

## **Request for Authorization to Establish a Master of Science in Security Studies at East Carolina University**

East Carolina University requests authorization to establish a Master of Science in Security Studies degree program (CIP 30.0601).

### **Program Description**

The MS in Security Studies will provide students an interdisciplinary approach to understanding and addressing the diverse domestic and international threats to US security. These threats may be posed by natural disasters or by humans, whether through governments or non-state actors such as terrorist groups. The program is designed to enable students to evaluate threats and develop responses to those threats. The program will also increase student understanding and skills of the response coordination required to meet the challenges posed by such threats.

### **UNC Tomorrow Relevance**

This degree program addresses several recommendations of the UNC Tomorrow Final Report including 4.1 Our Global Readiness, 4.4 Our Communities and Their Economic Transformation, and 4.7 Our University's Outreach and Engagement.

### **Highlights from UNC-GA Data Template**

This type of program is not offered by any other institution in NC. In the last three years, ECU has added two baccalaureate programs, one master's, and one doctoral program and has discontinued two baccalaureate and four master's programs.

### **Outcome of Consultation with Disciplinary Panel**

In addition to ECU representatives, panel participants included faculty representatives from FSU and UNCC as well as the UNC-GA Associate Vice President for Security and Safety Operations. Topics discussed included internships, collaboration with NC military installations, development of an advisory committee, funding opportunities, and security clearances. The panel was very supportive of the proposed degree.

### **Student Demand**

The program will build on the strengths of the graduate certificate in Security Studies, which began in 2004 and has grown to approximately 30 students. Current military base realignments in NC are bringing a substantial number of military personnel who will find the degree attractive, particularly because the program will be offered via distance education. A master's degree is almost essential for officer promotion in the military now. The program projects full enrollment of the program in its fourth year will be 23 full-time and 37 part-time students.

### **Opportunities for Graduates of the Program**

The program is being designed to meet the developing Homeland Security Defense Education Consortium standards for master's degrees, thus graduates of the program will find many job opportunities for which they are qualified. ECU is a member of this consortium, and ECU faculty members have contributed to development of these standards.

### **Resource Implications**

**Resource needs:** One new faculty member may be needed in the third year of the program to handle growing enrollments.

**Resources allocated:** Much of the program will be taught online, eliminating the need for office space. ECU has an excellent infrastructure for supporting the development of online degree programs.

**Estimated cost to the State:** Based on the University funding formula, when the program reaches full enrollment, ECU would receive additional State appropriations of approximately \$308,938 if fully funded by the General Assembly.

### **Recommendation**

It is recommended that the Board of Governors approve ECU's request to establish a Master of Science in Security Studies degree program (CIP 30.0601) subject to the availability of funding.

## General Information Template for Academic Program Review

### **Degree Area and Level:**

Master in Science in Security Studies at East Carolina University (30.0601)

### **Addressing UNC Tomorrow:**

This proposed program would address several Recommendations within the UNC Tomorrow Report including the components to enhance Our Global Readiness (Recommendation 4.1), Our Citizens and Their Future: Access to Higher Education (Recommendation 4.2), Our Communities and their Economic Transformation (Recommendation 4.4), Our University's Outreach and Engagement (Recommendation 4.7).

### **Role of Program in Relation to State and Regional Needs:**

According to the proposal, "As a region of the state with a large number of military bases and as a region subject to severe tropical weather, eastern North Carolina and North Carolina in general particularly need a cadre of trained professionals who understand the origins of these threats to security, their patterns of development, and how to respond in appropriate ways. This will only increase as the Base Realignment and Closure (BRAC) process relocates a four-star command from Atlanta to Ft. Bragg, along with the US Army Reserve Command. These relocations alone are expected to bring another 20,000 military and dependents into the Fayetteville area. This program will also strengthen the university's connections to its military personnel through the provision of a desired master's-level program. It is expected that much of the enrollment in this program will come from the ranks of the military."

### **US Labor Department Analysis:**

- Summary – No narrative or data is provided for this cluster.

### **Availability of Program Statewide (Enrollment and Degrees Awarded in Last 3 Years):**

- Public universities – Not available.
- Private universities – Not available.

### **Available or not from Academic Common Market:**

Not available.

### **East Carolina University Campus enrollment and degrees awarded in similar programs at the Master's level:**

(Based on two CIP digits – 30 CIP is the summary group for Multi/Interdisciplinary Studies under which Security Studies is a program.) The MS Sustainable Tourism degree program (CIP 30.9999) was approved by the BOG on 01/08/2010.

| Enrollment |                                         |    | Academic Year |        |         |        |         |        |
|------------|-----------------------------------------|----|---------------|--------|---------|--------|---------|--------|
|            |                                         |    | Fall 06       | Spr 07 | Fall 07 | Spr 08 | Fall 08 | Spr 09 |
| ECU        | Multi-/Interdisciplinary Studies, Other | MA | 26            | 28     | 28      | 31     | 36      | 33     |

| Number of Degrees Awarded |                                         |    | Academic Year |           |           |
|---------------------------|-----------------------------------------|----|---------------|-----------|-----------|
|                           |                                         |    | 2006-2007     | 2007-2008 | 2008-2009 |
| ECU                       | Multi-/Interdisciplinary Studies, Other | MA | 9             | 10        | 3         |

