

**The University of North Carolina at
Charlotte**

**Doctor of Philosophy in
Geography and Urban Regional Analysis**

**Request for Authorization
to Plan**

Appendix B

The University of North Carolina Request for Authorization to Plan a New Doctoral or First Professional Degree Program

THE PURPOSE OF ACADEMIC PROGRAM PLANNING: Planning a new academic degree program provides an opportunity for an institution to make the case for need and demand and for its ability to offer a quality program. Authorization to plan, and the planning activity to follow, do not guarantee that authorization to establish will be granted. Requests (5 copies) may be submitted annually, by October 1 of each year.

Date September 30, 2004

Constituent Institution: University of North Carolina at Charlotte

CIP Discipline Specialty Title: Geography

CIP Discipline Specialty Number: 45.0701 Level: D 1st Prof.

Exact Title of the Proposed Degree Ph.D. in Geography and Urban Regional Analysis

Exact Degree Abbreviation (e.g. Ph.D.,Ed.D.): Ph.D.

Does the proposed program constitute a substantive change as defined by SACS? Yes No

a) Is it at a more advanced level than those previously authorized? Yes No

b) Is the proposed program in a new discipline division? Yes No

Approximate date for submitting the Request to Establish proposal (must be within two years of date of authorization to plan): October 1, 2005

Proposed date to establish degree: month August year 2006 (Date should allow at least three months for review of the request to establish, once submitted.)

1. Describe the proposed new degree program. The description should include:

a) a brief description of the program and a statement of educational objectives

The Proposed Ph.D. in Geography and Urban Regional Analysis builds philosophically upon the most successful components of the nationally recognized and highly successful Master of Arts in Geography offered by the Department of Geography and Earth Sciences. During the past 33 years, the Department has offered a unique applied geography master's degree focused on economic and urban related issues in the metropolitan context. In practice, the emphasis on applied geography has simultaneously trained hundreds of policy-oriented geographers who have worked as public and private sector professionals, while, at the same time, enabling the faculty and graduate students to be involved in a broad range of community-oriented research issues in the Charlotte metropolitan region. The thrust of the master's curriculum capitalized on the complex economic, spatial, and social characteristics of this region, using it as a laboratory that pedagogically linked teaching, research, and service. As a result, geography at UNC Charlotte is well positioned as an engaged partner in ongoing spatial analyses of the region.

Building upon the accomplishments and infrastructure that have developed around the applied master's program, the UNC Charlotte graduate geography faculty are prepared to extend the current level of graduate training to the doctoral level. The proposed instructional program draws upon the current research strengths of the faculty, research funding streams, and the technical and structural advances in the science of geography. The proposed Ph.D. in Geography will be positioned around the theoretical and applied analysis of metropolitan areas and their broader regional, national and global contexts. At the core of this program is the recognition that cities are engines and products of multi-scalar interactions, and that understanding these urban dynamics necessitates rigorous theoretical, conceptual and applied study. Within this framework, two thematic research clusters will be offered:

- i. Spatial Analytical Studies (SAS)
- ii. Geographic Information Science and Technology (GI S&T)

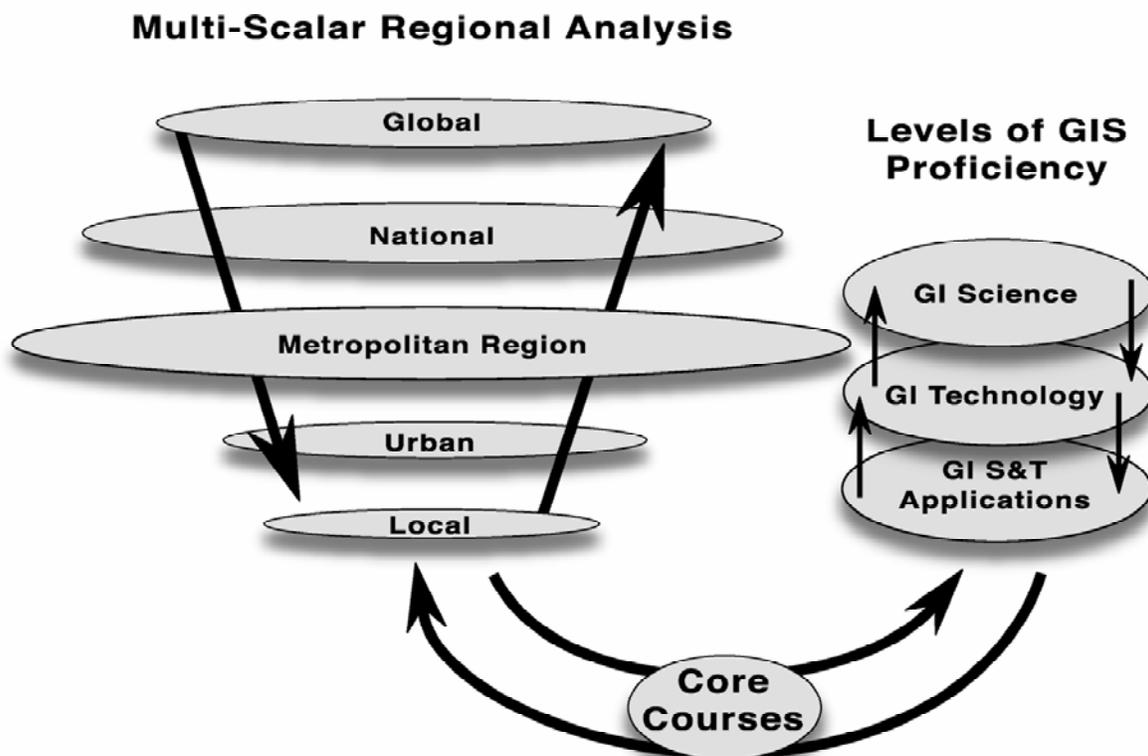
By focusing their topical attention on urban and regional issues, these two clusters complement and intersect one another in ways that ensure a clearly defined programmatic focus. The two clusters provide analytical, theoretical and pedagogic framework to the research expertise and technical specialization for students trained in the program. Current geography faculty already have active research programs in these areas and the Ph.D. program would enable the faculty to expand the scope of current research and teaching agendas, as well as increase their external funding options. The proposed program represents an extension and strengthening of current research streams and graduate program strengths.

