Course of Study

* Curriculum & Courses: Industry-aligned coursework with hands-on training in state-of-the-art labs
* Key Components: Biology and chemistry foundation, lab techniques, workforce skills, and internships

Program Strategy

* Duration: Two-year associate degree or certificate programs
* Outcomes: Direct entry into biotech jobs or transfer to a four-year institution
* Changes: Continuous updates to align with workforce needs and emerging biotechnology advancements

Program Challenges

* Recruitment Issues: Need to expand outreach to high school students and career changers
* Retention: Emphasizing career opportunities to keep students engaged
* Industry Biases: Addressing preference for four-year degrees in biotech hiring

Program Results

* 478+ graduates, plus continuing education students
* Alumni working in local biotech companies, some progressing to management roles
* Employers actively seeking ACC graduates

Industry Partnerships & Business Engagement

* Advisory Board: 26 biotech companies guiding curriculum and hiring graduates
* Internship Collaborations: Industry partners provide real-world projects and direct internships
* Wet Lab Incubator: Supported by an Emerging Technology Fund grant, fostering startup collaborations

Funding Sources:

* Emerging Technology Fund grant
* Local industry sponsorships
* Open Educational Resources (OER) initiative for free tuition and textbooks

Leadership Support & Challenges:

* Strong leadership backing but challenges with industry perception of two-year degrees
* Continuous adaptation to meet biotech workforce needs

Lessons Learned:

* Industry involvement enhances job placement opportunities
* Strengthening outreach efforts to high school counselors and career advisors is critical

Program Highlights:

* Workforce Development: Strong industry partnerships leading to high employment rates
* Higher Education Pathways: UT Austin partnership allowing students to earn biotech credentials alongside a bachelor's degree
* Hands-on Training: Students work on real biotech industry projects before graduation

Des Moines Area Community College Biotechnology Program (IA)

Contact

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Institution Details

* School: Des Moines Area Community College
* Program: Biotechnology
* Website: [DMACC Biotechnology Program](https://www.dmacc.edu/pathways/ms/biotechnology.html)

Industry Sectors

* Biomanufacturing
* Agriculture
* Industrial

Target Population & Recruitment

* High school students, recruited through events and fairs

Program Offerings

* Dual credit (high school co-enrollment)
* Science CORE credit
* Associate degree
* Articulation to four-year schools

Educational Partners

* High schools

Program Course of Study

* [Curriculum & Courses](https://www.dmacc.edu/pathways/ms/biotechnology.html)

Program Strategy

* Duration: Two-year associate degree
* Key Components: Biology and chemistry foundation, hands-on biotechnology training, internship opportunities
* Outcomes: Transfer to science majors or direct entry into the biotech industry
* Changes: Program has remained largely consistent, with updates to meet Department of Education standards and industry advancements

Program Challenges

* Recruitment Issues: Struggles to enroll enough students to meet industry demand
* Program Longevity: Established in 1996, transitioned to an AS degree with a Biotechnology Certificate in Fall 2024
* Retention: Need to engage high school counselors to better promote biotech careers

Program Results

* Recognized for producing well-trained lab technicians
* Graduates have pursued bachelor's, master's, and Ph.D. degrees
* Many graduates now manage labs and hire new program graduates
* Employers continuously seek additional graduates

Industry Partnerships & Business Engagement

* Companies involved:
* AE Dairy, Bayer, Biova, Boehringer Ingelheim, Cargill, Corteva, Diamond Animal Health, Eurofins, Kemin Industries, Merck Animal Health, State Hygienic Lab, Stine Seed, USDA-NVSL
* USDA-NVSL funds four student internships annually since 2020

Funding Sources:

* College science department
* Small equipment grants
* Partnerships with Iowa State University
* NSF-ATE grant
* EPSCoR II proposal
* Continual search for additional funding

Leadership Support & Challenges

* Leadership supports the program but is concerned about low enrollment
* Program sustainability threatened by enrollment fluctuations

Lessons Learned

* Need for stronger industry support
* Importance of direct outreach to high school counselors to increase biotech career awareness

Program Highlights

* NASA Collaboration: Graduate contributed to a research project sent to the International Space Station
* Industry Partnerships: Graduates secure high-paying jobs, strengthening the workforce

For more information, visit: [DMACC Biotechnology Program](https://www.dmacc.edu/pathways/ms/biotechnology.html).

ASPIRE Biotechnology Training Program – Los Angeles Pierce College (CA)

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Institution Details

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* Program: ASPIRE Biotechnology Training Program
* Website: [ASPIRE Biotechnology Program](https://www.lapc.edu/academics/aos/biotechnology)
* Instagram: <https://www.instagram.com/aspire.biotech/>

Industry Sectors

* Biomanufacturing
* R&D

Target Population & Recruitment

* Community college and high school students
* Recruitment through word of mouth, classroom visits (CC and HS), social media, an NSF project involving HS teachers, flyers, biotech events, student clubs, college/ career day (HS), and parent-teacher meetings (HS).