***Campus Average of enrollment and degrees awarded in this degree area at the Master's level:***

*(Based on two CIP digits – 30 CIP is the summary group for Multi/Interdisciplinary Studies is a program under which Security Studies is a program - over the last 3 Academic Years, Fall 2006-Fall 2009)*

| <b>Campus Average</b> |                              |                            |                          |
|-----------------------|------------------------------|----------------------------|--------------------------|
|                       | Number of<br>Active Programs | Enrollment per<br>Semester | Degrees Awarded per Year |
| ASU                   | 1                            | 10                         | 5                        |
| ECU                   | 1                            | 32                         | 7                        |
| NCSU                  | 2                            | 20                         | 9                        |
| UNCC                  | 2                            | 47                         | 13                       |
| UNC-CH                | 2                            | 30                         | 13                       |
| UNCG                  | 2                            | 20                         | 8                        |
| UNCW                  | 1                            | 9                          | 1                        |
| WCU                   | 1                            | 1                          | N/A (New Program 2006)   |
| Campus Average:       |                              | 21                         | 8                        |

***ECU Degree Programs added in the past three years:***

- *Bachelor*
  - BS Applied Atmospheric Science (02/12/2010)
  - BA African and African American Studies (02/09/2007)
- *Master*
  - MS Sustainable Tourism (01/08/2010)
- *Doctoral*
  - AuD Audiology (06/13/2008)

***ECU Degree Programs discontinued in past three years:***

- *Bachelor*
  - BS Marketing Education (03/20/2009)
  - BS Accounting (08/14/2009)
- *Master*
  - MM Music Therapy (03/20/2009)
  - MPT Physical Therapy (06/08/2007)
  - EdS Counselor Education – Intermediate Degree (03/20/2009)
  - CAS Library Science – Intermediate Degree (03/20/2009)
- *Doctoral*
  - N/A

## **Request for Authorization to Establish a Master of Science in Biomedical Sciences at East Carolina University**

The Brody School of Medicine at East Carolina University requests authorization to establish an M.S. in Biomedical Sciences degree program (CIP 26.0102).

### **Program Description**

The goal of this interdisciplinary degree program is to provide advanced training in biomedical research to students at the graduate and post-graduate levels. Through direct participation in ongoing research, students will be instructed in the application of the scientific method in modern biomedical research as well as in state-of-the-art approaches to the investigation of biomedical problems. It is anticipated that graduates of this program will eventually enter the work force in the areas of medicine, biotechnology, biomedical or pharmacological research, and health education, all of which are areas of current personnel shortages. The program should attract three groups of potential students: graduate students from traditional science disciplines (biology, chemistry, biochemistry, etc), select medical students, and residents or fellows in clinical training. This 38 semester hour program is closely related to the Ph.D. programs in the basic medical sciences in the Brody School of Medicine Division of Health Sciences and will utilize the same faculty as teachers and mentors. There is adequate capacity in existing didactic courses and research laboratories in the participating departments to accommodate the anticipated number of new students. An additional benefit of this new degree program will be an increase in the School's research productivity due to the new students' involvement in ongoing research projects.

### **UNC Tomorrow Relevance**

This proposed program would address several Recommendations within the UNC Tomorrow Report including the components to enhance our Global Readiness (Recommendation 4.1), Our Communities and Their Economic Transformation (Recommendation 4.4), and Our Health (Recommendation 4.5).

### **Highlights from UNC-GA Data Template**

No other public or private college or university in North Carolina offers a similar degree. In the past three years, ECU has established one doctorate, one masters, and two baccalaureate programs, and has discontinued four masters and two baccalaureate programs.

### **Outcome of Consultation with Disciplinary Panels**

The panel included faculty members from NCSU and UNC-CH in addition to the ECU faculty presenters. Panel members discussed the varied backgrounds of students who might apply to this program, and the employment opportunities for the program graduates. In short, the program teaches students who have a background in science how to perform biomedical research, and the panel members agreed this is an important and beneficial result. Overall comments were positive, with consensus on the desirability of offering this degree program.

### **Student Demand**

The graduate directors of the current doctoral programs in the Brody School of Medicine Division of Health Sciences report that they receive inquiries from students each year about the availability of masters programs. Moreover, the pool of potential applicants for this new program is quite large. In the 2005-06 academic year, for example, the numbers of baccalaureate graduates in the biological sciences at the following UNC campuses were: ECU – 190; UNC-CH – 368; NCSU – 491; UNCW – 156; and UNCG – 77. In addition, chemistry majors interested in extending their experience into the biomedical area would also likely be interested in this program. The program projects full enrollment of the program in its fourth year will be 26 full-time students.

### **Opportunities for Graduates of the Program**

Graduates of this program will be able to apply for laboratory research positions in companies performing medical, biotechnical, or pharmacological research. Program graduates, should they choose to do so, will also be eligible to apply to medical school or to Ph.D. programs in the health sciences. Also, because a large percentage of community college instructors will be retiring in the next years, there will be an acute shortage of instructors to teach in the allied health programs offered on community college campuses. Graduates of this program will certainly be qualified to teach in medical science programs at the community college level.

### **Resource Implications**

**Resource needs:** No new courses, faculty, facilities, or library resources are needed to implement the proposed degree program. Ongoing financial support for the new program will be mainly enrollment growth funding.

**Resources allocated:** The participating departments are utilizing existing courses, faculty, facilities, laboratory equipment, technological infrastructure, and library resources to offer and support this new program.

**Estimated cost to the State:** Based on the University funding formula, when the program reaches full enrollment, ECU would receive additional state appropriations of approximately \$395,000 if fully funded by the General Assembly.

### **Recommendation**

It is recommended that the Board of Governors approve East Carolina University's request to establish a Master of Science in Biomedical Sciences degree program (CIP 26.0102) subject to the availability of funding.

