**Request by University of North Carolina at Chapel Hill to
Plan a Doctoral Degree Program in American Studies**

Introduction
This is a request from the University of North Carolina at Chapel Hill to plan a doctoral degree program in American Studies (with a master's degree in American Studies conferred along the way) (CIP: 05.0102).

Program Description
American Studies is a nationally and internationally recognized field, comprising the interdisciplinary study of American culture. The object of study is American culture in all its diversity, and the methodologies include historical, literary, and visual analysis as well as ethnography, sociology, economics, and political science as appropriate. The American Studies Department at UNC-CH has a distinguished faculty, including tenured and tenure-track appointments of five full professors, two associate professors, and four assistant professors as well as three jointly appointed full professors and more than three dozen affiliated faculty with primary appointments in other departments. With these strong resources, the American Studies Department already has the standing to offer a nationally competitive graduate program. Students will take courses in American Studies and other disciplines and will develop "fields" that reflect special strengths at UNC-CH: Southern Studies, American Indian Studies, Folklore, and material culture, as well as American History, literature, visual culture, ethnography, and social sciences. Graduate students will be able to focus their educational programs according to their individual interests and will be strong candidates for positions in college teaching as well as for jobs in educational innovation, archives, museums, foundations, and other related fields.

The American Studies Department is already the home for UNC's long-standing and successful MA degree in Folklore. The Folklore MA will continue to be offered. Some students who receive the Folklore MA may apply for admission to the doctoral program in American Studies, and will be evaluated for admission alongside other candidates. Receipt of the Folklore MA will not guarantee admission to the American Studies doctoral program.

Students will be admitted directly into the doctoral program in American Studies. Applicants do not need a master's degree prior to admission to the program. The MA degree in American Studies is typically earned at the end of the fourth semester, but students planning to earn a terminal Master's degree will not be admitted to the program. Students admitted with an MA in a related field such as Folklore will take some additional core courses as they progress toward the American Studies PhD Students will complete specified course work, write a third-semester paper as a thesis option, present a teaching portfolio, take comprehensive examinations, defend a dissertation prospectus, and write and defend a PhD thesis. We anticipate that all requirements can be completed by the end of the student's fifth year.

UNC Tomorrow Relevance

American Studies as an academic program fits centrally in the liberals arts. UNC Tomorrow made a point that with the attention on so many pressing health, education, and STEM needs, the role of the liberal arts should not be lost. This proposal has a unique feature of integrating the perspective of American Studies programs in other countries into its curriculum and to seek international partners and collaborators.

Disciplinary Panel

The disciplinary panel was composed of representatives from UNC Chapel Hill, faculty from ASU and ECU, and representatives from General Administration. The conversation was primarily about the program, the major focus areas, the issue of the teaching portfolio and the kinds of collaboration that might be possible.

Response

The program addressed the questions why us and why now. The case was presented that the American Studies Department and its faculty are highly regarded throughout the profession and the faculty along with the library resources are already in place to offer a doctoral program in American Studies. The interdisciplinary nature of the program was emphasized. In addition to the eleven program faculty and three joint appointments, there are a large number of adjunct and affiliated faculty throughout the university. It makes the program much broader than a typical departmental program. Among the areas of focus are Southern Studies, Folklore, African American Studies, Native American populations, Latino Studies, material cultural, history, literature, and Global American Studies. Much of the work of the program would focus on underserved populations.

The program plans a teaching portfolio for each graduate student in which they would collect samples of their research and teaching as they go through the program. The issue was raised about another kind of portfolio for students who may be headed toward museum work, and program representatives indicated they would explore that option.

It became clear that the work of the department is highly collaborative within and without the university and that there will be opportunities to work with faculty and programs on other UNC campuses. For example, the potential connection between Appalachian Studies at ASU and this program was discussed, and ideas for collaboration will be explored.

This would be a relatively small program admitting only about five students per year.

This would be the only doctoral program in American Studies in the University of North Carolina or in North Carolina.

