

Master of Science in Earth Sciences



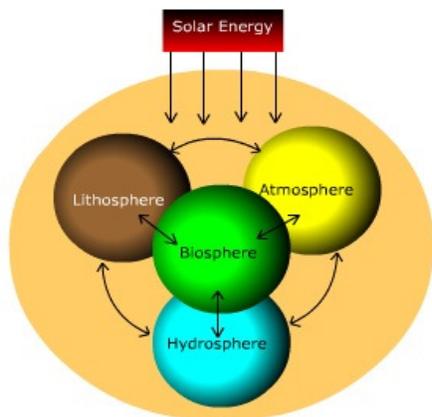
Department of Environmental, Earth and Geospatial Sciences

College of Arts and Science

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2013-14 Edition

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THE M.S. IN EARTH SCIENCES

A Brief History

The General Assembly of North Carolina authorized the establishment of graduate work in the liberal arts and professions at NCCU in 1939. Receiving approval from the University of North Carolina Board of Governors in 1995, the Master of Science in Earth Sciences has a relatively short history. The first M.S. degree in Earth Sciences was conferred in 1998. While the degree program was established in the Department of Geography and Earth Sciences, it became a part of the Environmental, Earth and Geospatial Sciences Department in 2005 when the Environmental Science and the Geography and Earth Sciences departments merged.

Mission and Vision

The Department's mission is to promote intellectual, professional, and personal excellence through the highest quality instruction, research, and service in the Environmental, Earth and Geospatial sciences.

Its vision is to be recognized as a regional, statewide, and national resource for students and society as well as professionals who work in the many fields that are encompassed by the environmental, earth, and geospatial sciences.

PROGRAM OBJECTIVES

The primary objectives of the program are:

1. To provide students with the analytical and methodological skills necessary to understand or derive explanations for individual occurrences, for recurring processes, and for invariable as well as statistical regularities in the earth's atmosphere,

lithosphere, hydrosphere, and biosphere.

2. To support the educational needs of students seeking to develop master's level skills in applied earth sciences that are useful in achieving entry or mid-career advancement in occupations requiring these skills.
3. To meet the educational needs of students seeking a master's level education in general earth sciences in preparation for pre-college or community college teaching, further graduate work, or as a general background for current or planned occupations.
4. To equip students in the program with problem solving capacity on locally, regionally, and globally relevant geo-environmental challenges through the skill sets learned in the department.

ADMISSION REQUIREMENTS

To be considered for admissions, a student must submit an application for admission to NCCU graduate programs, an official undergraduate transcript, completed recommendation forms, and a statement of academic objectives to the admissions office of the Graduate Division at least 30 days in advance of the registration date of the semester or summer session in which degree work is to begin. Applicants who apply late or whose application has not been evaluated before registration may be permitted to enroll as a temporary degree-seeking student and/or may not be eligible for student support.

After the Department has evaluated the student's credentials, the School of Graduate Studies will notify the student of the admission decision by letter. Admitted students have one year to enroll in courses before the admission status expires.

The School of Graduate Studies will notify the student of this time limitation.

All NCCU graduate programs require that the GRE be taken as part of the admissions process. However, the DEEGS recognizes that the GRE is just one indicator of student potential at the graduate level. The DEEGS weighs GPA within the major, practical experience, research interests and a student's cover letter along with GRE scores. Admissions will be decided based on all of these factors and students are encouraged to apply, regardless of GRE score.

A writing sample is required from all new graduate students. The writing will be done during an orientation session. All new graduate students are required to attend the orientation session the week before classes begin or during the first week of class.

TIMELINE AND COURSE REQUIREMENTS FOR COMPLETION OF DEGREE

All requirements must be completed within six years of the beginning term of the student's admission to the program. Typically, full-time students complete their coursework in four semesters. During the final semester, a student is admitted to candidacy after the Graduate Council approves his or her research project. Students must be registered for thesis or project and apply for graduation during the semester they intend to graduate. A university calendar with deadlines and dates are produced for each semester by the Graduate Office and must be adhered to.