Spatial Analytical Studies

The ability to provide the synthesis needed to solve place-specific problems at a number of geographic scales is one of the most significant contributions that geographers make to public policy and the advancement of social science research. The Spatial Analytical Studies cluster will focus on a broad set of research questions germane to the study of metropolitan areas and the broader regions in which they are embedded. The nature of that contribution is theoretically expressed in Figure 1. The two-directional arrows in Multi-Scalar Regional Analysis (left side of diagram) indicate connections and influences that operate reciprocally

across a continuum from global to local scales. A myriad of societal issues, including economic development, technology transfer, demographic and political change, and quality of life issues are linked across these scales. Metropolitan regions, with their connections to economic, social and political systems at every scalar level, and with their capacity for innovation and response to change, lie at the geographic intersection of those dynamics. Indeed, the hierarchy of spatial scales represents a conduit for structural adjustments that accompany change. The importance of spatial issues is critical in the context of economic and social globalization processes and evolving patterns of political restructuring. Metropolitan regions are at the nexus of these processes.

Figure 1. Ph.D. in Geography and Urban Regional Analysis



The Spatial Analysis Studies concentration will focus on a strong theoretical and methodological grounding in urban and regional economic and population analyses. In response to a rapidly changing demographic and economic landscape, this concentration will prepare students for careers in the public or private sectors as well as academia. Coursework and specializations would include, but not be limited to, the study of the roles of capital (both financial and human), innovation, race, ethnicity and citizenship, transportation, and government in urban and regional development patterns, housing and labor markets, facility location, and urban and regional analysis techniques. While this concentration will have a

strong quantitative and modeling orientation, studies will also pursue more qualitative approaches where appropriate.

Geographic Information Science and Technology

The proposed program's second research cluster, Geographic Information Sciences and Technology (GI S&T), reflects a nested hierarchy of Geographic Information Systems (GIS) applications, Geographic Information Technology (GIT) development, and the expansion of technologies via innovations in Geographic Information Science (GI Science). The applications level features practical GIS operations, including the development of GIS coverages, data sets and the ability to store, retrieve and manipulate GIS data and tools in a problem-solving research environment. A broad array of multi-scaled economic, demographic, land use, and environmental data have begun to be hosted and operationally maintained in the Department's recently established Center for Applied Geographic Information Science. This level of fundamental training will be required of all students in the proposed Ph.D. Program. It is worthy of note that the Department of Geography and Earth Sciences was recently invited to join the University Consortium of Geographic Information Science, a national group of educators, researchers and developers in the GIS field. In the Carolinas, only UNC Chapel Hill and the University of South Carolina are members of this elite and selective group.

The next technical level, GIT, would focus on development and training in technological initiatives such as 3-D visualization, GIS modeling, multi-attribute assessment, and spatial decision support systems. Students seeking Ph.D.-level training in these specializations would pursue coursework at this advanced level. A number of national and metropolitan regional analysis applications lend themselves to GIT capabilities. Among them are regional economic planning and forecasting, land use and transportation modeling, and the rapidly evolving field of homeland security. The latter two issues are logically linked with UNC Charlotte's Center for Transportation Policy Studies and the proposed Regional Institute for Homeland Security. Both are affiliated with the Department of Geography and Earth Sciences. Finally, the GI Science level would further the advancement of models, expanded applications, and sophisticated technologies for future GIS architecture and platforms. The symbiotic relationships among the levels of Geographic Information Sciences and Technology (GI S&T) are apparent: each level addresses the need for more robust GIS tools and the technical solutions that accompany their development. Similarly, analytical capacity derived from GI S&T informs and instructs research questions that are pursued in the Spatial Analytical Studies cluster that comprises the topical thrust of the urban regional analysis Ph.D. program.

Educational Objectives

The proposed doctoral program in geography and urban regional analysis will bridge the theoretic and applied realms that are ascribed by modern geographic science. Over the past ten years, the discipline of geography has increasingly moved toward a paradigm that draws together strong theoretic tenets with geo-spatial technologies. Within this framework, the proposed Ph.D. program will focus on a subset of geographic research and graduate training to the extent that the program will examine human processes and interactions in a metropolitan context.