Program Offerings

* Dual credit (high school co-enrollment)
* CTE/workforce credit
* Level 1 & Advanced Technical Certificates
* Associates degree
* Non-credit Biotech exploration courses/ certificates
* Biomanufacturing B.S. degree (upcoming)

Educational Partners

* High schools, school districts, community/technical colleges, trade organizations, research institutes, and industry

Program Course of Study

* [Course Map](https://programmapper.piercecollege.edu/academics/interest-clusters/d751e218-8964-4d43-ab2d-c3dd10011658/programs/2623bcd0-e044-4efe-9007-0e2e41c28a38)

Program Strategy

* Hands-on training, modeled after a real biotech company
* Stackable certificates leading to an associate degree and a new B.S. in Biomanufacturing
* Weekend courses to accommodate working students and high schoolers
* Initial focus on R&D, expanding to include biomanufacturing due to local demand
* Growing high school partnerships to create a direct pipeline to the B.S. program

Program Challenges

* Workforce demand exists, but graduates struggle with job placement due to lack of skills
* To answer: training program with the goal of providing students with industry-relevant skillset that can make them more competitive in the job market right after earning their college degree.
* Limited awareness of biotech careers—students mainly associate bioscience with healthcare
* Efforts to increase biotech career awareness through student clubs, workshops, and social media

Program Results

* 100% job placement rate for students seeking immediate employment
* Successful transfer rates:
* 7 students received REU research fellowships in Summer 2024
* 4 students secured paid industry internships in Summer 2024
* Industry partners contribute to teaching and hiring

Industry Partnerships & Business Engagement

* Industry partners include:
* Pasadena Bio Collaborative (PBC) – donations, internships, workshops
* A2 Biotherapeutics – teaching, internships, donations
* Constitution Laboratory (CRO) – teaching, internships
* Amgen Biotech Experience – donations, employment, workshops
* Terasaki Institute - internships
* Entrogen - internships, employment
* Curia Global - donation
* Grifols, Thermo Fisher, Beyond Meat, Kite Pharma, Poseidon Laboratory - advisory board
* Business partnerships expanding to support workforce needs

Funding Sources

* No dedicated funding yet – relies solely on grants. Our program is new (in our 3rd year). We are in the process of requesting the college to allocate a ‘department fund’ to support the program. However, it is a difficult proposition given that our program has a lot of existing funds while other CTE programs on campus are starving.
* 2 active NSF ATE (lead) + 1 NSF ATE (co-PI) + 1 NSF ExLENT (partner)
* 1 Dept of Education grant
* Strong Workforce Regional Fund
* Amgen Foundation (partner)
* Industry donations provide lab consumables and equipment

Leadership Support

* Strong administrative support (Dean to President level)
* The first program at the college to offer a Baccalaureate degree
* Communication challenges due to rapid program growth

Lessons Learned

* No specific feedback yet

Program Highlights

* High job placement rates and industry involvement
* Growth of high school partnerships to expand the biotech career pipeline
* Authentic research project & student peer-reviewed publication

For more information, visit: [ASPIRE Biotechnology Program](https://www.lapc.edu/academics/aos/biotechnology).

Sheldon STEM/PTECH Academy – C. E. King High School (TX)

Contact Information

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Institution Details

* School: C. E. King High School
* Program: Sheldon STEM/PTECH Academy
* Website: [Sheldon STEM/PTECH Academy](https://khs.sheldonisd.com/educational-resources/ptech)

Industry Sectors

* Biomanufacturing

Target Population & Recruitment

* Students in the STEM/Biomedical Science Program
* Recruitment from middle schools and the existing middle school STEM Academy

Program Offerings

* Dual credit (high school co-enrollment)
* CTE/workforce credit
* Level 1 & Advanced Technical Certificates
* Credentials (BACE, BCSI)
* Associate degree

Educational Partners

* community/technical colleges

Program Course of Study

* [Biomedical Science Course Map](https://resources.finalsite.net/images/v1727697221/sheldonisdcom/pe6bclsuhwxhd5nf2fd0/POS_BiomedicalScience.pdf)

Program Strategy

* Uses Project Lead the Way (PLTW) Biomedical Science curriculum
* Prepares students for BACE certification in senior year
* Developing a cross-walk with San Jac College for dual-credit Level 1 Certification
* Dual-credit program expected to start next year

Program Challenges

* Currently in planning stages with San Jac for Level 1 DC
* Coordinating stakeholders to finalize program structure
* Lack of industry partners for mentorship and internships
* Scheduling conflicts between high school and college classes

Program Results

* No workforce outcomes yet—program is in early stages
* Next step: establish college connections and work-based learning

Industry Partnerships & Business Engagement

* Currently seeking biotech industry partners for mentorship, internships, and training
* Potential connections through San Jac College’s industry network

Funding Sources

* CTE funds for program setup (PTECH)
* District funds cover dual credit class fees
* Occasional grants for equipment purchases

Leadership Support

* Strong support from school and district leadership
* Good collaboration with San Jac College
* Biggest challenge: aligning course schedules between high school and college

Lessons Learned

* Better understanding of college biotech curriculum would have improved program preparation
* Plan to align high school coursework with college biotech requirements

Program Highlights

* "White Coat Ceremony" for 10th-grade students to celebrate mid-program achievement
* Event helps with student motivation, parental engagement, and program recruitment

For more information, visit: [Sheldon STEM/PTECH Academy](https://khs.sheldonisd.com/educational-resources/ptech).