Student Demand

The program reports that there are regular inquiries to the department from students wanting to know about the doctoral program in American Studies. There are two American Studies undergraduate programs (UNC-CH, UNCP), a certificate program at

ECU, and a range of programs that could feed the programs, such as Appalachian Studies, African American Studies, and American Indian Studies. This is in addition to students from the core humanities and social science programs across the University of North Carolina.

The interest in American Studies appears to be growing according to survey work done by the American Studies Association, and a large portion of those students plan to attend graduate school.

Opportunities for Graduates of the Program
One direction is to prepare students for careers in teaching or research in the field. There are a range of employment opportunities outside universities in museums, cultural resources management, archives and records management, and public heritages projects, for example. A recent survey found that 66% of departments expect to hire and that there are expected to more than a 1,000 positions opening over the next five year for American Studies graduates.

Resource Implications
Resource Needs: The primary needs are a strong faculty and a first-rate library. UNC-CH has both.

Funding for the Program: A faculty of distinction and size adequate for a doctoral program exists at UNC-CH. The library holdings are outstanding, with such special collections as the Southern Historical Collection, the North Carolina Collection, the Southern Folklife Collection, and the Documenting the American South project.

Estimated Cost to the State Based on the University Funding Formula: Based on the estimated enrollment in the program it is expected that the program will generate approximately $450,000 in state resources. This is a very rough estimate and a more accurate estimate can be provided at the stage of a request for program approval.

Recommendation
The staff of General Administration recommends that the Board of Governors approve the request from the University of North Carolina at Chapel Hill to plan a doctoral degree program in American Studies.

Approved to Be Recommended for Planning to the Committee on Educational Planning, Policies, and Programs

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Senior Vice President for Academic Affairs   **December 15, 2009**

General Information Template for Academic Program Review

Degree Area and Level:
MA and PhD in American Studies (CIP 05.0102) at UNC Chapel Hill

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), and Our University's Outreach and Engagement (Recommendation 4.7).

Role of Program in Relation to State and Regional Needs:
The proposal referenced the <u>Report of the Interdisciplinary Task Force</u> of the American Association of Universities (2005) which found the growth in number and complexity of interdisciplinary programs "reflects the need for new combinations of disciplinary knowledge and research methods to solve new and complex problems, and the educational value for students of analyzing important issues from multiple perspectives." According to the proposal graduates of this program, "will bring these skills to academic and other employment, putting them at the forefront of educational innovation. Although the economic downturn of 2008-2009 is causing many institutions to examine their priorities, the proposed Ph.D. program, and the graduates it will produce in the middle of the second decade of the twenty-first century, will be well-positioned to claim employment opportunities in both traditional and new academic programs, centers, and institutes as the economy opens up again."

US Labor Department Analysis:
- *Summary* – No summary is provided for this CIP cluster.

Availability of Programs 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 Chapel Hill Degree Programs added in the past three years:
- Bachelor
  - BA English – joint with the National University of Singapore (03/16/2007)
  - BA Archaeology (09/07/2007)
  - BA Economics – joint with the National University of Singapore (01/11/2008)
- Master
  - MS Disaster Management (03/16/2007)
  - MS Neurobiology (11/09/2007)
  - MMDS Molecular Diagnostic Science (06/13/2008)
  - MS Clinical Research (06/13/2008)
  - MA German Studies – joint with Duke University (06/13/2008)
- Doctoral
  - PhD Bioinformatics and Computational Biology (11/09/2007)
  - PhD German Studies – joint with Duke University (06/13/2008)

UNC Chapel Hill Degree Programs discontinued in past three years:
- Bachelor

- **BA Russian & East European Studies (03/20/2009)**
- *Master*
  - MA Romance Languages and Literatures (03/20/2009)
  - MA Romance Languages and Literatures, Italian Literature (03/20/2009)
  - MA Romance Languages and Literatures, Spanish Literature (03/20/2009)
  - MA Romance Languages and Literatures, Spanish-American Literature (03/20/2009)
  - MA Geological Sciences (05/09/08)
  - MS Speech and Hearing Sciences, Speech and Language Pathology (05/09/08)
- *Doctoral*
  - PhD Romance Languages and Literatures, French Language and Literature (03/20/2009)
  - PhD Romance Languages and Literatures, Italian Language and Literature (03/20/2009)
  - PhD Romance Languages and Literatures, Spanish Language and Literature (03/20/2009)
  - PhD Romance Languages and Literatures, Spanish-American Language and Literature (03/20/2009)
  - PhD Romance Languages and Literatures, Romance Philology (03/20/2009)

**Request to Plan a Doctoral Degree Program in Bioinformatics
at The University of North Carolina at Charlotte**

Introduction
This is a request from the University of North Carolina at Charlotte to plan a doctoral program in Bioinformatics and Computational Biology (CIP: 26.1103).