In narrowing the specialties of the program to spatial analytical studies and geography information science and technology, the faculty has chosen to build on the strength of the existing master's program, as well as extend their currently active research programs. The research clusters within the program, along with UNC Charlotte's setting in a dynamic metropolitan region, provide students with the opportunity to easily engage in research with theoretic rigor, while at the same time helping to inform local and state public policy. In this context, strong linkages between the geography faculty and public agencies and businesses in the Charlotte region will facilitate student access to resources and data. Past experience suggests that stipends and funded research opportunities are also available for doctoral students. The programming activities and resources warehoused in the Center for Applied Geographic Information Science, especially the regional databases, strengthen the opportunities for Charlotte-centered research programs.

The underlying mission for the proposed program is to train doctoral-level geographers for employment in the academy, as well as for research positions in the public and private sectors. The need for university-level faculty in the two research clusters has been extremely strong and sustained over the past several years. Beyond higher education, government and businesses are increasing their share of doctoral-trained geographers in the applied areas of spatial analysis and geographic information science and technology. UNC Charlotte's reputation for offering strong master's degree students in these areas will enhance doctoral student placement following completion of the degree.

Owing to the mission and focus, the core curriculum for the proposed program will include common theoretic and techniques courses. The theoretic component will provide broad training in the discipline of geography, and will offer particular emphasis on human-economic theory and urban and regional development. Students will be equipped to examine and interpret empirical evidence through the lens of contemporary theory and innovative research paradigms. Students in both research clusters will develop the analytical capabilities necessary to carry out field-based research and understand pedagogical issues around urban/metropolitan data.

Common techniques courses will include several areas of geo-spatial analysis and technology. Among these courses are GIS, spatial modeling, spatial econometrics, spatial statistics, and advanced quantitative methods. These courses will engage students with methodologies and skill building that will enable them to operationalize theory. By pairing technology and theory in the core curriculum, the program seeks to train a doctoral graduate who is both grounded in an understanding of metropolitan processes and who has the capacity to build from empirical data and scientifically grounded answers to research questions. Ultimately, this "cross-trained" graduate is better equipped to offer informed research judgments and is a stronger professional in seeking employment.

b) the relationship of the proposed new program to the institutional mission and how the program fits into the institution's strategic plan

Over the past three decades, the geography faculty has built a nationally recognized Master of Arts program, with emphases in urban and regional analysis; location analysis; and community and regional planning. Within those programmatic thrusts, the Department's long-standing integration of teaching, research and service missions connected its curriculum with the broader community in a number of demonstrated ways. The Charlotte region's dynamic economic, environmental, institutional, and social landscapes provided abundant

opportunities for the department to translate a real-world problem-solving academic philosophy into practice. That practice also helped shape the University's teaching, research and service missions as the University and its surrounding urban region grew. As a result, Geography at UNC Charlotte remains well positioned and actively engaged on and off campus.

The Department's performance in the delivery of the master's program and the structure of proposed Ph.D. Program are clearly consistent with the current Mission Statement of the University. Core elements of UNC Charlotte's Institutional Mission Statement are to provide "for the educational, economic, social, and cultural development of the people of North Carolina through . . . continuing personal and professional education opportunities, research, and collaborative relationships with private, public and nonprofit institutions." That statement is pursued further in the campus vision that specifically includes urban and regional development as a key theme. Issues identified in that theme include, but are not limited to, "economic development . . . urban planning . . ." The University is seen as playing a critical role in addressing these issues by: "offering intellectual and technical expertise in each of these areas and . . . solving contemporary problems of the region."

The complexities of the Charlotte Metropolitan Region and its 1.7 million people offer enormous opportunities for applications of the geographic and analytical perspective that the proposed doctoral program will provide. To elaborate, the turn of the 21st century has been a period of stark developmental contrasts borne of the impacts of the de-industrialization of the national economy and a shift to a service sector economy within the region. The collective Charlotte regional community simultaneously experienced nationally prominent rates of urban growth fueled by economic expansion in knowledge, technology and advanced services, while at the same time experiencing the disappearance of economic activities and jobs within the traditional textile mill economy. Outsourcing of service sector employment to cost-efficient overseas venues recently has compounded continuing offshore manufacturing job losses. Such processes continue to test the resilience and sustainability of the economic base simultaneous with a profound cultural change brought by an increasingly diverse population of newcomers from Latin America, Southeast Asia and Eastern Europe. The place-specific nature of geographically uneven development immediately lends itself to spatial analysis that comprehends the complexities of change and yields solutions. The regional focus is not idiographic, but comprises processes that operate across a number of places so that theories, methods and skills acquired in the program have broad applicability.