San Jacinto College – Center for Biotechnology   
Biomanufacturing Training Program (TX)

Contact Information

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Institution Details

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* Program: Center for Biotechnology Biomanufacturing Training Program
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Industry Sectors

* Biomanufacturing
* Therapeutics and Diagnostics
* Industrial

Target Population & Recruitment

* High school students, career changers, and underrepresented groups in STEM
* Recruitment Strategies:
* High school outreach for dual-credit pathways
* Community engagement through workshops and biotech fairs
* Industry partnerships to attract and train students
* Social media & local marketing campaigns

Program Offerings

* Science CORE credit
* Level 1 & Level 2 Certificates
* Credentials (BACE, BCSI)
* Associate degree

Educational Partners

* industry

Program Course of Study

* [Course Map](https://publications.sanjac.edu/areas-study/science-technology-engineering-math/biomanufacturing-tech-aas/#planofstudydegreeplantext)

Program Strategy

* Prepares students for immediate biomanufacturing employment or further education
* Three stackable credential options:
* Occupational Certificate – 15 credit hours, 300+ hours of training
* Level 2 Certificate – Advanced skills in upstream/downstream processing and cell therapy
* AAS Degree – Two-year program with a 240-hour internship or capstone project
* Industry-driven curriculum: “For industry, designed by industry, taught by industry”
* Dual-credit pathways with high schools to introduce students to biotech early
* Collaboration with four-year institutions for transfer options

Program Challenges

* Houston’s biotech sector needed more skilled workers
* Initial barriers:
* Skill gaps in biomanufacturing and cell therapy
* Recruitment struggles, especially among underrepresented groups
* Lack of industry-experienced instructors
* Solutions:
* Industry partnerships to update curriculum and provide internships
* Dual-credit options to attract younger students
* Continued focus on recruitment and retention

Program Results

* Strong employer partnerships leading to specialized training programs
* Collaborations with Solugen & CellReady to develop rapid job-training models
* Employment success:
* Graduates enter biomanufacturing roles quickly
* Program creates career pathways for underrepresented students

Industry Partnerships & Business Engagement

* Active industry collaboration for curriculum updates, internships, and apprenticeships
* Key industry partners:
* Solugen – Bioindustrial technician training
* CellReady – Cell therapy onboarding program
* Program evolves to match industry demands (e.g., growing focus on cell therapy)

Funding Sources

* Initial funding from San Jacinto College
* Industry partnerships sustain the program through donations and internships
* Collaborative projects with companies like Solugen and CellReady help reduce training costs

Leadership Support

* Strong support from college leadership due to focus on workforce readiness
* Industry-backed program stability

Lessons Learned

* Offer multiple credentialing options for flexibility
* Frequent industry consultation keeps the curriculum relevant
* More hands-on training needed with a focus on industry skill mastery

Program Highlights

* Solugen Collaboration – Fast-track biomanufacturing job training
* CellReady Partnership – Accelerated cell therapy training
* For further details, visit:
* <https://www.sanjac.edu/about/news/2024/San_Jac_partners_with_Solugen_for_biotech_training_program>
* <https://www.sanjac.edu/about/news/2024/san-jac-and-cellready-launch-program-to-accelerate-cell-therapy>

For more information, visit: [San Jacinto College Biomanufacturing Tech Program](https://www.sanjac.edu/programs/areas-of-study/stem/biomanufacturing-tech/).

Frederick Community College (MD)

Contact Information

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Institution Details

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* Program: Biotechnology
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Industry Sectors

* Biomanufacturing
* Cell and Gene Therapy

Target Population & Recruitment

* Students familiar with biotech, high school students, and FCC STEM students
* Recruitment strategies:
* High school outreach and community marketing

Program Offerings

* Dual credit (high school co-enrollment)
* CTE/workforce credit
* Credentials (BACE, BCSI)
* Associates degree
* Articulation to four-year schools
* Biotech boot camps

Educational Partners

* industry

Program Course of Study

* [Course Map](https://www.frederick.edu/programs/science,-technology,-engineering,-and-math-(stem)/biotechnology.aspx?_gl=1*6elbv4*_gcl_au*OTE4MDE4MTk3LjE3MzYxMzAyMTI.*_ga*MTk1MjMxODM1My4xNzM2MTMwMjEy*_ga_EZJK9BZ38B*MTczNzMxNDgwNC4zLjEuMTczNzMxNDg1NC4xMC4wLjA.)

