

# Bioprocessing Science Degree Fact Sheet

## What is bioprocessing?

Bioprocessing is a broad term encompassing the research, development, manufacturing, and commercialization of products prepared from or used by biological systems, including food, feed, fuels, biopharmaceuticals, and cosmetics. In other words, bioprocessing is the alteration or application of biologically derived materials for use as products or feed stocks to formulate products beneficial to society.

## What is the Bioprocessing Science degree?

The **Bioprocessing Science** degree program was designed to educate scientists for the rapidly developing bio-based industries of North Carolina and the world. Students completing the degree will possess:

- Working knowledge of GMP principles, validation procedures and vocabulary and how to apply FDA regulations
- Experience designing and running a process, especially fermentation, cell culture, and downstream processing for biomolecule production
- Skills to analyze and integrate biomanufacturing unit operations and processing equipment for biomolecule production
- Working knowledge of those industries applying microbiology and biotechnology towards biomolecule production

## What courses will students take?

**Bioprocessing Science** students will take courses from a new curriculum:

BBS 201 Introduction to Biopharmaceutical Science  
BBS 301 Process Validation Science  
BBS 426 Industrial Microbiology & Biomanufacturing  
FS/BBS 231 Principles of Food and Bioprocess Engineering  
FS/BBS 290 Careers in Food and Bioprocessing Sciences  
FS/BBS 402 Chemistry of Food and Bioprocessed Materials  
FS/BBS 403 Analytical Techniques in Food & Bioprocessing Science  
FS/BBS 416 Quality Control in Food and Bioprocessing  
FS/BBS 475 Problems and Design in Food and Bioprocessing Science

Students will also have opportunities to select coursework from the Biotechnology (BIT) and the Biomanufacturing (BTEC) programs.

## What experience will students receive?

Students in **Bioprocessing Science** will have access to the Golden Leaf Biomanufacturing Training and Education Center (BTEC) on the Centennial Campus of NC State University. The BTEC will provide a unique pilot-scale, industry-informed, GMP environment critical to developing scientists and professionals proficient in the skills needed for successful employment in the biomanufacturing industry.

## Where might graduates work?

North Carolina is focused on becoming a center for bio-based businesses, including pharmaceutical, agricultural and chemical manufacturers such as Bayer Crop Science, Wyeth Vaccines, Syngenta Biotechnology, Biogen Idec, and Novozymes to name a few. In industry, bioprocessing scientists may design studies to evaluate or improve products or processes, develop tests to ensure product quality, or explain the scientific aspects of products or processes to regulators, customers, or investors. *Starting salaries for an entry-level scientist typically begin around \$46,000 per year.*

## Where can I find more information?

For additional information, contact

Dr. John Sheppard  
Bioprocessing Science Coordinator  
919.513.0802

[jdsheppa@unity.ncsu.edu](mailto:jdsheppa@unity.ncsu.edu)

or visit the website

[www.bioprocessingscience.info](http://www.bioprocessingscience.info)