To respond better to the complexities of a rapidly changing, globalizing world, geographers who possess graduate studies in advanced analytical techniques and who can apply these tools in urban and regional problem solving, are uniquely positioned to contribute to research and policy agendas. The demand for applications-oriented Ph.D. geographers in academic, public sector and private sector organizations has grown significantly in recent years. In particular, the expanded use of Geographic Information Sciences and Technology (GI S&T) for analysis and problem-solving in urban infrastructure, social service provision, natural resource management, and corporate operations has spurred strong hiring patterns for teaching and research faculty in higher education, as well as Ph.D.-level Geographic Information Sciences and Technology (GI S&T) specialists in the non-academic environment. The geographic analysis doctorate at UNC Charlotte would be aligned to fill this professional need.

c) the relationship of the proposed new program to other existing programs at the institution

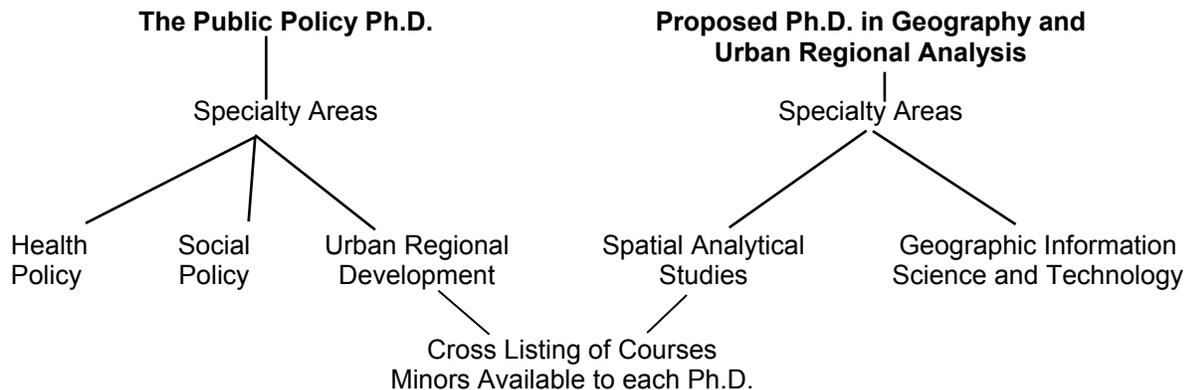
In the development of doctoral programming at UNC Charlotte, strategic decisions to emphasize interdisciplinary and applied Ph.D. programs have been implemented. While the earliest doctoral programs were in education and engineering, two of the most recent Ph.D. programs are in Public Policy, and Infrastructure and Environmental Systems. Both of these programs have had successful starts and cross traditional disciplinary boundaries in the training of applied social and natural scientists.

The proposed Ph.D. in Geography, with the spatial analytical and Geographic Information Sciences and Technology (GI S&T) concentrations, will complement and provide the opportunity for inter-programmatic collaboration between faculty and graduate students. Cross-listing courses between geography, public policy, and infrastructure and environmental systems is expected, and indeed encouraged, and the Ph.D. in Geography and Urban Regional Analysis will function especially well with the three-year-old Ph.D. in Public Policy. The Department of Geography and Earth Sciences has been one of the three cornerstone units supporting the Public Policy Ph.D. (PPOL). In its three-year history, most of the teaching faculty in PPOL have come from Political Science, Sociology and Anthropology, and Geography and Earth Sciences. Of the eleven full-time teaching faculty in Geography, five have taught regularly within the dominant specialty area of PPOL – Urban Regional Development. Of the 30 current students in PPOL, all but 10 are focusing on this specialty area. The Director of the Public Policy Ph.D. since its inception is currently serving as the Chair of the Department of Geography and Earth Sciences.

As can be seen from Figure 2, there would be a strong relationship between the Urban Regional Development Specialty (URD) Area of PPOL and the Spatial Analytical Studies (SAS) track of the proposed Geography Ph.D. While the Geography SAS track would be grounded more in the tools and techniques of spatial analysis, and have a stronger GI Science analytical focus than the PPOL URD Specialty Area, the two would have a common foundation of urban theory and basic urban regional economic development theory. The common thread of basic urban and economic theory would be shared and represents a strong synergy between the two programs. In fact, students in PPOL would have much greater opportunity to pursue more spatial statistics and GI Science technical training once the Ph.D. in Geography and Urban Regional Analysis is in place. As both programs mature, it is likely that minor concentrations in each program (GIS in PPOL; Policy in Geography) will emerge.

Currently, the Department of Geography and Earth Sciences includes 18 geography faculty. The Department is well respected and has collaborative relationships across the College of Arts and Sciences, including the Departments of Political Science, Psychology, Sociology, and Criminal Justice. Active inter-collegiate cooperation exists with the College of Architecture, The William States Lee College of Engineering, The Belk College of Business Administration, and the College of Information Technology. Interdisciplinary doctoral programs in Public Policy and Infrastructure and Environmental Systems are also partners with the Geography faculty. These linkages broaden student access to multi-disciplinary research. In addition, they allow non-geography students the opportunity to apply geographical concepts to diverse research issues that have spatial dimensions.

Figure 2
The Relationship Between The Ph.D. in Public Policy and The Proposed Ph.D. in Geography and Urban Regional Analysis



The proposed Ph.D. program will complement the existing Master of Arts program in Geography and its concentrations in Locational Analysis; Urban-Regional Analysis; Transportation Studies; and interdisciplinary Community Planning. Historically, 10-15 percent of those students completing their master's in geography have gone on to study in Ph.D. programs. Every year, there are inquiries from non-UNC Charlotte students expressing interest in pursuing doctoral studies in geography at UNC Charlotte. The Department of Geography and Earth Sciences is well situated to deliver a strong program that would retain master's students and attract doctoral students from in state and beyond North Carolina.

d) special features or conditions that make the institution a desirable, unique, or appropriate place to initiate such a degree program.