Program Strategy

* Offers multiple pathways:
* AAS degree (60 credits, 2 years)
* Cell & Gene Therapy Essentials Certificate (20 credits, 1 year)
* Flow Cytometry & Cell Therapy Letter of Recognition (8 credits, 1 semester)
* 40% of students currently work in the biotech industry
* Students can transfer to UMGC for a bachelor's degree
* New biotech apprenticeship program approved by Maryland Department of Labor
* High school dual enrollment and internship programs available (6 credit one semester)
* Biotech boot camps for career changers

Program Challenges

* Updated curriculum to meet industry standards (Batch records, SOPs, GDP)
* Introduced cell and gene therapy focus to address workforce needs
* Scheduling classes in 7.5-week blocks for better skill retention
* Difficulty in gaining full departmental support for program initiatives
* Challenges in recruiting and retaining students

Program Results

* Previously, 67% of students worked in the industry; currently, 40%
* Apprenticeship program started with 9 students in 4 partner companies
* 23 alumni working in local biotech companies with job promotions
* Biotech boot camp trained 62 people, placing 32 into biotech jobs

Industry Partnerships & Business Engagement

* Key industry partners:
* Kite Pharma, Lonza, Valogic, Texcell – Apprenticeship partners, guest lectures, curriculum input
* BioNTech, AstraZeneca, Millipore Sigma, Thermo Fisher – Donations, internships, job placements
* Precision for Medicine – Boot camp sponsor, field trips, job placements
* Strong employer engagement supports curriculum development and job placement

Funding Sources

* Supported by Perkins funding for maintenance
* $100,000 Innovation Grant from MSDE for equipment
* NSF ATE Grant (2022) for lab expansion
* Industry donations for consumables and cleanroom supplies

Leadership Support

* Administration supports program growth and lab expansion
* Science department has not been as supportive of funding requests

Lessons Learned

* Align curriculum with industry needs
* Leverage Innovate Bio resources instead of reinventing content
* Seek collaboration and guidance from national biotech programs

Program Highlights

* Success in biotech boot camps – placing students into the workforce
* Links to program success stories:
* [Biotech Boot Camp Success](https://www.frederickworks.com/everything-workforce/success-story-biotech-boot-camp)
* [Biotech Career Training](https://www.frederick.edu/news/biotech-boot-camp-offers-career-training.aspx)

For more information, visit: [Frederick Biotech Program](https://frederick.augusoft.net/info/landing/biotechnology).

MassBay Community College (MA)

Contact Information

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Institution Details

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* Program: Biotechnology
* Website: [MassBay Biotech Program](https://www.massbay.edu/academics/stem/biotechnology)

Industry Sectors

* Biomanufacturing
* Agriculture
* Therapeutics and Diagnostics
* Industrial

Target Population & Recruitment

* Primarily high school students recruited through strong school partnerships
* Engagement with underrepresented groups in STEM
* Outreach efforts include partnerships with high schools, biotech workshops, career fairs, and mentorship programs

Program Offerings

* Dual credit (high school co-enrollment) to give students early exposure to biotech
* CTE/workforce credit for career-ready skills
* Science CORE credit for students pursuing advanced degrees
* Level 1 & Advanced Technical Certificates
* Industry-recognized credentials (BACE, BCSI)
* Associate degree in Biotechnology and Biomanufacturing
* Articulation agreements for transfer to four-year schools

Educational Partners

* High schools, school districts, community/technical colleges, trade organizations, and biotech industry partners
* Collaborations with research institutions to provide students with hands-on laboratory experience

Program Course of Study

* [Course Map](https://www.massbay.edu/programs)
* Students complete coursework in molecular biology, genomics, cell & gene therapy, and biomanufacturing
* Hands-on research experiences integrated with industry partnerships

Program Strategy

* Comprehensive, hands-on training in biotechnology and biomanufacturing
* Students earn Associate of Science (AS) degrees in Biotechnology or Genomics & Biomanufacturing
* Graduates can transfer to institutions such as Framingham State University, Northeastern University, and UMass-Amherst
* Students receive practical experience through two specialized training centers:
* Center for Therapeutics and Genomics Training (CTGT) – Provides research-based training for careers in biotech and life sciences
* Center for Biomanufacturing Education and Workforce Training (CBEWT) – Focuses on workforce development in biomanufacturing, cell & gene therapy
* Adapted curriculum to match evolving industry demands, adding new courses in:
* Genomics
* Biomanufacturing
* Molecular and Developmental Biology
* Cell & Gene Therapy
* Therapeutics Research
* Emphasis on diversity and inclusion through targeted recruitment efforts for underrepresented students