Program Description and Background
The life sciences have changed dramatically in the last two decades. Initially, the widespread use of high-throughput technologies to generate massive databases has caused biology to become, to a great extent, an information-driven science. Now, more generally, computation is at the heart of all leading edge biological science. *Bioinformatics* and *Computational Biology* are disciplines that have emerged in response to the need to utilize these new complex datasets to help solve difficult, important biological problems. The recent announcement of success with next generation single molecule sequencing technologies (i.e., *Science*, April 4, 2008) will greatly increase these needs.

In 2000, the National Institutes of Health formed a committee to develop working definitions of these terms (http://www.bisti.nih.gov/CompuBioDef.pdf). The Committee offered the following definitions, recognizing that no definition could completely eliminate overlap with other activities:

Bioinformatics: *Research, development, or application of computational tools and approaches for expanding the use of biological, medical, behavioral or health data, including those to acquire, store, organize, archive, analyze, or visualize such data.*

Computational Biology: *The development and application of data-analytical and theoretical methods, mathematical modeling and computational simulation techniques to the study of biological, behavioral, and social systems.*

Campus History
Recognizing the critical importance of Bioinformatics and Computational Biology to 21st Century science and technology, UNC Charlotte requested and received $35M from the North Carolina State Legislature to build a Bioinformatics building on campus. This building, which was accepted in the Fall of 2009 has over has over 70,000 g.s.f for offices, wet labs, computational labs, and instructional space. In 2005, UNC Charlotte established a Bioinformatics Research Center (www.bioinformatics.uncc.edu) (BRC) that now has over 25 faculty members from Computer Science, Biology, Physics, Kinesiology, Chemistry, and Mathematics and Statistics. At the same time, UNC Charlotte began hiring outstanding scientists for the Bioinformatics Division of the Department of Computer Science, within the College of Computing and Informatics. Currently, there are eight such faculty and four more are being recruited in the 2007-08 academic year. A new department was formed within the College of Computing and Informatics around these faculty in 2005. Within five years, we expect this new department will grow to approximately 25, bringing the total number of faculty in the BRC to nearly 60.

Three years ago, the College of Computing and Informatics reorganized its Information Technology (IT) Ph.D. program into distinct tracks, each with its own steering committee, student admissions committee, and curriculum. The Bioinformatics Track now has 18 Ph.D. students enrolled and expects to add five additional students in the fall of 2008. In developing the Bioinformatics Track, UNC-C has established a comprehensive curriculum, including 15 new didactic courses in bioinformatics and computational biology. They have also instituted policies and procedures for student evaluation, advancement to doctoral candidacy, and thesis proposal and defense. Currently four students have passed their qualifying examinations, and three are completing the final work on their dissertations.

UNC Tomorrow Relevance
The proposed Ph.D. in Bioinformatics and Computational Biology is connected to a number of University goals, including those which a) increase the number of Ph.D. programs in high demand fields, b) extend the campus infrastructure supportive of research, c) help the University reach "Doctoral/Research University – Extensive" status by 2010, d) and increase both faculty and student research that will address regional problems.

The proposed Ph.D. is also closely aligned with the recommendations of the UNC Tomorrow Commission, especially with regard to job creation and meeting health needs. It is in an inherently interdisciplinary field that will help foster collaborative research and educational efforts within a number of existing programs, and will help attract outstanding students and extramural funding. The development of a Ph.D. in Bioinformatics and Computational Biology is well aligned with the commitment to develop applied sciences and technologies in the Charlotte area. The region is well on its way to becoming a major biotechnology center in the State with the development of the North Carolina Research Campus (NCRC) at Kannapolis. The expertise provided by this program is critical in a wide range of biotechnology research problems and applications, from genomics to health care and beyond.