## General Information Template for Academic Program Review

### **Degree Area and Level:**

M.S. in Biomedical Sciences (CIP 26.0102) at East Carolina University

### **Addressing UNC Tomorrow:**

This proposed program would address several Recommendations within the UNC Tomorrow Report including the components to enhance our Global Readiness (Recommendation 4.1), Our Communities and Their Economic Transformation (Recommendation 4.4), and Our Health (Recommendation 4.5).

### **Role of Program in Relation to State and Regional Needs:**

According to the proposal, "The need for additional biomedical scientist is documented in "Advancing the Nation's Health Needs," a 2005 publication from the National Research Council. This publication states that most biomedical scientists receive their baccalaureate in another field and calls for the development of programs that will interest students and help with their transition into the biomedical field. Our proposed program should accomplish this as it is expected that some of the graduates will continue their training by enrolling in doctoral programs in the biomedical sciences. Finally, some of the graduates of this program will help the predicated need for teachers of the basic medical sciences at the community college level."

### **US Labor Department Analysis:**

- *Summary* – The Occupational Supply Demand System puts this degree code in the Medical Sciences category. The national information available for this category is, "An increasing focus on monitoring patients at hospitals and health care centers to ensure positive patient outcomes will contribute to job growth for epidemiologists. In addition, a heightened awareness of bioterrorism and rare, but infectious diseases such as West Nile Virus or severe acute respiratory syndrome (SARS) should spur demand for these workers. As hospitals enhance their infection control programs, many will seek to boost the quality and quantity of their staff."  
[http://www.occsupplydemand.org/OSD\\_UnitOfAnalysis.aspx?CLUSCODE=096A-15&ST=NC&PathNo=1](http://www.occsupplydemand.org/OSD_UnitOfAnalysis.aspx?CLUSCODE=096A-15&ST=NC&PathNo=1)

### **Availability of Program Statewide (Enrollment and Degrees Awarded in Last 3 Years):**

- *Public universities* – Not available.
- *Private universities* – Not available.

### **Available or not from Academic Common Market:**

Not available

### **ECU Campus enrollment and degrees awarded in similar programs at the Masters level:**

(Based on two CIP digits – 26 CIP is the summary group for Biological and Biomedical Sciences under which Biomedical Sciences is a program)

| Enrollment |                             |    | Academic Year |        |         |        |         |        |         |
|------------|-----------------------------|----|---------------|--------|---------|--------|---------|--------|---------|
|            |                             |    | Fall 06       | Spr 07 | Fall 07 | Spr 08 | Fall 08 | Spr 09 | Fall 09 |
| ECU        | Biology/Biological Sciences | MS | 54            | 50     | 47      | 46     | 49      | 42     | 52      |
|            | Molecular Biology           | MS | 14            | 13     | 14      | 12     | 20      | 19     | 23      |

| Number of Degrees Awarded |                             |    | Academic Year |           |           |
|---------------------------|-----------------------------|----|---------------|-----------|-----------|
|                           |                             |    | 2006-2007     | 2007-2008 | 2008-2009 |
| ECU                       | Biology/Biological Sciences | MS | 19            | 10        | 14        |
|                           | Molecular Biology           | MS | 3             | 5         | 3         |

**Campus Average of enrollment and degrees awarded in this degree area at the Masters level:**  
 (Based on two CIP digits – 26 CIP is the summary group for Biological and Biomedical Sciences under which Biomedical Sciences is a program - over the last 3 Academic Years, Fall 2006-Fall 2009)

| <b>Campus Average</b> |                              |                            |                             |
|-----------------------|------------------------------|----------------------------|-----------------------------|
|                       | Number of<br>Active Programs | Enrollment per<br>Semester | Degrees Awarded<br>per Year |
| ASU                   | 1                            | 30                         | 9                           |
| ECSU                  | 1                            | 4                          | 1                           |
| ECU                   | 2                            | 33                         | 9                           |
| FSU                   | 1                            | 9                          | 2                           |
| NCA&T                 | 1                            | 21                         | 4                           |
| NCCU                  | 2                            | 29                         | 5                           |
| NCSU                  | 14                           | 10                         | 4                           |
| UNCC                  | 2                            | 18                         | 7                           |
| UNC-CH                | 13                           | 5                          | 4                           |
| UNCG                  | 3                            | 16                         | 10                          |
| UNCW                  | 2                            | 23                         | 7                           |
| WCU                   | 1                            | 27                         | 6                           |
| Campus Average:       |                              | 19                         | 6                           |

**ECU Campus Degree Programs added in the past three years:**

- Bachelor
  - BA African and African American Studies (02/09/2007)
  - BS Applied Atmospheric Science (02/12/2010)
- Master
  - MS Sustainable Tourism (01/08/2010)
- Doctoral
  - AuD Audiology (06/13/2008)

**ECU Campus Degree Programs discontinued in past three years:**

- Bachelor
  - BS Marketing Education (03/20/2009)
  - BS Accounting (08/14/2009)
- Master
  - MM Music Therapy (03/20/2009)
  - MPT Physical Therapy (06/08/2007)
  - EdS Counselor Education – Intermediate Degree (03/20/2009)
  - CAS Library Science – Intermediate Degree (03/20/2009)
- Doctoral
  - N/A



## **Request for Authorization to Establish a Master of Science in Bioengineering at NC A&T State University**

NC A&T State University requests authorization to establish a Master of Science in Bioengineering degree (CIP 14.0501).

### **Program Description**

NCA&T, in partnership with the University of Pittsburgh and the University of Cincinnati, has been awarded a National Science Foundation (NSF) Engineering Research Center (ERC) on metallic biomaterials. In addition to the Bachelor of Science degree that is proposed to be established in conjunction with this initiative, a Master of Science degree is proposed. The MS degree will emphasize advanced study in two specialization areas: biomaterials and biomechanics; and bioimaging, biosignals, and biosensors. The program provides graduate level education designed to prepare the graduate for Ph.D. studies or for advanced bioengineering practice in industry, consulting, or government service.