Program Challenges

* Workforce shortage in biotech (since 1993) – Industry needed skilled workers
* Diversity & inclusion gaps (early 2000s) – Efforts to increase representation of minorities and women in biotech careers
* Limited transfer pathways (mid-2000s) – Now addressed through articulation agreements with major universities
* Need for specialized training (2010s) – Created CTGT and CBEWT centers to enhance student preparation
* COVID-19 impact (2020) – Shifted internships to virtual/hybrid models while maintaining hands-on lab experiences
* Ongoing challenge – Recruitment and retention of students from low-income backgrounds

Program Results

* Nearly 100% job placement rate for graduates in biotech and biomanufacturing roles
* Over 100 students have participated in biotech internships at major companies
* 55% of students come from underrepresented backgrounds, increasing diversity in the biotech workforce
* Graduates work at prestigious biotech firms and research institutions, including:
* Broad Institute
* MIT
* Sanofi
* Moderna

Industry Partnerships & Business Engagement

* Collaborates with top biotech companies and research institutions for workforce training, mentorship, and curriculum development
* Key industry partners include:
* Sanofi – Provides paid internships, mentorship for underrepresented minorities
* Broad Institute – Offers research internships and biotech lab experience
* ABI-LAB – Supports students with scholarships, mentorship programs, and financial stipends
* Ginkgo Bioworks – Industry training partnerships and project-based learning opportunities
* UMass Medical School – Provides student internships and research collaboration
* Massachusetts Life Sciences Center (MLSC) – Grants for new training facilities and student research programs

Funding Sources

* Start-up funding from Massachusetts Life Sciences Center (MLSC) to develop biotech training infrastructure
* Ongoing funding through industry partnerships, federal/state grants, and educational foundations
* Grants provide cutting-edge equipment, internship stipends, and training support

Leadership Support

* Strong support from previous administration but recent changes have introduced challenges
* Program leaders working to maintain and expand institutional backing

Lessons Learned

* Build strong industry partnerships early for funding, job placements, and mentorship opportunities
* Design flexible curriculums that adapt to emerging biotech trends and workforce needs
* Engage stakeholders (faculty, students, and industry leaders) to create a collaborative learning environment
* Develop clear communication pathways to support student enrollment and program visibility
* Emphasize skills-based learning and micro-credentials for career-ready graduates

Program Highlights

* Massachusetts Life Sciences Center (MLSC) granted "Pathmaker Validation" to the program, recognizing it as aligned with biotech industry standards
* State-of-the-art facilities support hands-on research and training for students
* Partnerships with leading biotech companies provide students with direct employment pathways
* Success Story: [MassBay Biotech Program Receives Pathmaker Validation](https://www.masslifesciences.com/massbay-community-colleges-biotech-program-receives-pathmaker-validation-2/)

For more information, visit: [MassBay Biotech Program](https://www.massbay.edu/academics/stem/biotechnology).

Skyline College (CA)

Contact Information

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Institution Details

* School: Skyline College
* Program: Biotechnology Manufacturing Program
* Website: [Skyline Biotech Program](https://skylinecollege.edu/biotechnology/)

Industry Sectors

* Biomanufacturing

Target Population & Recruitment

* High school students and science majors at the college
* Dual Enrollment (D/E) partnerships with local high schools
* Efforts to strengthen high school-to-college pathways

Program Offerings

* Dual credit (high school co-enrollment)
* CTE/workforce credi
* Level 1 & Advanced Technical Certificates
* Associate degree
* Articulation agreements for transfer to community colleges offering BS degrees in Biomanufacturing

Educational Partners

* High schools, school districts

Program Course of Study

* [Program Flyer](https://skylinecollege.edu/biotechnology/assets/BiotechProgramFlyer.pdf)
* Certificates and Degrees Offered:
* Biotechnology Manufacturing Assistant (17-19 units)
* Biotechnology Manufacturing Technician (33 units, which can be applied toward an Associate Degree)
* Students prepared for entry-level jobs in biomanufacturing or transfer to four-year community colleges offering BS degrees
* Paid 2-week summer Work-Based Learning (WBL) experience added for Dual Enrollment high school students

Program Strategy

* Emphasis on hands-on training and industry-aligned curriculum
* Targeted recruitment efforts focus on helping students earn their first credential quickly
* Internships available at the end of the first year to increase career readiness
* Flexible transfer options for students who wish to pursue advanced degrees

Program Challenges

* Despite being in the South San Francisco biotech hub, local workforce needs vary significantly across companies
* Biomanufacturing roles are increasingly being outsourced beyond California
* Higher-paying biotech jobs are available in the East Bay, but entry-level positions with lower salaries make it challenging to retain students locally

Program Results

* Over 1,000 high school students participate in Dual Enrollment (D/E) biotech courses
* Students complete two years of coursework in high school, earning up to 7 college credits toward their first biotech certificate
* 75% of students transition directly to four-year universities
* Students who attend Skyline College receive counseling on transfer pathways to California public universities
* Challenge: Many skills-based biotech courses do not transfer, leading some students to discontinue biotech studies

