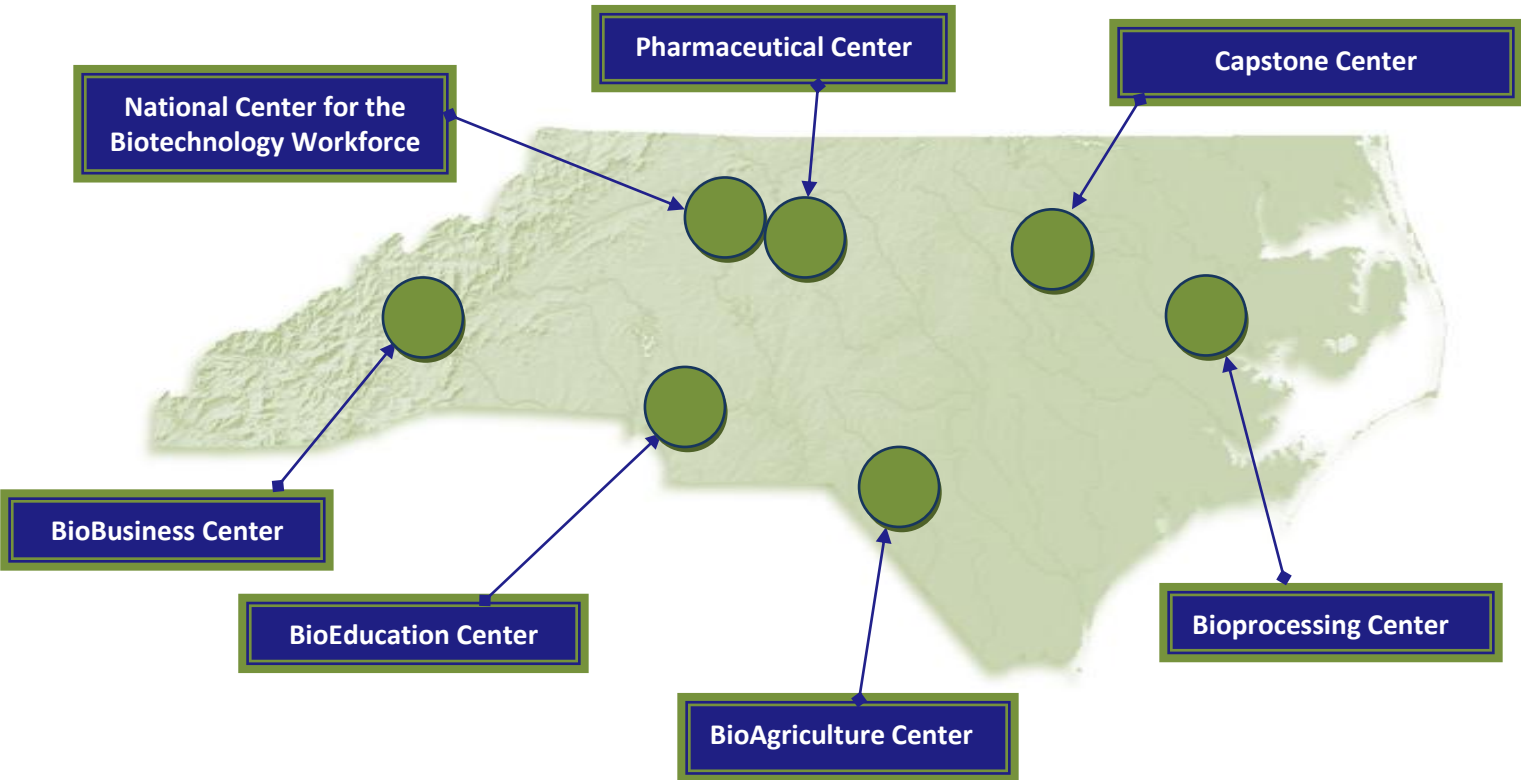


*News about growing the biotechnology workforce*

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

**BioNetwork supports the mission of the North Carolina Community Colleges aligning world class workforce training and education to the biotechnology, pharmaceutical and life science industries.**