### **UNC Tomorrow Relevance**

This degree program addresses several recommendations in the UNC Tomorrow Final Report including 4.1 Our Global Readiness, 4.4 Our Communities and Their Economic Transformation, 4.5 Our Health, and 4.7 Our University's Outreach and Engagement.

### **Highlights from UNC-GA Data Template**

Job growth in this field will be much faster than the national average for occupations. Over the last 10 years, bioengineering has been the fastest growing discipline in engineering. Average salaries are substantially higher than the overall state average. In the last three years, NCA&T has added one baccalaureate, one master's, and one doctoral program and has discontinued four baccalaureate and three master's programs.

### **Outcome of Consultation with Disciplinary Panel**

Faculty from ECU, NCSU, UNC-CH, and UNCC participated in the panel discussion with NCA&T and UNC-GA representatives. Topics covered included: courses that the NCA&TSU program could share with the programs at NCSU and UNC-CH, the program's enrollment projections (overly optimistic?), the lack of a non-thesis option, and the status of faculty hires for the Engineering Research Center grant. Panel participants were supportive of the proposed degree.

### **Student Demand**

Over the last ten years, bioengineering has been the fastest growing discipline in engineering. The program projects full enrollment of the program in its fourth year will

be 25 full-time students, although approximately 10 of them would have been otherwise enrolled in another NCA&T engineering program.

### **Opportunities for Graduates of the Program**

Bioengineers are expected to have 21 percent employment growth over the decade. The aging of the population and the focus on health issues will drive demand for better medical devices and equipment designed by bioengineers. Along with the demand for more sophisticated medical equipment and procedures, an increased concern for cost-effectiveness will boost demand for bioengineers, particularly in the pharmaceutical manufacturing and related industries.

### **Resource Implications**

**Resource needs:** Over a period of several years, ten new faculty positions will be needed to support growth in the baccalaureate, master's, and doctoral programs.

**Resources allocated:** Funds for the above positions have been allocated by the University. The Engineering Research Center grant will bring direct federal funding of about \$40 million over 10 years. NCA&T has established a variety of state-of-the-art facilities including high performance computing systems, a scientific visualization laboratory, the Center for Advanced Materials and Smart Structures, and a number of other laboratories and facilities.

**Estimated cost to the State:** Based on the University funding formula, when the program reaches full enrollment, NCA&TSU would receive additional State appropriations of approximately \$687,519 if fully funded by the General Assembly.

### **Recommendation**

It is recommended that the Board of Governors approve NCA&TSU's request to establish a Master of Science in Bioengineering degree (CIP 14.0501) subject to the availability of funding.

## General Information Template for Academic Program Review

### ***Degree Area and Level:***

MS in Bioengineering (CIP 14.0501) at NCA&T

### ***Addressing UNC Tomorrow:***

This proposed program would address several Recommendations within the UNC Tomorrow Report including the components to enhance Our Global Readiness (Recommendation 4.1), Our Communities and Their Economic Transformation (Recommendation 4.4), Our Health (Recommendation 4.5), Our University's Outreach and Engagement (Recommendation 4.7).

### ***Role of Program in Relation to State and Regional Needs:***

According to the proposal this degree program, "responds to the need for biomedical engineering graduates. Over the last ten years, biomedical engineering has been the fastest growing discipline in engineering. Enrollment data from the American Association of Engineering Societies clearly shows that the undergraduate and graduate enrollment in biomedical engineering program in the United States has tripled in the last ten years, compared to a relatively negligible growth in cumulative enrollment in other engineering disciplines."

### ***US Labor Department Analysis:***

- *Summary* –Biomedical engineers are expected to have 21 percent employment growth over the projections decade, much faster than the average for all occupations. The aging of the population and the focus on health issues will drive demand for better medical devices and equipment designed by biomedical engineers. Along with the demand for more sophisticated medical equipment and procedures, an increased concern for cost-effectiveness will boost demand for biomedical engineers, particularly in pharmaceutical manufacturing and related industries. However, because of the growing interest in this field, the number of degrees granted in biomedical engineering has increased greatly. Biomedical engineers, particularly those with only a bachelor's degree, may face competition for jobs. Unlike many other engineering specialties, a graduate degree is recommended or required for many entry-level jobs.

[http://www.occsupplydemand.org/OSD\\_Main.aspx?ST=NC](http://www.occsupplydemand.org/OSD_Main.aspx?ST=NC)

### ***Availability of Program Statewide (Enrollment and Degrees Awarded in Last 3 Years):***

- *Public universities* – The below program is a joint program with NCSU and UNC-CH.

| Enrollment |                                |    | Academic Year |        |         |        |         |        |         |
|------------|--------------------------------|----|---------------|--------|---------|--------|---------|--------|---------|
|            |                                |    | Fall 06       | Spr 07 | Fall 07 | Spr 08 | Fall 08 | Spr 09 | Fall 09 |
| NCSU       | Biomedical/Medical Engineering | MS | 21            | 19     | 23      | 21     | 21      | 18     | 18      |
| UNC-CH     | Biomedical/Medical Engineering | MS | 5             | 5      | 6       | 4      | 4       | 3      | 5       |

| Number of Degrees Awarded |                                |    | Academic Year |           |           |
|---------------------------|--------------------------------|----|---------------|-----------|-----------|
|                           |                                |    | 2006-2007     | 2007-2008 | 2008-2009 |
| NCSU                      | Biomedical/Medical Engineering | MS | 6             | 7         | 1         |
| UNC-CH                    | Biomedical/Medical Engineering | MS | 4             | 4         | 2         |

