PROFESSIONAL SCIENCE MASTER’S (PSM) IN BIOMANUFACTURING

NC State University is dedicated to equality of opportunity. The University does not condone discrimination against students, employees, or applicants in any form. NC State commits itself to positive action to secure equal opportunity regardless of race, color, creed, national origin, religion, sex, age, or disability. In addition, NC State welcomes all persons without regard to sexual orientation.

3000 copies of this public document were printed at a cost of 12¢ per copy. This document was printed on paper with 10% recycled content.

Where biomanufacturing meets business
Accelerate your career in biomanufacturing

Take control of your career in the dynamic and growing field of biomanufacturing. Graduate with the scientific knowledge, business insight, and industry experience to join global companies as they meet tomorrow’s growing need for vaccines, antibodies, recombinant proteins, and other biotherapeutics. Gain hands-on experience in industrial-scale fermentation, cell culture, and purification in a simulated-cGMP facility while simultaneously taking targeted MBA and professional development courses.

A unique program in industrial biomanufacturing

North Carolina State University has created the first industry-scale cross-disciplinary graduate degree program in biopharmaceutical manufacturing in the country. The program home is the 82,500-gross-square-foot, $50-million Golden LEAF Biomanufacturing Training and Education Center (BTEC). BTEC is located on the university’s Centennial Campus, near Research Triangle Park (RTP) and in the midst of one of the largest concentrations of biopharmaceutical manufacturing facilities in the nation. Many of BTEC’s courses are taught by subject matter experts who come directly from industry.

BTEC offers two Professional Science Master’s (PSM) degrees: a Master of Biomanufacturing (non-thesis) and a Master of Science in Biomanufacturing (thesis option). Both degrees include a sequence of hands-on industrial-scale laboratory courses taught in the largest simulated-cGMP biomanufacturing training facility in the United States. Other integral program experiences include an industry internship, case studies in the cGMP manufacturing of influenza vaccine and therapeutic antibodies, as well as a QC analytical laboratory course. Students also engage in professional development skills training and complete MBA coursework including project management, strategic management foundations, and biosciences management. Some program requirements may be waived for applicants with advanced degrees or relevant industry experience.

Options for working professionals

BTEC welcomes both full- and part-time students. Individuals currently working in industry are encouraged to apply. Many graduate courses are offered in the evenings or online.

Highlights of program curriculum

All biomanufacturing graduate students complete the following:

- Six (6) credits of industry case studies in cGMP manufacturing of influenza vaccine and therapeutic antibodies
- Three (3) credits of FDA regulatory affairs coursework
- One (1) complete upstream or downstream biomanufacturing track using BTEC’s cGMP facilities
- Professional soft skills training
- A biopharmaceutical characterization QC laboratory course
- An industry internship
- A biomanufacturing-focused research experience

The industry internship and research experience are distinct and important features of BTEC’s graduate degrees, as are the in-depth case studies, which are facilitated by subject matter experts employed in the industry.

For a complete list of course requirements, please visit the BTEC website at www.btec.ncsu.edu/academic/graduate.

FURTHER INFORMATION

For further information or a tour of BTEC, please contact:
Danny Monroe, Ph.D.
Assistant Director, Academic Programs
dsmnonroe@ncsu.edu
(919) 513-2195

Master of Biomanufacturing (MR)

Master of Biomanufacturing in a non-thesis degree requiring students to complete a minimum of 36 credit hours of industrial biomanufacturing lecture and laboratory coursework, professional development skills training, and MBA classes. All MBA courses are taught by faculty in the Jenkins Graduate School of Management, a part of NC State University’s Poole College of Management.

Master of Science (MS)

Similar to the MR degree, the Master of Science in Biomanufacturing combines interdisciplinary coursework with professional management courses. In addition, this degree program provides additional experience in bioprocess development research to familiarize students with the methods, ideals, and goals of independent investigation. Students pursuing this degree complete four credit hours of industry-focused process research mentored by their graduate advisor. Each student submits a written thesis and presents that thesis to his or her graduate advisory committee.

ADMISSION REQUIREMENTS

Admission to the BTEC graduate program requires completion of an undergraduate degree in engineering, life science or physical science, letters of recommendation, a resume, and a statement of career goals. A minimum overall grade point average of 3.0 and GRE scores in the 80th percentile or higher are also required. Prior completion of biomanufacturing courses is not required for admission to the program. Students can be admitted for fall or spring semester. Priority application deadlines are March 15 for fall admission and October 15 for spring admission. However, applications are accepted throughout the year.

HOW TO APPLY

Visit www.btec.ncsu.edu/academic/graduate for information about applying.