Disciplinary Panels
A disciplinary panel was convened in November 2009 to address the request from UNC-C for this new PhD. Program. Participation was from UNC-GA, UNC-C, ECU, ASU, UNC-CH and NCSU. UNC-C has been moving quickly into the field of bioinformatics. In less than five years they established funding for a new building, formed a new department and hired new faculty and staff. Their program carved a niche different from programs at UNC-CH and NC State that focus in human genomics and statistical genetics, respectively. This program is more computationally based. The program of study and courses are largely in place as a result of the Bioinformatics concentration in Information Technology that currently enrolls 18 PhD. students.

There is widespread support for the program as there is a shortage of Bioinformatics professionals, and the program complements other programs in the system.

Response
The institution had well prepared documentation and excellent responses to all issues raised at the panel.

Student Demand
The strongest indication of future student demand has been UNC-C's success in attracting outstanding student to the existing Bioinformatics Track. They currently have 18 Ph.D. students and will admit five more in the Fall of 2008.

UNC-C employs a full-time Graduate Coordinator (Ms. Elise Marshall) to answer the very substantial number of inquiries from potential students and arrange interviews. In addition, Ms. Marshall will be travelling to many colleges and universities in the region to recruit outstanding students. Indeed, on a recent visit to North Carolina A&T, she signed up 12 biology/math/computer science students to visit UNC-C's graduate open-house event.

The strong student demand observed is mirrored in the other institutions in our State. The Bioinformatics and Computational Biology program at Chapel Hill had 49 applicants for the 2007-08 year, but only 7 could be enrolled. Last year, NCSU's program received 210 applications for only 10 positions, and Duke reported receiving 85 applications for only 8 positions. Clearly, there is a strong student demand that is not being met by the current programs in our State.

Opportunities for Graduates of the Program
North Carolina is widely regarded as third in the nation (behind CA and NY) in the biotechnology sector and demand is expected to grow. Current surveys indicate bioinformatics is in the highest demand of all science fields.

Resource Implications
Very few new resources are needed to develop this program due to recent investments by UNC-C. As noted earlier in the *Campus History* section of this document, UNC-C has taken steps to develop the infrastructure, personnel, fiscal and student service needs required for a viable program.

Day-to-day operation of the program will be overseen by the Graduate Coordinator, Ms. Elise Marshall, who also oversees the recently established Professional Science Master's Degree in Bioinformatics at UNC-C. These tasks involve student recruitment, initial review of applications, maintenance of student records, tracking student progress, and assistance with job placement. No additional staffing will be required for this program.

UNC-C is committed to expand current faculty of eight to 25 over the next few years. Moreover, the campus finds that faculty from other departments such as Chemistry, Physics, and Biology wish to mentor Ph.D. students in Bioinformatics and Computational Biology. The number of potential faculty mentors for these students will reach 50 by 2013. This will be adequate for the program.

The current Bioinformatics Track within the IT Ph.D. program currently has funding for full time stipends for about 14 students. These amounts seem sufficient for the proposed program.

UNC-C's goal is to attain an NIH pre-doctoral training grant (T32) in the next 5-8 years. The critical criteria are 1) an outstanding US applicant pool, 2) training faculty with a

strong record of extramural (esp. NIH) funding, and 3) excellent publication and placement record. A number of UNC-C faculty now have NIH grants, and the institution is actively working on increasing this funding stream.

Estimated Cost to the State Based on the University Funding Formula: Based on the estimated enrollment in the program it is expected that the program will generate approximately $600,000 in state resources. This is a very rough estimate and a more accurate estimate can be provided at the stage of a request for program approval.

Recommendation
UNC-C now offers a similar program as a concentration where student demand is high and employer interest is also high. This program fits with UNC-C mission and is appropriate. Approval of a recommendation for planning a doctoral program means the campus is authorized to develop a full proposal to establish a doctoral program and present it to the Board for approval before the new doctoral program can be implemented.