- *Private universities* – Data Sources: Occupational Supply Demand System and the U.S. Department of Education Institute of Education Sciences.

| Number of Degrees Awarded                                       |                                |    | Academic Year |           |           |
|-----------------------------------------------------------------|--------------------------------|----|---------------|-----------|-----------|
|                                                                 |                                |    | 2006-2007     | 2007-2008 | 2008-2009 |
| Duke University                                                 | Biomedical/Medical Engineering | MS | 20            | 22        | 18        |
| Wake Forest University<br>(Joint with Virginia Tech University) | Biomedical/Medical Engineering | MS | 2             | 3         | 2         |

**Available in Online or Distance Format from UNC institutions:**  
Not available

**Available or not from Academic Common Market:**  
Not available

**NCA&T Campus enrollment and degrees awarded in similar programs at the Masters level:**  
(Based on two CIP digits – 14 CIP is the summary group for Engineering under which Bioengineering is a program.)

| Enrollment |                                                        |    | Academic Year |        |         |        |         |        |         |
|------------|--------------------------------------------------------|----|---------------|--------|---------|--------|---------|--------|---------|
|            |                                                        |    | Fall 06       | Spr 07 | Fall 07 | Spr 08 | Fall 08 | Spr 09 | Fall 09 |
| NCA&T      | Chemical Engineering                                   | MS | 10            | 11     | 10      | 10     | 16      | 19     | 20      |
|            | Civil Engineering, General                             | MS | 32            | 27     | 28      | 24     | 27      | 38     | 40      |
|            | Electrical, Electronics and Communications Engineering | MS | 56            | 61     | 47      | 38     | 44      | 46     | 40      |
|            | Mechanical Engineering                                 | MS | 25            | 30     | 23      | 19     | 28      | 17     | 18      |
|            | Industrial Engineering                                 | MS | 38            | 43     | 42      | 36     | 48      | 39     | 36      |
|            | Engineering                                            | MS | 13            | 11     | 11      | 10     | 12      | 11     | 17      |

| Number of Degrees Awarded |                                                        |    | Academic Year |           |           |
|---------------------------|--------------------------------------------------------|----|---------------|-----------|-----------|
|                           |                                                        |    | 2006-2007     | 2007-2008 | 2008-2009 |
| NCA&T                     | Chemical Engineering                                   | MS | 5             | 5         | 2         |
|                           | Civil Engineering, General                             | MS | 17            | 13        | 11        |
|                           | Electrical, Electronics and Communications Engineering | MS | 26            | 22        | 22        |
|                           | Mechanical Engineering                                 | MS | 5             | 11        | 8         |
|                           | Industrial Engineering                                 | MS | 14            | 8         | 20        |
|                           | Engineering                                            | MS | 6             | 10        | 2         |

**Campus Average of enrollment and degrees awarded in this degree area at the Masters level:**  
 (Based on two CIP digits – 14 CIP is the summary group for Engineering under which Bioengineering is a program - over the last 3 Academic Years, Fall 2006-Fall 2009)

| <b>Campus Average</b> |                              |                            |                             |
|-----------------------|------------------------------|----------------------------|-----------------------------|
|                       | Number of<br>Active Programs | Enrollment per<br>Semester | Degrees Awarded per<br>Year |
| ECU                   | 1                            | 14                         | N/A * approved 2006         |
| NCA&T                 | 6                            | 28                         | 12                          |
| NCSU                  | 15                           | 64                         | 26                          |
| UNCC                  | 4                            | 48                         | 21                          |
| UNC-CH                | 2                            | 4                          | 3                           |
| Campus Average:       |                              | 32                         | 16                          |

***NCA&T Campus Degree Programs added in the past three years:***

- *Bachelor*
  - BS Atmospheric Sciences and Meteorology (11/09/2007)
- *Master*
  - MS Information Technology (09/07/2007)
- *Doctoral*
  - Ph.D. Computational Science and Engineering (01/08/2010)

***NCA&T Degree Programs discontinued in past three years:***

- *Bachelor*
  - BS Visual Arts, Art Education (03/20/2009)
  - BS Music Education (03/20/2009)
  - BS Romance Languages and Literatures, French Secondary Education (03/20/2009)
  - BS Romance Languages and Literatures, Spanish Secondary Education (03/20/2009)
- *Master*
  - MS English Education (03/20/2009)
  - MS Mathematics Education (03/20/2009)
  - MS History Education (03/20/2009)
- *Doctoral*
  - N/A

## **Request for Authorization to Establish a Master of Science in Construction and Facilities Management at UNC Charlotte**

UNC Charlotte requests authorization to establish an M.S. in Construction and Facilities Management degree program (CIP 15.9999).

### **Program Description**

Construction Management is a program that prepares individuals to manage, coordinate, and supervise the construction process from concept development through project completion on timely and economic bases. Facility Management (efficient and effective operation of the finished structure) is a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process, and technology. The proposed 30 semester hour M.S. in Construction and Facilities Management (MSCFM) degree program is designed to provide the advanced professional development and graduate education necessary for construction and facility management professionals to work in the increasingly high tech, rapidly changing construction industry and to effectively interface with related disciplines such as energy efficiency, environmental protection, code and standards enforcement, and insurance. The emerging economic climate for green construction, sustainable facility management, energy infrastructure, and related business services in the Charlotte region would seem to make UNCC a good fit for this MSCFM program. Furthermore, this program will take on a sustainable energy infrastructure focus both in the curriculum and in research projects as part of the Innovative Design, Engineering, and Sustainability (IDEAS) Center and the legislatively-supported Energy Production and Infrastructure Center (EPIC) initiatives at UNC Charlotte. The proposed program will be offered through both on-campus and online delivery.