Industry Partnerships & Business Engagement

* Genentech – Supports high school Dual Enrollment students and offers selective summer internships
* Guardant Health – New partnership, exploring student placements for screening-related work
* Challenge: The local biotech sector is heavily focused on R&D rather than Biomanufacturing, creating gaps in direct job placements

Funding Sources

* Perkins funding used for program support and maintenance
* Dual Enrollment (D/E) high school participation is a key factor in program funding and support from the college
* NSF grant funds the 2-week summer Work-Based Learning (WBL) course for high school students

Leadership Support

* Multiple support teams involved in student pathways, including Career Services, STEM faculty, Workforce Development, and Counseling Services
* Counselors focus primarily on transferring students to universities, making articulation for biotech courses difficult
* College administration supports the program because biotech represents over 50% of Dual Enrollment students
* Lack of clear collaboration between college and district in structuring the pathway program

Lessons Learned

* Need for improved communication between high school and college programs to streamline admissions and enrollment
* Biotech faculty do not have the time to manage all student pathway logistics alone
* Importance of providing clear information to students and parents about biotech career paths and transfer opportunities
* Risk of losing students if transfer options are not emphasized alongside industry credentials

Program Highlights

* Significant increase in applications for the summer Work-Based Learning (WBL) program
* Increased from 6 to 74 applications in the second year
* 67% of WBL participants identified as underrepresented minority students
* 87% of WBL students expressed interest in continuing biotech studies if internship opportunities were included

For more information, visit: [Skyline Biotech Program](https://skylinecollege.edu/biotechnology/).

Collin College (TX)

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Institution Details

* School: Collin College
* Program: Biotechnology
* Website: [Collin College Biotech Program](https://www.collin.edu/academics/programs/biotechnology-overview)

Industry Sectors

* Biomanufacturing

Target Population & Recruitment

* Science majors, reskilling professionals, and upskilling workers
* Recruitment challenges persist, particularly for dual-credit partnerships

Program Offerings

* Science CORE credit for degree programs
* Level 1 & Advanced Technical Certificates
* Industry-recognized credentials (BACE, BCSI)
* Articulation agreement with UNT Health Science Center for online upper-level courses

Educational Partners

* trade organizations, and industry partners

Program Course of Study

* [Program Details](https://www.collin.edu/academics/programs/biotechnology-cert1-biotechnology)
* Certificates and Credentials:
* Level 1 Certificate
* Advanced Certificate
* BACE Credentialing Opportunity (every semester)
* Focus on workforce training with the option to continue to a BS degree through articulation agreements

Program Strategy

* Emphasis on workforce training and industry readiness
* Students can earn certificates and credentials while preparing for employment or further education
* All biotech courses currently transfer to UNT Health Science Center for continued education
* Former AAS degree discontinued due to low graduate numbers, but certificates remain strong

Program Challenges

* Recruitment and low enrollment continue to be major hurdles
* Efforts to expand dual-credit partnerships have been difficult due to lack of high school interest in workforce programs
* Concerns about long-term program sustainability due to fluctuating enrollment

Program Results

* Most students are either employed in biotech or have continued their education after completing the program

Industry Partnerships & Business Engagement

* Companies involved include:
* Nexpoint, BioNorth TX, BioLabs, Ceutical Labs, Certified Labs, Signature Biologics, Panthera, UTSW
* Evolve (has not yet launched, but is on the advisory board)
* Partnerships have improved over time but remain constrained by advisory committee regulations

Funding Sources

* Currently a sub-awardee on the EDA Good Jobs Challenge with Dallas College and other regional institutions
* Funding has helped recruitment but is set to expire in June 2025 unless extended
* Much of the program’s startup and maintenance funding has come from the departmental budget
* Limited external funding, which poses sustainability challenges

Leadership Support

* Support from leadership is inconsistent, particularly due to lack of understanding of the biotech field
* Concerns about program sustainability as leadership considers sunsetting programs with low enrollment
* Current grant funding has stabilized enrollment, but future stability remains uncertain

Lessons Learned

* Mentorship programs and collaborations are essential to program success
* Networking with initiatives like InnovateBIO and NSF ATE-funded projects can provide curriculum support
* Avoid re-inventing the wheel—leverage existing resources and partnerships

Program Highlights

* Article on Collin College Biotechnology Program: [Allen Image Feature](https://issuu.com/allenimage/docs/jan_18)

For more information, visit: [Collin College Biotech Program](https://www.collin.edu/academics/programs/biotechnology-overview).