The staff at General Administration recommends that the Committee on Educational Planning, Policies, and Programs approve the request from UNC-C to plan a doctoral program in Bioinformatics and Computational Biology.

Approved to be Recommended for Planning to the Committee on Educational Planning, Policies, and Programs

Senior Vice President for Academic Affairs   **December 15, 2009**

General Information Template for Academic Program Review

Degree Area and Level:
 Ph.D in Bioinformatics & Computational Biology (CIP 26.1103)

Addressing UNC Tomorrow:
 The Ph.D in Bioinformatics & Computational Biology degree program directly applies to UNC Tomorrow Recommendation 4.1.2 that states, "UNC programs, especially research programs, should be globally competitive to ensure that they are globally relevant and significant."

Role of Program in Relation to State and Regional Needs:
 According to the proposal, the Charlotte region "is well on its way to becoming a major biotechnology center in the state with the development of the North Carolina Research Campus (NCRC) at Kannapolis. The expertise provided by this program is critical in a wide range of biotechnology research problems and applications, from genomics to health care and beyond." In 2005, the North Carolina General Assembly granted the request from UNC Charlotte for $35 million to build a Bioinformatics building on their campus.

US Labor Department Analysis:
 - *Summary* - The computer scientists and database administrator's occupation is expected to grow 37 percent from 2006 to 2016, much faster than average for all occupations. Employment of these computer specialists is expected to grow as organizations continue to adopt and integrate increasingly sophisticated technologies. Job increases will be driven by very rapid growth in computer systems design and related services, which is projected to be one of the fastest growing industries in the U.S. economy.
 http://www.occsupplydemand.org/OSD_UnitOfAnalysis.aspx?CLUSCODE=110B-11&ST=NC&PathNo=1

Availability of Program Statewide (Enrollment and Degrees Awarded in Last 3 Years):
 - *Public universities* – The program at UNC-CH was BOG approved on 11/09/07.

Enrollment			Academic Year						
			Fall 05	Spr 06	Fall 06	Spr 07	Fall 07	Spr 08	Fall 08
NCSU	Bioinformatics	PhD	45	40	40	36	39	35	34
UNC-CH	Bioinformatics and Computational Biology	PhD	N/A	N/A	N/A	N/A	N/A	N/A	1

Number of Degrees Awarded			Academic Year		
			2005-2006	2006-2007	2007-2008
NCSU	Bioinformatics	PhD	6	7	9

- Private universities – The data below was found on the Duke University Graduate School website for their Ph.D in Computational Biology & Bioinformatics.
http://gradschool.duke.edu/about/statistics/admitbgt.htm

		Academic Year			
		2005-2006	2006-2007	2007-2008	2008-2009
Duke University	Enrollment	20	26	28	18
	Number of Degrees Awarded	N/A	1	2	N/A

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

Available or not from Academic Common Market:
Not available.

UNC Charlotte Campus enrollment and degrees awarded by similar programs:
(Based on two CIP digits – 26 CIP is the summary group for Biological and Biomedical Sciences under which Bioinformatics is listed as a program.)

Enrollment			Academic Year						
			Fall 05	Spr 06	Fall 06	Spr 07	Fall 07	Spr 08	Fall 08
UNC-C	Biology/Biological Sciences, General	PhD	25	22	23	22	24	26	29

Number of Degrees Awarded			Academic Year		
			2005-2006	2006-2007	2007-2008
UNC-C	Biology/Biological Sciences, General	PhD	4	3	2

Campus Average of enrollment and degrees awarded in this degree area:
(Based on two CIP digits – 26 CIP is the summary group for Biological and Biomedical Sciences under which Bioinformatics is listed as a program - over the last 3 Academic Years, Fall 2005-Fall 2008)

Campus Average			
	Number of Active Programs	Enrollment per Semester	Degrees Awarded per Year
ECU	8	12	1
NCSU	13	23	4
UNC-C	1	24	3
UNC-CH	14	55	8
UNC-G	1	7 in Fall 2008	N/A
UNC-W	1	11	1
Campus Average:		22	3

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