### **UNC Tomorrow Relevance**

The proposal states: “This proposal is aligned with UNCC’s response to UNC Tomorrow; specifically, this program is one of the desired deliverables in the EPIC initiative at UNCC and is specifically listed in UNCC’s response to UNC Tomorrow.” In addition, the proposed program would address two Recommendations within the UNC Tomorrow Report, namely the components to enhance our Global Readiness (Recommendation 4.1), and Our Environment (Recommendation 4.6).

### **Highlights from UNC-GA Data Template**

The proposed new degree program is unique in that it will be the first integrated construction and facility management graduate degree program in North Carolina. (Nationwide, it will be only the fifth graduate program in facility management.) ECU and WCU currently offer online Masters programs in Construction Management. In the past three years, UNCC has established one doctorate, three masters, and four baccalaureate programs, and has discontinued one baccalaureate and six masters programs.

### **Outcome of Consultation with Disciplinary Panels**

The panel included faculty members from ASU and ECU in addition to the UNCC faculty presenters. Panel members asked thoughtful questions about the proposed program's curriculum and how it compared to that of the two existing Master in Construction Management programs within UNC. Discussion was also held on how this program is being designed to meet the economic needs of the Charlotte area. Overall comments were positive, with consensus on the desirability of offering this degree program.

### **Student Demand**

The infrastructure and building needs in the Charlotte metropolitan area, coupled with the large construction industry located there and UNCC's longstanding strong relationship with that industry, provide significant opportunities for the MSCFM program. Furthermore, student interest in graduate study within the Department of Engineering Technology is high (this will be the department's first graduate program), and the Fall 2009 undergraduate enrollment of 826 majors provides a large pool of potential M.S. students. The program projects full enrollment of the program in its fourth year will be 35 full-time and 30 part-time students.

### **Opportunities for Graduates of the Program**

The proposal states: "The Bureau of Labor Statistics' 2007-08 Edition of the Occupational Outlook Handbook indicates that employment of construction managers is projected to increase by 16 percent during the 2006-16 decade, faster than the average for all occupations, and that the number of job openings will exceed the number of qualified individuals to fill them." Data from the NC Employment Security Commission show that the need in North Carolina (and in Charlotte in particular) for qualified construction and facility managers is significantly greater than in the nation as a whole. In addition, the increasing complexity of construction projects and the finished structures will likewise increase demand for specialized and well-educated management-level personnel within the construction and facility management industry.

### **Resource Implications**

**Resource needs:** Existing instructional facilities and library holdings are adequate to support the proposed program. A total of 15 new courses will need to be developed. Ongoing financial support for the new program will be mainly enrollment growth funding. This enrollment funding will be used to add four new faculty positions for the program.

**Resources allocated:** UNCC is utilizing existing facilities, laboratory equipment, technological infrastructure, and library resources to offer and support this new program. Faculty will develop the 15 new courses in-load.

**Estimated cost to the State:** Based on the University funding formula, when the program reaches full enrollment, UNCC would receive additional state appropriations of approximately \$704,000 if fully funded by the General Assembly.

### **Recommendation**

It is recommended that the Board of Governors approve UNC Charlotte's request to establish a Master of Science in Construction and Facilities Management degree program (CIP 15.9999) subject to the availability of funding.

## General Information Template for Academic Program Review

### **Degree Area and Level:**

Master of Science in Construction and Facilities Management at UNC Charlotte (CIP 15.9999)

### **Addressing UNC Tomorrow:**

This proposed program would address multiple Recommendations within the UNC Tomorrow Report including the components to enhance Our Global Readiness (Recommendation 4.1), and Our Environment (Recommendation 4.6).

### **Role of Program in Relation to State and Regional Needs:**

According to the proposal, "With the increasing urbanization and associated transportation and infrastructure challenges, the resultant exploding demand for construction professionals and the associated demand for facility managers across the nation and particularly in North Carolina and the Charlotte region become even more acute. This proposed program is positioned in support of the Department, College and University missions to provide intellectual capital and to educate North Carolina citizens to meet the challenges of the region and state."

### **US Labor Department Analysis:**

- *Summary* – Overall employment of engineering technicians is expected to grow 7 percent between 2006 and 2016, about as fast as the average for all occupations. Competitive pressures will force companies to improve and update manufacturing facilities and product designs, resulting in more jobs for engineering technicians.

Source: [http://www.occsupplydemand.org/OSD\\_UnitOfAnalysis.aspx?CLUSCODE=029A-02&ST=NC&PathNo=1](http://www.occsupplydemand.org/OSD_UnitOfAnalysis.aspx?CLUSCODE=029A-02&ST=NC&PathNo=1)

### **Availability of Program Statewide (Enrollment and Degrees Awarded in Last 3 Years):**

- *Public universities*

| Enrollment |                                   |     | Academic Year |        |         |        |         |        |         |
|------------|-----------------------------------|-----|---------------|--------|---------|--------|---------|--------|---------|
|            |                                   |     | Fall 06       | Spr 07 | Fall 07 | Spr 08 | Fall 08 | Spr 09 | Fall 09 |
| ECU        | Master in Construction Management | MCM | N/A           | 5      | 6       | 10     | 14      | 13     | 18      |
| WCU        | Master in Construction Management | MCM | 17            | 13     | 30      | 27     | 36      | 29     | 38      |

| Number of Degrees Awarded |                                   |     | Academic Year |           |           |
|---------------------------|-----------------------------------|-----|---------------|-----------|-----------|
|                           |                                   |     | 2006-2007     | 2007-2008 | 2008-2009 |
| ECU                       | Master in Construction Management | MCM | N/A           | N/A       | 3         |
| WCU                       | Master in Construction Management | MCM | N/A           | 4         | 10        |

- *Private universities* – Not available.