Johnston Community College   
Bioprocess Technology/Biotechnology Program (NC)

Contact:

* Name: Julie Griffin, Bio Blend Career Coach
* Email: jcgriffin@johnstoncc.edu
* Website: [JCC Bioprocess Technology Program](https://www.johnstoncc.edu/programs/industrial/bioprocess-tech/index.aspx)

Industry Sectors Served:

* Biomanufacturing

Target Population & Recruitment Strategies:

* High School Students – Enrolled through dual credit programs
* BioWork Certificate Holders & Industry Employees – Those seeking upskilling or career advancement
* Individuals on the Autism Spectrum – Supported through UDL and specialized training initiatives
* Recruitment Methods:
* Direct partnerships with Johnston County Public Schools
* Community outreach, career fairs, and industry networking events
* Employer referrals and workforce development initiatives

Program Offerings & Certifications:

* Dual Credit (High School Enrollment) & Workforce/CTE Credit
* Associate Degrees & Articulation to Four-Year Schools
* BioWork Certificate (140-hour, non-credit) – Provides training for entry-level process technician roles
* DeltaV Certification (21-hour) – Industry-recognized software training for distributed control systems
* Industry Credentials (e.g., BACE, BCSI)

Education & Workforce Integration:

* Flexible Lab Schedules – Supports students working shifts in biopharmaceutical manufacturing
* 2+2 Articulation Agreement with ECU –
* Allows seamless transfer of 100% of credits toward a BS in Industrial Technology (Bioprocess Manufacturing)
* Online program format for working professionals
* BioWork Certificate Recognition – Considered equivalent to one year of industry experience

Program Impact & Achievements:

* Employment Rate: 82% for graduates since 2007
* Average Starting Salary: $40,615 per year
* Certifications Awarded in 2024:
* BioWork Certificate: 287 graduates
* DeltaV Certificate: 144 graduates

Industry & Business Engagement:

* Workforce Development Center (Clayton, NC)
* 30,000 sq. ft. facility featuring classrooms, training labs, and a simulated biopharmaceutical manufacturing environment (BioSWE)
* Land donated by Novo Nordisk
* Core Industry Partners:
* Grifols Therapeutics – Utilizes JCC training space for employee orientations, hires students, provides expertise for training equipment, supports customized industry training
* Novo Nordisk – Offers student site tours, job shadowing, hires graduates, and participates in advisory council meetings
* Seqirus – Provides resume review sessions, career mentoring, and interviews students for employment
* Autism Workforce Initiative:
* Grifols and Novo Nordisk employees received Autism 101 training to foster inclusive hiring practices
* Business Engagement Trends:
* Companies actively participate in hiring and training during workforce expansion periods
* Engagement fluctuates based on hiring needs, with increased collaboration during talent shortages

Funding & Support:

* Industry-Supported Tax Funding:
* Grifols & Novo Nordisk contribute to Workforce Development Center operations
* State & Federal Funding:
* Covers curriculum students and operational expenses
* Grant Funding Sources:
* National Science Foundation (NSF) ATE Awards – Supports advanced biotechnology training and curriculum development
* Build Back Better-EDA Grant – Funds workforce expansion initiatives

Challenges & Lessons Learned:

* Expansion of BioWork in High Schools:
* Increased access but created staffing difficulties due to short teaching hours
* Scheduling conflicts and fluctuating demand make faculty coverage difficult
* Industry Hiring Fluctuations:
* Biopharmaceutical companies paused hiring but are now expanding, leading to a renewed workforce demand
* Faculty Retention & Adjunct Recruitment:
* Difficulty in hiring adjunct instructors due to low teaching hours per day (1-2 hours), five days a week
* Only classroom time is compensated, with travel time excluded unless taught by full-time faculty
* Solutions & Adaptations:
* Stronger employer partnerships to ensure consistent workforce demand
* Continuous faculty recruitment and training initiatives

Program Highlights:

* Industry Growth & Expansion:
* Novo Nordisk investing $1.4 billion in Johnston County expansion
* [Read More](https://www.ncbiotech.org/news/novo-nordisk-plans-41b-johnston-co-expansion)
* Student Success Stories:
* JCC BioWork partnership with Johnston County Public Schools
* [Read More](https://www.johnstoncc.edu/news/biowork_JCPS.aspx)
* Testimonial Feature:
* [Bev Carter’s Story on LinkedIn](https://www.linkedin.com/posts/johnston-community-college_bev-carter-testimonial-activity-7215815321876602880-aIlP?utm_source=share&utm_medium=member_desktop)

National Center for the Biotechnology Workforce,  
Forsyth Technical Community College (NC)

Contact:

* Russ Read ([rread@forsythtech.edu](mailto:rread@forsythtech.edu))

Website:<http://www.biotechworkforce.org/>

* [www.biotechworkforce.org](http://www.biotechworkforce.org/)

Industry Sectors:

* Biomanufacturing, Agriculture, Therapeutics & Diagnostics, Industrial

Program Overview:

* Target Audience: Forsyth Tech college students
* Offerings: Dual credit (high school co-enrollment), workforce/CTE credit, associate degrees, certificates, credentials (BACE, BCSI), articulation to four-year schools
* Educational Partners: High schools, school districts, community/technical colleges, state agencies, trade organizations, industry groups

Workforce Development & Industry Engagement:

* Established: 23 years ago to support the Piedmont Triad Region of NC
* Key Industry Partners:
* Wake Forest Institute for Regenerative Medicine (WFIRM)
* JSNN (Joint School of Nanoscience & Nanoengineering)
* PTRME Engine Companies – Provide work-based learning and employment opportunities
* University Articulations: Agreements exist with Winston-Salem State University and other local institutions

Program Impact & Results:

* Graduates Employed Locally: Many alumni have secured jobs in the region
* Class Size: 10–18 students per year
* Economic & Workforce Growth Contribution: Trained biotech professionals supporting local industry expansion

Funding Sources:

* State Funding supports program operations
* NSF Grants:
* NSF ATE (InnovATEBIO, BETA, Equipment Grants)
* NSF Engine Grant
* EDA Build Back Better Grant
* Other Funding: NIIMBL, BioMade, BEZOS grants

Challenges & Lessons Learned:

* Initial Need: Created to address emerging biotech R&D needs at Wake Forest Institute for Regenerative Medicine
* Ongoing Challenges:
* Articulation agreements
* Recruitment and instructor qualifications
* State and government system hurdles
* Key Takeaways:
* Regional workforce research is essential
* Building a strong advisory committee ensures sustainability
* Anticipating industry trends helps align training programs

Program Highlights:

* Educator Training & Workforce Development:
* [BETA Fellows Program: Preparing educators for the future biotech workforce](https://www.ncbiotech.org/news/beta-fellows-program-equips-educators-prepare-future-biotech-workers)

Finger Lakes Community College (NY)

Program Contact:

* James Hewlett, SUNY Distinguished Service Professor - [James.Hewlett@flcc.edu](mailto:James.Hewlett@flcc.edu)
  + Coordinator, Natural Sciences
  + Director, Biotechnology/Biomanufacturing

Institution:

* Finger Lakes Community College (FLCC)

Program Overview:

* Degree Type: Associate of Science (A.S.) in Biotechnology/Biomanufacturing (not A.A.S.)
* Integration: Shared with the A.S. Liberal Arts and Science degree

Dual Credit & Early College Programs:

* Dual Credit Courses: First-year Biology and Chemistry
* Gemini Program:
* High school students take courses at their own schools
* Credits transfer when they enroll at FLCC
* Early Scholars Program:
* High school students take courses at FLCC
* Earn credit for both FLCC and high school diplomas

Program Specifics:

* No Certificate Programs
* CTE Biotechnology: Not commonly found in New York State

El Paso Community College Biotechnology Program (TX)

Institution Overview:

* Location: El Paso, Texas, near the U.S.-Mexico border (Ciudad Juarez)
* Campuses: 6 across the El Paso Borderplex region
* Student Population: 25,569 students
* Enrollment: 32% full-time, 68% part-time
* Financial Aid: 58% qualify for need-based aid
* First-Generation Students: 47%
* Military Student Population: Notable due to nearby Fort Bliss

Biotechnology Program Development:

* Texas Biotechnology Training Network:
* EPCC is working to expand biotechnology education and workforce opportunities in the El Paso region
* Limited awareness of biotech careers among local high school and community college students
* Planned Programs (Launching Fall 2026):
* Associate of Applied Science (AAS) in Biotechnology (60 credits)
* Biotechnology Certificate 1 (18 credits)
* Biotechnology Certificate 2 (32 credits)
* Emphasis: Biomanufacturing to meet industry demand

Target Population & Curriculum Features:

* Target Students: Biology & Chemistry students at EPCC
* 2023-2024 Enrollment: 8,311 students in transferable Biology & Chemistry courses
* Fall 2024 Enrollment:
* 5,675 Biology & Chemistry students
* 1,926 dual-credit high school students
* Core Curriculum Components:
* Training in CGMP (Current Good Manufacturing Practices) & GMP (Good Manufacturing Practices) for FDA compliance
* AI Certification & Internships to enhance biotech qualifications

Industry Partnerships & Workforce Development:

* Advisory Committee: Established with biotech industry leaders & instructors
* Key Industry Recommendations:
* Biotechnology skills & training embedded in the curriculum
* Alignment with local/regional biotech employer needs
* Faculty Training & Certifications:
* Bio-Train Program (Montgomery College, Maryland)
* Trained EPCC Faculty:
* Dr. Maria Alvarez, Dr. Carolina Chianelli, Dr. Trevor Duarte, Dr. Jeff Sivils
* Completed Biotech Industry Workforce Essentials training under Dr. Meena Chandok
* Focused on Biotech Lab & Safety, Environmental Monitoring, Industry Standards & Regulations

Challenges & Next Steps:

* Main Challenge: Funding for equipment & lab renovations
* Program Proposal:
* Submitted to EPCC Cabinet & Board of Trustees for approval
* Includes cost analysis & return on investment projections
* Recruitment Outlook:
* High interest from Early College High School & STEM students
* Strong demand in Biological, Chemical, and Medical Sciences expected to drive enrollment