# NC BioNetwork Centers

**BioNetwork** Centers work with industry leaders to understand specific workforce requirements. The Centers then work with each industry's local community college to meet these needs. To accomplish these vital goals, each center pursues a statewide strategy designed with five priorities:

- ❖ **Analyze** & strategize to compete in global industry by meeting specific workforce requirements.
- ❖ **Support** community college partnerships with resources.
- ❖ **Develop** new courses or enhance existing programs.
- ❖ **Innovate** with hands-on training, flexibility and clear career advancement paths.
- ❖ **Recruit** new students, workers and industries.

**The BioBusiness Center** supports business development for start-up life science companies across North Carolina through local, regional and statewide partnerships and collaborations. The Center sponsors conferences and delivers training programs to support the continuing educators, industry training officials and life science faculty. The Center also provides technical support resources for the Small Business Center Network, focusing on ways to commercialize technologies for life science industries.

## *BioBusiness Center*

*Asheville-Buncombe Technical Community College*

*A service hub for start-up and small life science companies*

The Center has established collaborations with industry and economic development officials throughout North Carolina. Current active industry support collaborations focus on traditional biotechnology and life science companies, organic, local and sustainable agriculture, biofuels and the natural products industry sector. Among the many collaborators the Center partners with are AdvantageWest, Blue Ridge Food Ventures, Gaia Herbs, Biofuels Center of NC, the NC Biodiesel, Herb and Natural Products Associations, NCSU's Mountain Horticultural

Crops Research & Extension Center, the Small Business Technology and Development Center, and the Western Region Education Service Alliance.

A wide range of topics are covered by Center classes, workshops and seminars, including business development, consumer education and health professional continuing education. Since 2006, over two thousand students have attended these programs, delivered at community colleges in every region of the State. The Center also provides analytical testing services for botanical constituent quantification as well as identification and speciation of medicinal herbs through its Natural Products Laboratory (NPL). These analyses are performed using High Pressure Liquid Chromatography (HPLC), Gas Chromatography (GC), Mass Spectrometry (MS) and other techniques.

The NPL provides rentable lab space for individuals and companies interested in product research, testing and development. Additionally the Lab also offers several courses covering current good manufacturing practices (cGMP), documentation, conducting investigations, quality control, laboratory operations, and management responsibilities. Overall, the NPL assists companies in preparing to meet cGMP and Food and Drug Administration (FDA) regulations for dietary supplements.

Center staff also engages in outreach with schools, civic groups and community stakeholders. The staff works with public schools and early college students, providing career fairs as well as in-class programs

and teacher support. Active educational collaborations include those with Appalachian State University, School of Enquiry and Life Sciences – Asheville, University of North Carolina at Asheville, Western Carolina University and numerous Community Colleges.

**The BioNetwork Pharmaceutical Center** is a statewide resource promoting workforce development in North Carolina. Initially focused on the pharmaceutical industry, the Center has expanded its reach to serve most life science industries through consultation and training for companies, service to North Carolina community colleges, and job coaching and educational guidance to students and displaced workers interested in becoming a part of the growing biotechnology industry in the state. Its new training facilities at the Richard Dean Biomedical Research Building in the Piedmont Triad Research Park in Winston-Salem house classroom and meeting space, plus the Analytical Training Lab, showcasing the latest technologies in analytical chemistry.

## *BioPharmaceutical Center*

*Forsyth Technical & Guilford Technical Community Colleges*

*Fostering collaborations and providing innovative training for the life science industry.*

The Pharma Center's relationship with the Piedmont Triad Research Park has fostered the opportunity to expand its program, and to establish the **BioNetwork Analytical Training Lab** which adjoins the Center in the research park. This state-of-the-art resource houses analytical testing equipment used for training of community college students, incumbent workers, collaborating businesses, and educational institutions seeking hands-on training and experience with the latest tools in analytical chemistry. This one-of-a-kind training facility offers both lecture and lab components and provides a skill set in analytical evaluation techniques that is unmatched in the state.