### **Available in Online or Distance Format from UNC institutions:**

ECU and WCU offer their MCM programs through UNC Online.

### **Available or not from Academic Common Market:**

Not Available.

### **UNC Charlotte Campus enrollment and degrees awarded in similar programs at the Masters level:**

(Based on two CIP digits – 15 CIP is the summary group for Engineering Technology under which Construction and Facilities Management is a program)



| Enrollment |                                    |    | Academic Year |        |         |        |         |        |         |
|------------|------------------------------------|----|---------------|--------|---------|--------|---------|--------|---------|
|            |                                    |    | Fall 06       | Spr 07 | Fall 06 | Spr 08 | Fall 08 | Spr 09 | Fall 09 |
| UNCC       | Engineering/ Industrial Management | MS | 18            | 23     | 23      | 22     | 24      | 21     | 27      |

| Number of Degrees Awarded |                                    |    | Academic Year |           |           |
|---------------------------|------------------------------------|----|---------------|-----------|-----------|
|                           |                                    |    | 2006-2007     | 2007-2008 | 2008-2009 |
| UNCC                      | Engineering/ Industrial Management | MS | 8             | 8         | 9         |

**Campus Average of enrollment and degrees awarded in this degree area at the Masters level:**  
 (Based on two CIP digits – 15 CIP is the summary group for Engineering Technology under which Construction and Facilities Management is a program - over the last 3 Academic Years, Fall 2006-Fall 2009.)

| Campus Average  |                           |                         |                          |
|-----------------|---------------------------|-------------------------|--------------------------|
|                 | Number of Active Programs | Enrollment per Semester | Degrees Awarded per Year |
| ASU             | 1                         | 32                      | 14                       |
| ECU             | 2                         | 127                     | 42                       |
| NCA&T           | 1                         | 79                      | 31                       |
| UNCC            | 1                         | 23                      | 8                        |
| WCU             | 2                         | 45                      | 14                       |
| Campus Average: |                           | 61                      | 22                       |

**UNC Charlotte Campus Degree Programs added in the past three years:**

- Bachelor
  - BA Special Education, General Curriculum (03/20/2009)
  - BS Systems Engineering (09/07/2007)
  - BS Respiratory Therapy (05/11/2007)
  - BS Public Health (03/16/2007)
- Master
  - MUD Urban Design (06/13/2008)
  - MA Latin American Studies (02/09/2007)
  - MS Bioinformatics (05/11/2007)
- Doctoral
  - PhD Nanoscale Science (01/12/2007)

**UNC Charlotte Degree Programs discontinued in past three years:**

- Bachelor
  - BA Special Education (03/20/2009)
- Master
  - MEd Special Education, Cross-Categorical Disabilities (03/20/2009)
  - MEd Special Education, behavioral-Emotional Handicaps (03/20/2009)
  - MEd Special Education, Mental Handicaps (03/20/2009)
  - MEd Special Education, Learning Disabilities (03/20/2009)
  - MEd Special Education, Severe and Profound Handicaps (03/20/2009)
  - MA Art Administration (03/20/2009)
- Doctoral
  - N/A

## **Request for Authorization to Establish a Master of Fire Protection and Administration at UNC Charlotte**

UNC Charlotte requests authorization to establish a Master of Fire Protection and Administration degree program (CIP 43.0299).

### **Program Description**

The proposed program will consist of a common core and concentrations in Fire Protection and Fire Administration. The fire protection concentration prepares fire protection professionals to use modern fire protection methodologies, techniques and tools for fire protection design, fire investigation, industrial fire safety, key infrastructure security, safety assessment, and other fire safety matters. The administration curriculum prepares those who are engaged in occupations in the fire, emergency services, and safety fields to effectively manage the administrative decision-making requirements of both public and private entities.

### **UNC Tomorrow Relevance**

The proposed program represents important aspects of the UNC Tomorrow Final Report sections 4.4, Our Communities and Their Economic Transformation, 4.5 Our Health, 4.6 Our Environment, and 4.7 Our University's Outreach and Engagement.

### **Highlights from UNC-GA Data Template**

Employment in the fire fighting occupations is expected to grow by 12 percent during this decade. A trend is for more volunteer units to be transformed into professional organizations. Greater urbanization is resulting in a need for more fire protection professionals. This would be the only degree of its kind in North Carolina. In the past three years UNCC has established four baccalaureate, three master's, and one doctoral program and has discontinued one baccalaureate and six masters programs.

### **Outcome of Consultation with Disciplinary Panel**

Topics addressed during the videoconference included availability of resources, employer interest in the program, and the current UNCC baccalaureate program that is offered via distance education. The city of Charlotte is very supportive of the proposed program, making its training facilities and equipment available to the program. UNCC has substantial resources to support the program, including sophisticated equipment and instruments that are generally unique for a university campus. Among other things, the program will help prepare faculty to teach in the 11 community college programs in fire safety and protection.

### **Student Demand**

The program projects full enrollment of the program in its fourth year will be 15 -20 students. Surveys by UNCC have yielded hundreds of responses indicating student interest in the program.

### **Opportunities for Graduates of the Program**

Employers of fire protection professionals have difficulty recruiting enough qualified fire protection professionals. The needs in both the private and public sectors of NC and the Southeast provide unique opportunities for the program, including outreach and collaboration with local, state, and regional fire and emergency services organizations. The Society of Fire Protection Engineers has documented the shortage of professionals in the western and southern US where there are no fire protection and administration programs.