The goals of the proposed Geography and Urban Regional Analysis Ph.D. program enhance UNC Charlotte's mission in the areas of Urban and Regional Development and Applied Sciences and Technology. As such, the program will increase the stature of UNC Charlotte and enhance its ability to meet its obligations within the broader community.

Over the past three decades, the Department of Geography and Earth Sciences at the University of North Carolina at Charlotte has evolved into one of the nation's leading geography programs. In teaching, service and research arenas, geography faculty have consistently been at the vanguard of geographic investigation, pedagogical development, and professional contribution at both the regional and national levels. They serve as journal editors and editorial advisory board members, reviewers for federal funding organizations, officers in professional organizations, and leaders of teaching centers and research units, and are highly productive scholars and effective graduate student mentors.

The UNC Charlotte Department of Geography and Earth Sciences has a faculty that already includes senior members with national and international reputations and junior

faculty with respected degrees and developing records of scholarship in geographic research. The faculty are especially strong in urban and regional analysis, economic geography, community planning, and geographic information systems, and as such the proposed program represents an extension and strengthening of current research streams and graduate program strengths. Establishment of the Ph.D. in Geography and Urban Regional Analysis in this Department would not only enable the faculty to expand the scope and rigor of current research agendas, but would dramatically increase opportunities for external funding in a department whose faculty are already generating over three-quarters of a million dollars annually in geography-related research (not including contracts of the UNC Charlotte Urban Institute that involve departmental faculty). Table 1 provides a summary of Department funding levels for each of the past five years.

Table 1
Total Funding From All Sources
Department of Geography and Earth Sciences
Fiscal Years 1999-2004

Year	Total Funding
1999-2000	\$684,217
2000-2001	\$714,141
2001-2002	\$732,798
2002-2003	\$675,453
2003-2004	\$714,205

In addition to the substantial supply of federal funding (10 to 15%) for advanced analytical geographic research (from sources such as the U.S. Department of the Interior, U.S. Department of Housing and Urban Development, the U.S. Department of Commerce, and the National Science Foundation), there are a wide range of local and regional funding sources that are unique to this area. Grants and contracts from local sources regularly account for \$150,000 of the total funding and have gone as high as \$382,000 in FY 2001-2002. Virtually every major planning agency in the Charlotte urban region requires substantial amounts of geographic research. Much of this funding has been directed to student support and makes a strong statement of the Department's commitment to its already established graduate program. With the establishment of a Ph.D. program in the Department of Geography and Earth Sciences at the University of North Carolina at Charlotte, it is likely that the range of funding sources and level of support will increase as doctoral students become available to lead and staff advanced research efforts.

Beyond local government and non-profit agency support, there are also substantial private sector sources of funding within the region. Large corporations with significant locational decision-making demands, such as retail, financial operations, and real estate development, have slowly but steadily expanded their use of basic geographic research in their decision-making. The prominence of locally headquartered financial, real estate and utility firms suggests strong demand for geographic research from private sector sources. Contract research for private companies would bring the proposed Ph.D. program a unique

set of opportunities for research and data collection and would build upon at least two of the Department's economic specializations in business- and real estate-related research. Research projects under contract to local government, non-profit, and business interests will pave the way for full-time professional employment for graduates of the proposed program within the region.

These funding energies will need to expand to more national or federal sources to sustain the proposed Ph.D. As with the applied character of the M.A. program to date, the emphasis of funding attention and research problem selection will shift to reflect the nature of the level of inquiry that comes with the Ph.D. Our track record with competition for funding offers promise of future success.

While enhanced research productivity and funding is central to the success of any Ph.D. program, so too is its instructional strength and commitment. The proposed Ph.D. in Geography and Urban Regional Analysis builds upon a celebrated tradition of teaching excellence among the geography faculty at UNC Charlotte and the continued expansion of its graduate and undergraduate programs. Since 1973 the Geography faculty have built a nationally recognized Master of Arts program with emphases in urban and regional analysis, locational analysis, and community planning. The graduate program currently hosts about 80 students with demand for places exceeding acceptance on the program. While most of our graduates have proceeded directly into jobs as professional geographers, research and/or spatial marketing specialists, location analysts, planners, transportation specialists, and public and private sector consultants, about 10 percent of the more than 250 graduates have pursued Ph.D. degrees at other institutions.

The success of our undergraduate program is also measured in student growth. We currently have about 100 majors. But success is also measured through recognition of multiple teaching awards. The Department has produced five recipients of The Bank of America Award for Teaching Excellence, and in 1997 the entire Department was awarded the University's Provost Award for Excellence in Teaching. In the same way that our undergraduate program regularly produces students who wish to continue their geographic studies at the master's level at UNC Charlotte, our hope is that the master's program will also yield students interested in pursuing a Ph.D. and remaining with the Department. It is expected that both the local and national reputation of the Department, its faculty and UNC Charlotte more broadly, will draw doctoral students to us from other state, national and international locations.

In addition to building on the existing research and teaching strengths of the Department of Geography and Earth Sciences, the Ph.D. in Geography and Urban Regional Analysis will strengthen and complement efforts currently underway to development strong, research centers at UNC Charlotte. Moreover, the programmatic focus and research products of this new Ph.D., coupled with the Department's development of a Center for the Study of Applied Geographic Information Science and leadership within the Urban Institute, enhance UNC Charlotte's Mission and the Themes for Campus Development in the areas of "Applied Sciences and Technology" and "Urban and Regional Development."