## *BioAgriculture Center*

*Robeson Community College*

*Supports growth and use of agricultural biotechnology, plant tissue culturing, biofuels education and training*

State-of-the-art breakthroughs in applying biotechnology to commercial markets such as herbalism, horticulture, and micropropagation are leading into highly profitable new enterprises right for all North Carolina regions. **BioNetwork's BioAgriculture Center** leads in developing programs and services that support biotechnology's growth in agriculture - while always being sensitive to the health and wellbeing of citizens and the environment.

An important focus is food safety, which is also a growing industry.

The Center pursues emerging enterprises in viticulture and enology, agritourism, beekeeping and apitherapy. More opportunities exist in marine science, including biofuels with algae culturing, plus other sustainable energy, aquaculture, and food possibilities. As part of the Center's overall strategy, staff members give biofuel demonstrations as part of the Craven Community College Small Business Center's popular Bio-Entrepreneur Academy Series. They also hosted Carolina Living Green Academy workshops in Concord, N.C. covering all aspects of green industries in North Carolina, including alternative energy opportunities and organic farming. The Center worked with Robeson CC faculty as well as the Robeson County Cooperative Extension Office to develop a series of courses offered at the college for Beekeeping Certification.

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The **BioNetwork's Bioprocessing Center** is a resource for community colleges, students, and industries across North Carolina. The Center focuses on three major areas:

- Developing materials for curriculum, continuing education, and incumbent worker training
- Outreach activities to the K-12 System, Community Colleges and Civic Groups
- Providing expert advice to community colleges, economic developers and industry

The Bioprocessing Center delivers faculty development programs in every region. Examples of classes available include Environmental Monitoring/Aseptic Practices and Downstream Processing. Train-the-Trainer sessions for

Bioprocessing in the Workplace®, a 12 Module Continuing Education course for those who want to consider Life Sciences as a career, is also offered by the Center. The BioNetwork Bioprocessing Center also aids economic developers working to bring new companies to North Carolina, and helps existing facilities expand. The Center supports community colleges as they increase the effectiveness of the workforce in their region by developing customized training materials for local industries.

Staff members deliver workshops and give presentations to any organization interested in learning about Life Sciences. They attend career and job fairs with information to increase public awareness of these industries. The Center also works with public and private schools across the state, discussing biotechnology, including the careers available and training required. Presentations are made to counselors, faculty, and students. Collaborative agreements between colleges developed by the Center enable students to take a first year at their local community college. The second year is at one of the community colleges with biotechnology degree programs. In addition, the BioNetwork Bioprocessing Center developed agreements with several North Carolina universities to offer the opportunity for students to seamlessly earn a four year degree.

## *Bioprocessing Center*

*Pitt Community College*

*Enhanced courses, a resource for upgrading facilities and train-the-trainer programs*

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The **BioEducation Center** primary areas of focus are:

- Instructional Design and Development
- E-Learning
- Regional Training Events
- Project Management

## *BioEducation Center*

*Gaston College*

*Interactive Learning Solutions*

**Instructional Design and Development** The BioEd Center uses a systematic process of instructional specifications to ensure design and development quality. With their instructional design process they can develop state-of-the-art, interactive learning solutions using our team of experts. Some of the key aspects of our instructional design process include performing a needs assessment, evaluating existing material, creating performance objectives and developing a detailed project plan. We offer a proven design process that is repeatable and ensures the development of high-quality learning solutions.

**E-learning** The lifestyles of 21<sup>st</sup> century learners demand flexibility of training. The Bio Center works with subject matter experts to develop interactive learning objects that support online and hybrid learning. Learning objects are reusable “chunks” of training that can be used in many different settings. BioEd Center’s goal is to use technological tools such as webinars, multimedia, simulations, flash modules, and serious games to immerse the learner in highly effective, participant-centered e-learning.

**Regional Training Events** Whether you are offering training at a single location or in multiple locations, the BioEd Center provides an invaluable service in the success of your training events. They offer a platform of services from pre-event planning and online registration to providing live webinar and recording the event for future access. They deliver cutting edge service by following a detailed process and developing a one-on-one relationship with the customer.