### **Resource Implications**

**Resource needs:** Primary resource needs will be for three new faculty positions over the next four years to support growth of the program.

**Resources allocated:** In recent years UNCC has purchased a variety of state-of-the-art technology to support such a program, and the city of Charlotte has offered its fire training facilities for use by the program. The department has a well-qualified pool of adjunct faculty and faculty associates who will take on some of the undergraduate program delivery.

**Estimated cost to the State:** Based on the University funding formula, when the program reaches full enrollment, UNCC would receive additional State appropriations of approximately \$297,766 if fully funded by the General Assembly.

### **Recommendation**

It is recommended that the Board of Governors approve UNC Charlotte's request to establish a Master of Fire Protection and Administration degree program (CIP 43.0299) subject to the availability of funding.

## General Information Template for Academic Program Review

### **Degree Area and Level:**

Master of Fire Protection and Administration at UNC Charlotte (CIP 43.0299)

### **Addressing UNC Tomorrow:**

This proposed program would address several Recommendations within the UNC Tomorrow Report including the components to enhance Our Communities and Their Economic Transformation (Recommendation 4.4), and Our University's Outreach and Engagement (Recommendation 4.7).

### **Role of Program in Relation to State and Regional Needs:**

According to this proposal, "This will be the first graduate degree of this type in the state and region; as such, it is expected to draw students from across the southeastern United States. Many practicing fire protection professionals have no easily accessible advanced degree opportunities because of the lack of a program in this region of the country. It is expected that the UNC Charlotte MFPA degree recipients will be recruited by the major businesses and industries from across North Carolina and all areas of the United States."

### **US Labor Department Analysis:**

- *Summary* – Employment of workers in fire fighting occupations is expected to grow by 12 percent over the 2006-2016 decade, which is as fast as the average for all occupations. Most job growth will stem from volunteer fire fighting positions being converted to paid positions. In recent years, it has become more difficult for volunteer fire departments to recruit and retain volunteers. This may be the result of the considerable amount of training and time commitment required. Furthermore, a trend towards more people living in and around cities has increased the demand for fire fighters. When areas develop and become more densely populated, emergencies and fires affect more buildings and more people and therefore require more fire fighters.

### **Availability of Program Statewide (Enrollment and Degrees Awarded in Last 3 Years):**

- *Public universities* – Not available.
- *Private universities* – Not available.

### **Available or not from Academic Common Market:**

Not available.

### **UNC Charlotte Campus enrollment and degrees awarded in similar programs at the Masters level:**

(Based on two CIP digits – 43 CIP is the summary group for Protective Services under which Fire Protection and Administration is a program.)

| Enrollment |                                    |    | Academic Year |           |            |           |            |           |            |
|------------|------------------------------------|----|---------------|-----------|------------|-----------|------------|-----------|------------|
|            |                                    |    | Fall<br>06    | Spr<br>07 | Fall<br>07 | Spr<br>08 | Fall<br>08 | Spr<br>09 | Fall<br>09 |
| UNCC       | Criminal<br>Justice/Safety Studies | MS | 34            | 30        | 29         | 24        | 24         | 23        | 16         |

| Number of Degrees Awarded |                                    |    | Academic Year |           |           |
|---------------------------|------------------------------------|----|---------------|-----------|-----------|
|                           |                                    |    | 2006-2007     | 2007-2008 | 2008-2009 |
| UNCC                      | Criminal<br>Justice/Safety Studies | MS | 14            | 11        | 11        |

***Campus Average of enrollment and degrees awarded in this degree area at the Masters level:***  
*(Based on two CIP digits – 43 CIP is the summary group for Protective Services is a program under which Fire Protection and Administration is a program - over the last 3 Academic Years, Fall 2006-Fall 2009.)*

| <b>Campus Average</b> |                              |                            |                             |
|-----------------------|------------------------------|----------------------------|-----------------------------|
|                       | Number of<br>Active Programs | Enrollment per<br>Semester | Degrees Awarded<br>per Year |
| ASU                   | 1                            | 25                         | 10                          |
| ECU                   | 1                            | 58                         | 14                          |
| FSU                   | 1                            | 23                         | 2                           |
| NCCU                  | 1                            | 48                         | 9                           |
| UNCC                  | 1                            | 26                         | 12                          |
| Campus Average:       |                              | 36                         | 9                           |

***UNC Charlotte Campus Degree Programs added in the past three years:***

- *Bachelor*
  - BA Special Education, General Curriculum (03/20/2009)
  - BS Systems Engineering (09/07/2007)
  - BS Respiratory Therapy (05/11/2007)
  - BS Public Health (03/16/2007)
- *Master*
  - MUD Urban Design (06/13/2008)
  - MA Latin American Studies (02/09/2007)
  - MS Bioinformatics (05/11/2007)
- *Doctoral*
  - PhD Nanoscale Science (01/12/2007)

***UNC Charlotte Campus Degree Programs discontinued in past three years:***

- *Bachelor*
  - BA Special Education (03/20/2009)
- *Master*
  - MEd Special Education, Cross-Categorical Disabilities (03/20/2009)
  - MEd Special Education, behavioral-Emotional Handicaps (03/20/2009)
  - MEd Special Education, Mental Handicaps (03/20/2009)
  - MEd Special Education, Learning Disabilities (03/20/2009)
  - MEd Special Education, Severe and Profound Handicaps (03/20/2009)
  - MA Art Administration (03/20/2009)
- *Doctoral*
  - N/A