Since 1980, the Department has developed and maintained a state-of-the-art GIS laboratory. This teaching and research facility has grown as new technologies and innovations have propelled GIS into a highly regarded analytical tool. Currently, GIS applications are at the core of many social science and physical science research enterprises.

As a result of departmental research and publication in the GIS area, UNC Charlotte has gained national recognition for our work in this subfield of geographical inquiry and has developed a center for the study of applied Geographic Information Science. This Center will serve as a mechanism for attracting well-prepared researchers to UNC Charlotte who will be supported on non-state funds.

The Department of Geography and Earth Sciences also plays a leading role in the administration and research activities of The UNC Charlotte Urban Institute. The Institute is a non-profit, non-partisan, applied research and consulting services outreach unit of the University of North Carolina at Charlotte. The Institute provides a wide range of services, including technical assistance and training, public opinion surveys, land-use and natural resources consulting, economic development research, and community planning to meet the needs of the region and its citizens.

Many of the grants and contracts within the Urban Institute provide funding for master's-level geography students and, perhaps more importantly, provide valuable research experience that allows for the real world application of skills and theories learned in classrooms. The Urban Institute is now providing funding for three graduate students in the Carolinas Land Conservation Network (funded by the Foundation for the Carolinas, the Cole Foundation, and the Z. Smith Reynolds Foundation). Many of the recently constructed branches of the Public Library of Charlotte and Mecklenburg County have been sited based on faculty work through the Urban Institute. Graduate students have been supported to work on housing deterioration studies for Charlotte's Neighborhood Development Key Business, and for a Quality of Life Study in Charlotte's 173 neighborhood statistical areas. The establishment of a Ph.D. in Geography and Urban Regional Analysis in the Department of Geography and Earth Sciences at UNC Charlotte would be the basis for a synergistic expansion of the geographic analysis and planning activities by the Urban Institute and the involvement of doctoral students as researchers and consultants.

And finally, the proposed Ph.D. in Geography and Urban Regional Analysis is situated not only in the context of departmental excellence but also amidst the well established and strengthening relationship between the University and the rapidly developing Charlotte region. The following factors position the proposed program as a logical extension of the UNC Charlotte mission to offer instructional, research, and public service programs to provide for the educational, economic, social, and cultural advancement of the people of North Carolina in collaborative relationships with the institutional resources of the region:

- ∑ *Mission Statement.* UNC Charlotte is the only institution in the UNC system with a mission focused on an urban region, in this case "the greater Charlotte metropolitan region." (General Statement of Educational Mission, UNC Charlotte). The Department of Geography and Earth Sciences currently has a focus on urban regional analysis and the proposed Ph.D. program would further enhance this focus.

- ∑ *Dynamic Metropolitan Region.* The large and growing Charlotte region will be the source of some students for this Ph.D. program, and its growing employment base will supply the professional positions for some graduates. Of greater importance, however, the region is a rich laboratory for research in

geographic analysis. The dynamic urban setting of UNC Charlotte makes this an ideal place for doctoral-level geographic research.

Σ *Existing Relationships to the Region.* UNC Charlotte has vigorously and successfully pursued a new vision of the role of a University. UNC Charlotte fills the same role in this urban region that the land grant agricultural University filled in rural America. It supplies the educated people needed to run the economic, social, cultural, and political systems of the region. It does hands-on research to solve problems for public and private interests in the region and make life better for the residents of this state. It does basic research that will ultimately be applied to solve urban regional problems. The people of this region—and their leaders—see UNC Charlotte as "their University" and the campus community sees itself as an integral part of the region. Thus the teaching, service, and research provided by UNC Charlotte are all part of a continuum of association with the region. It is anticipated the proposed Ph.D. program in Geography and Urban Regional Analysis will contribute greatly to this continuum.

2. List all other public and private institutions of higher education in North Carolina currently operating programs similar to the proposed new degree program.

At the present time there are two other campuses in the UNC system offering doctoral programs in geography. The University of North Carolina at Chapel Hill has a Ph.D. in geography with programmatic concentrations in biophysical geography and earth systems science, geographic information and analysis, nature-society studies and human-environment interactions, social spaces, and globalization and international development. For the most part, the UNC Chapel Hill program has no overlap in instructional specialties with the proposed doctoral program. The one exception is GIS and the GI Sciences. Both programs would have instructional concentrations in this technology. However, there is a significant difference. In the UNC Chapel Hill program, the most active research programs are oriented toward the interface between GIS and physical environmental systems. Indeed, the intersection of GIS analytical capability with remote sensing imagery (not a UNC Charlotte research focus) for environmental modeling and landscape change are primary research and instructional concentrations at UNC Chapel Hill.

The doctoral program in geography at The University of North Carolina at Greensboro has identified main research concentrations in geographic information science (GIS), urban and regional economic development and planning, and earth science/natural resource management. Again, the proposed doctoral program has only one area of potential overlap with the UNC Greensboro program, GIS or GI Science. There is a significant difference between the research and instructional emphases at UNC Charlotte and UNC Greensboro. The latter program is similar to the doctoral studies at UNC Chapel Hill to the extent that GIS research interests are heavily oriented around the analyses of physical environmental systems, with a strong linkage to remotely sensed data collection and compilation. The physical science and environmental systems orientation of GIS instruction and research at UNC Chapel Hill and UNC Greensboro are not topics that the proposed program would address.