**Project Management** The Center’s approach to developing interactive learning solutions involves a commitment to planning and managing resources from project conception to implementation. The Center offers exceptional leadership to projects by using a plan to clearly outline the project’s scope, goals and deliverables, budget and resources. They consider project management as the critical component in the success of instructional design and development, e-learning and regional training events.

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**The BioNetwork Capstone Center** provides affordable, high quality, hands-on training in biotechnology, biomanufacturing, and biopharmaceutical/pharmaceutical operations in a simulated industrial (cGMP) environment. The Capstone Center is also home to the Validation Academy, which provides training and education in the area of validation. Importantly, short-course training (1-5 days) at the Capstone Center is carried out by highly qualified professionals with extensive experience in the biopharmaceutical/biomanufacturing industry.

The logo for the Capstone Center is a dark blue rectangle with a thin green border. It contains the text 'Capstone Center' in a white serif font, 'Wake Technical Community College' in a smaller white sans-serif font below it, and 'Training North Carolina's Life-Science Workforce' in a white sans-serif font at the bottom.

## Capstone Center

Wake Technical Community College

Training North Carolina's Life-Science  
Workforce

The Capstone Center is situated in the Golden LEAF Biomanufacturing Training and Education Center (BTEC) on Centennial Campus of North Carolina State University. Built in 2007, the BTEC is the largest facility of its kind in the nation. It provides a training environment that mirrors a biomanufacturing plant facility. The Capstone Center’s training facilities within BTEC include state-of-the-art classrooms, laboratories, and a certified cleanroom suite.

The Capstone Center serves:

- Incumbent workers
- New hires
- Workers in job transition
- College/university and community college faculty
- Community college and college students enrolled in the life sciences, especially those in biotechnology-related degree and certificate programs, providing an invaluable extended hands-on learning experience

Four certificates are offered by the Capstone Center, including a Certificate in Biomanufacturing and a Certificate in Analytical Lab Skills. Course offerings focus upon a variety of critical skill sets within areas

important to biomanufacturing: good manufacturing practices, aseptic manufacturing, and operations in biotechnology processes, industrial microbiology, good laboratory practices, HPLC, and validation.

Capstone Center Consortium:

- ❖ **Central Carolina Community College**
- ❖ Durham Technical Community College
- ❖ **Johnston Community College**
- ❖ Piedmont Community College
- ❖ **Vance-Granville Community College**
- ❖ Sandhill Community College
- ❖ **Wake Technical Community College (Lead)**

**The National Center for the Biotechnology Workforce** creates new ways and means for educating biotechnology technicians. It cultivates partnerships that add resources, enhance techniques, raise quality levels and improve efficiencies. The National Center for the Biotechnology Workforce (NCBW) expands BioNetwork effectiveness by creating out-of-state relationships and partnerships that grow expertise.

Among the compatible organizations or institutions it works with are the Biotechnology International Organization, the NSF-ATE, Bio-Link, US DOL-ETA, Bioscience WIRED Initiative, Biotechnology Institute, National Association for Manufacturers and Academy for Education Development. NCBW seeks partnerships via mutual grant opportunities.

*National Center for  
the Biotechnology  
Workforce*

*Forsyth Technical Community College*

The Center supports students, graduates and faculty through applied research methods. For example, a Biotechnology Graduate Tracking Model was designed to learn of graduate experiences and outcomes. Valuable data can now be applied for success statewide and in other disciplines. The NCBW creates best practice publications on collaborative topics to increase and advance training and education of the biotechnology workforce.

- Represent, enable and provide leadership at the national level of the biotechnology workforce with compatible organizations, educational and training institutions.
- Support for NCCCS BioNetwork, Forsyth Tech, North Carolina and the Piedmont Triad Biosciences community.

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For further information about NC BioNetwork  
Please visit our website

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

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[www.ncbionetwork.org](http://www.ncbionetwork.org)

**Creating Success**  
NC Community Colleges  

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