

## APPENDIX K

### **Request for Authorization to Establish a Bachelor of Science in Biotechnology at Winston-Salem State University**

#### **Introduction**

Winston-Salem State University notified the Office of the President of its intent to plan a Bachelor of Science degree in Biotechnology and Biomedical Sciences (26.1201) on July 19, 2003.

#### **Program Description**

The State of North Carolina has established the goal of developing the field of biotechnology for economic development and job opportunities for its citizens. Winston-Salem State University proposes to participate in the development of the biotechnology field by offering a Bachelor of Science in Biotechnology. The proposed B. S. in Biotechnology will be housed in the Department of Life Sciences. The Bachelor of Science in Biotechnology will require a minimum of 128 hours with 36 hours in biotechnology. The proposed degree program will prepare graduates for positions in three major categories 1) discovery and development sciences, 2) routine and advance laboratory biotechnologies, and 3) regulatory and managerial affairs. Some graduates will assume positions in biopharmaceutical development, bioprocessing applications, biomanufacturing, food sciences, environmental remediation industries, and biomanufacturing. Through the proposed program, Winston-Salem State University fulfills its mission by providing academic programs for students in professional areas with future growth potential, and it contributes to the economic development agenda of the State of North Carolina.

#### **Program Need**

From the 2003 assessment conducted by the North Carolina Biotechnology Center, it is projected that 125,000 new biotechnology workers will be needed in industry by the year 2025. North Carolina ranks fifth among all biotechnology regions in the United States. It is reported that these companies employ about 18, 500 North Carolinians. The proposed B.S. in Biotechnology will assist North Carolina in meeting the need for a better prepared workforce in biomanufacturing and bioprocessing-based facilities. Additionally, Forsyth Technical Community College has an Associate Degree in Biotechnology. There are currently 110 majors in biotechnology at Forsyth Technical Community College. The university forecasts that there will be 48 majors in its Bachelor of Science in Biotechnology by 2008. Both Winston-Salem State University and Forsyth Technical Community College are in Forsyth County, and they have an articulation agreement.

#### **Program Review**

Because of the newness of the subject area in this proposed degree program, the Office of the President requested that an expert examiner review the proposal for the B.S. in Biotechnology. Overall the reviewer stated that the Bachelor of Science in Biotechnology is a well-designed program with a strong foundation for work in biotechnology. Moreover, the reviewer reiterated that employers in biotechnology need highly trained workforces. The reviewer, however, recommended 1) the addition of a statistics course in the curriculum to assist students with quality control/quality assurance assignments, 2) the addition of faculty or adjunct faculty with specific expertise in some of the biotechnology areas (e.g. biotechnology

## APPENDIX K

regulations, law, and ethics course), 3) more explanation regarding the internship program, 4) the offering of a general bioinformatics course instead of a protein bioinformatics class, and 5) changing the name of the degree program from B.S. in Biotechnology and Biomedical (which assumes mainly biomedical research) to a B.S. in Biotechnology.

Winston-Salem State University responded to the reviewers recommendations and submitted revisions to the Office of the President. WSSU will offer biostatistics in the proposed B.S. in Biotechnology which will focus on the study of probability, descriptive and quantitative statistics used in the biotechnology environment. In response to the concern about faculty expertise, WSSU plans to add both full-time and part-time faculty members with experience in management and production of biotechnology products. Additionally, WSSU will add faculty who have experience in intellectual property, administrative law, ethics, and other areas relevant to the degree program. In explaining the internship program, WSSU states that there will be various options for students to fulfill the internship component in the Biotechnology program. Students can elect to complete an internship during the fall with nearby companies or to complete internships during the summer with companies farther away in the state or out of the country. WSSU, for example, has formal internship relationships with several international universities. Winston-Salem State University agrees to change the name of the course "Protein Bioinformatics" to "Bioinformatic," to reflect the broad focus of the course. Majors will also have an opportunity to spend time at the new training facility at NCSU when that facility becomes available in 2006. WSSU also agrees to alter the title of the proposed degree from Bachelor of Science in Biotechnology and Biomedical Sciences to Bachelor of Science in Biotechnology.

The Office of the President is satisfied with the reviewer's comments and the response and revisions of Winston Salem-State University for the Bachelor of Science in Biotechnology.

### **Resources**

It is expected that high student demand in the biotechnology will spread across all pre-existing programs in the Department of Life Sciences. The university has received \$225,000 over three years from the Office of the President's Focused Growth Revolving Fund to support biotechnology program development. Additionally, the B.S. in Biotechnology will be supported through current resources and enrollment funds.

### **Recommendation**

It is recommended that the Board of Governors approve the request to establish the Bachelor of Science in Biotechnology at Winston-Salem State University effective January 2005.