An overall unique aspect of UNC Charlotte’s doctoral program and what sets it apart from the system’s other two departments offering a Ph.D. in geography is that it is policy-oriented, concentrating on aspects of human landscape within urban regions. Research questions relating to regional growth and change, including social, economic, and governance issues, inform the application of geographic information science and technology to instructional and research missions in the UNC Charlotte Ph.D. proposal. The program does not analyze cities as separate, “black box” entities, but instead views changes in the metropolitan region at a variety of scales ranging from the neighborhood to the global. A few examples of potential and current research include efforts by cities to attract international investment, to retain/attract professional sports teams, and to develop regional governance. Broadly speaking, this is a fertile area for further academic investigation. The research that results from the UNC Charlotte doctoral program will advance the mission of the University and will also be salient to the larger business and policy communities.

3. Estimate the number of students that would be enrolled in the program during the first year of operation:

We estimate the program would begin its first year with 3 to 5 students. Over the first five years we would expect that we would build a student base at the rate of 5 to 10 students per year to a steady state of 25 students based on an attrition rate of 40 percent. Most of these would be full-time. Table 2 outlines the enrollment estimates for a five-year period.

**Table 2
Enrollment Estimates By Year**

Year	Fulltime	Part-time	Total Recruited	Cumulative	Graduation
1	3	2	5	5	-
2	6	2	8	11	-
3	6	1	7	16	1
4	6	1	7	20	2
5	5	1	6	25	4

4. Estimate the current and projected demand for graduates of the proposed new degree program. Provide documentation about the sources of data used to estimate demand figures.

The market for graduates of this program lies in the more traditional field of academia (both research and teaching) and the strong development of non-academic positions in both the private and public sectors. In academia, evidence suggests that the post-secondary employment will expand "as the number of 18-to-24-year-olds increases and as more adults return to college" (Hecker 2004). The aging out of the teaching population trained in 1960s and 1970s is likely to further strengthen this market. Geography is no exception.

One of the primary sources of job listings for academic positions is Jobs in Geography, published monthly in the AAG Newsletter, a publication of the Association of American Geographers, the major association for professional geographers, especially academics. Table 3 provides data summarized from job listings published for two months in each of the last five years. These advertisements were tallied by determining the primary job specialty of all of the ads listed in January, October, November or December. We selected these

months because these are the peak times for job advertisement and search activity. Each advertisement we reviewed could be placed in only one category except for the column -- GIS required (Column 5) -- which was a job requirement always listed in combination with some additional specialty.

As can be seen in Table 3, the market has remained consistently strong with 60 to 100 listings in each month analyzed. Of the total listings for jobs in these two months, over 70 percent are advertising positions in one of the primary specialties on which this proposed Ph.D. will concentrate. From 10 percent to 25 percent of the listing were for urban, regional science or economic positions, which also made a strong GIS background mandatory. Given the level of demand reflected in this table, we estimate that the market for Ph.D. geographers varied from 200 to 350 academic jobs per year from 1999 to 2003.

Table 3
Selected Listings in Jobs In Geography In November

1 Year	2 Total Listings	3 New Listings	4 GIS Specialty	5 GIS Required	6 Urban	7 Regional Science	8 Economic
1999 O	59	32	9	14	4	26	6
1999 N	86	47	15	24	10	28	10
2000 J	101	40	17	18	11	46	9
2000 O	77	48	15	9	14	34	0
2001 N	95	68	18	16	14	47	6
2001 D	110	68	15	20	16	52	7
2002 N	81	39	21	15	16	25	5
2002 D	74	45	15	16	5	32	7
2003 N	74	47	11	16	14	25	9
2003 D	99	56	16	20	8	44	11

Source: Computed by authors from listings in Jobs in Geography, AAG Newsletter.

As can be seen in Table 4, the actual number of Ph.D.'s produced during the period from 1999 to 2002 was about 200 per year. Without taking into account a expanding market for Ph.D. geographers in the private sector and non-profits, these data suggest a relatively strong market for Ph.D.s with the specialties proposed in this request.

Table 4
Geography Ph.D. Degrees Conferred in the United States, 1999-2002

1999-2000	200
2000-2001	201
2001-2002	205

Source: U.S. Department of Education surveys as cited in Guide to Geography Programs in North America

The rate of growth in the use of and market for GI S&T may be seen in the attendance patterns at the annual user conference of one of the largest firms supplying GI S&T technology. Recently this event attracted over 11,000 individuals representing dozens of countries – only twenty years ago there were just over a hundred persons in attendance. The job market for GI S&T academia and professionals has been growing at a rapid yet sustained pace. In the late 1990s, US News & World Report twice listed GI S&T as one of the “hottest tracks” for future employment. A more recent Internet survey gives 970,000 entries worldwide under the query “GIS jobs”. While this level of job activity in no way reflects the market for the products of a Ph.D. program, it does reflect the level of interest in field and the demand for programs that produce the university-level instructors who will train the people entering these jobs.

Documentation of Sources of Data Used to Estimate Demand

- The data from Table 3 were tallied from Jobs in Geography, a listing of current academic and some non-academic job openings published monthly in the AAG Newsletter of the Association of American Geographers.
 - Data on the post-secondary job market were taken from Daniel E. Hecker, "Occupational employment projections to 2012," Monthly Labor Review, February 2004.
 - US News and World Report provided the assessment of the market for GI S&T employment.
 - Data describing the production (Table 4) of Ph.D. in the U.S. were taken from Guide to Geography Programs in North America, 2003-2004, AAG Handbook and Directory of Geographers published by the Association of American Geographers, 2004.
5. **If there are plans to offer the program away from campus *during the first year of operation*:**
- a) **briefly describe these plans, including potential sites and possible method(s) of delivering instruction.**
 - b) **indicate any similar programs being offered off-campus in North Carolina by other institutions (public or private)**
 - c) **estimate the number of students that would be enrolled in the program during the first year of operation: *Full-Time* _____ *Part-Time* _____**

There are no plans to operate the program at any other location than the main campus of UNC Charlotte.

6. Describe the procedures to be used to plan the proposed program. List the names, titles, e-mail addresses and telephone numbers of the person(s) responsible for planning the proposed program.

The proposal was drafted over a period of 18 months by a team including most of the geographers within the Department of Geography and Earth Sciences. Five open meetings were conducted for general discussion of all aspects of the proposed program. A number of individuals volunteered to write various segments of the proposal, with every draft circulated to all geographers for review and critique. In general, two individuals, Drs. Ingalls and Moore, carried the responsibility for comprehensive drafts and merging of ideas. However, all geographers had an opportunity for input and critique.

The final drafts were submitted to all geographers available for review during the summer of 2004. A request to approve the final draft was conducted via email on July 26 and 27, 2004, and the final draft was submitted to Dr. Schley Lyons, Dean of the College of Arts and Sciences, on July 28, 2004.

Individuals Responsible for Proposal

Dr. Gerald Ingalls	Professor and Chair	gingalls@email.uncc.edu	704-687-4260
Dr. Tyrel Moore	Associate Professor	tgmoores@email.uncc.edu	704-687-4250

7. Describe the method of financing the proposed new program (e.g., potential sources of funding) and indicate the extent to which additional state funding may be required.

The proposed Ph.D. in Geography and Urban Regional Analysis can initially be sustained by the 18 positions available to the Department of Geography and Earth Sciences to teach at the Ph.D. level. Of these, there are 13 full-time, teaching faculty positions, of which two are currently vacant. The Department anticipates filling these vacancies in 2004-2005 (Table 5). Another five associated faculty are also available to sustain the degree with limited teaching and associated committee and advising duties. These associated faculty have administrative duties elsewhere on campus. There are two additional faculty with the Department whose degrees are in Geography, but who teach primarily within the Earth Sciences programs. Except for service on Ph.D. advisory committees and as general support for students, these are not likely to be heavily involved in this more social sciences-directed Ph.D. program.

Table 5

Geography Faculty Available to Teach in the Ph.D. Program

<u>No.</u>	<u>Name</u>	<u>Rank</u>	<u>Specialty Area</u>
1.	Campbell, Harry	Associate Professor	Economic/Regional Analysis
2.	Chilton, Ken	Assistant Professor	Planning
3.	Graves, Bill	Assistant Professor	Economic/Location Analysis
4.	Hartgen, David	Professor	Transportation
5.	Ingalls, Gerald	Professor	Urban Political
6.	Kalafsky, Ron	Assistant Professor	Economic/Spatial Analysis
7.	Lee, Jiyeong	Assistant Professor	GIS/Spatial Analysis
8.	Lord, Dennis	Professor	Economic/Location Analysis
9.	Moore, Tyrel	Associate Professor	Planning/Regional Analysis
10.	Smith, Heather	Assistant Professor	Urban Social
11.	Xiang, Wei Ning	Professor	GIS/Spatial Analysis

Associated Geography Faculty Available for Student Committees, Limited Teaching

12.	Furuseth, Owen	Professor	Planning
13.	Hauser, Edd	Professor	Transportation
14.	Ives, Sallie	Associate Professor	Social, Population
15.	Rash, Dennis	Faculty Affiliate	Transportation
16.	Walcott, Wayne	Associate Professor	Transportation

Current (2004) Vacant Positions

17.	Knight Distinguished Professor of Public Policy	Urban/Economic
18.	Assistant Professor	Planning/GIS

We propose an initial allocation of four University-funded graduate assistantships to sustain the Program during its early years. Two of these should come in each of the first two years of the Program. With its substantive granting and contract history, we anticipate funding for assistantships will grow to sustain the growth of the anticipated fulltime graduate student population. We would like to sustain a ratio of three departmentally funded assistantships for every University- or College-funded assistantship as the Program grows to its projected size.

The Department would prefer to appoint a Ph.D. Director from within its existing faculty. An additional stipend is advised to compensate for the year around nature of the job.

Finally, in order to sustain its undergraduate and master's programs at their current level of excellence, we propose three new faculty positions, one in each of the first three years of the Program. The first should be a more senior faculty member with experience in Ph.D. programs and a record of successful and substantive granting and/or contract activity. The second and third would be faculty at a junior, assistant professor level.

This intent to plan a new program has been reviewed and approved by the appropriate campus committees and authorities.

Chancellor  _____