Progressing through the Program in two years

By working with an academic advisor and following the sequence below, a student pursuing a graduate degree in the Department of Environmental, Earth and Geospatial Sciences on a **full-time** basis should be able to complete all requirements and graduate in 2 years. Research proposals must be submitted and approved by the student's thesis or project committee before April 1 for fall (December) graduation and November 1 for spring (May) graduation.

For other important deadlines consult 2013/2014 academic calendar at:

http://www.nccu.edu/formsdocs/proxy.cfm?file_id=2018

URL for all Graduate Studies Forms & Docs:

http://www.nccu.edu/formsdocs/search.cfm?Department_ID=68

First Semester

- Complete 9 semester hours of approved coursework
- Develop and submit a plan of study to the academic advisor
- Begin developing ideas for a research project

Second Semester

- Complete 9 semester hours of approved coursework
- Confirm composition of research committee
- Continue developing research project

Third Semester

- Complete courses (all required courses should be completed by the end of this semester)
- Statistics or foreign language requirement should be completed
- Take comprehensive examination
- Submit and defend proposal to research committee
- Apply for admission to candidacy
- Complete research

Fourth Semester

- Complete elective or remaining Coursework
- Complete research thesis or project
- Apply for graduation
- Oral presentation of thesis defense
- Graduate

CURRICULUM COMPONENTS

The program objectives are met through the following components: (1) a core curriculum consisting of 12 credit hours, (2) a concentration of 9 credit hours in applied earth sciences or a concentration of 9 credit hours in general earth sciences, (3) 12 credit hours of electives with or without teacher certification, and (4) a thesis or internship project (at least 3 credit hours) coupled with a systematic program of guidance, advisement, and evaluation that involve students from entry through graduation.

The Master of Science in Earth Sciences curriculum requires satisfactory completion of a minimum of 36 semester-hours of approved graduate credit. Candidates must complete thirty-three (33) credit hours of course work plus at least three (3) credit hours of thesis (1-6 credit hours) or internship (3 credit hours). Students may elect to complete a project (0 credit hours) in lieu of a thesis, in which case three elective hours must then be substituted.

The program is designed to develop master's level competence in **applied earth sciences**, with an emphasis on geographic information systems and remote sensing of the physical environment, or **general earth science**, which is designed to enhance the knowledge of earth science teachers and other professionals who wish to pursue additional graduate work. These concentrations will enable students to match their degree program with their educational and occupational needs and interests. All students will be required to complete a common twelve (12) semester hour sequence of core courses selected from the following: EASC 5000, GEOMORPHIC PROCESSES, EASC 5010, CLIMATOLOGY AND METEOROLOGY, EASC 5020, WATER AND MINERAL RESOURCES, EASC 5030, METHODS AND TECHNIQUES OF EARTH SCIENCE, and EASC 5031, ASTRONOMY.

OBJECTIVE OF THE CORE COURSES

The core courses are designed to provide students with the analytical and methodological skills necessary to understand or derive explanations for individual occurrences, for recurring processes, and for invariable as well as statistical regularities in the earth's lithosphere, hydrosphere, atmosphere, and biosphere. Within this broad goal are several specific objectives. The first specific objective of the core courses is to develop an understanding that the major parts of the earth - core, mantle, crust, oceans, and atmosphere - that can be studied as a dynamic, interactive system in which there is a cyclic flow of energy and material from one reservoir to another. Another important part of this objective is the development of conceptual skills to evaluate the natural environment on earth and the various effects of human activity on this environment. Students will attain an understanding of the universe as well as the composition and behavior of the earth, characteristics and formation of earth materials,

tectonics, geophysical processes, geology, meteorology and climatology, characteristics of the world's oceans, and natural resources as they relate to the environment. EASC 5000, GEOMORPHIC PROCESSES, EASC 5010, CLIMATOLOGY AND METEOROLOGY, EASC 5020, WATER AND MINERAL RESOURCES and EASC 5031, ASTRONOMY are designed to meet these objectives.

The second objective of the core courses is to enhance one's ability to answer questions concerning the earth's natural environment which: (1) reflect an understanding of the chemical and physical relationships that produce landforms, mineral resources, and environmental changes that affect human survival on the planet earth, (2) are answerable through available research techniques, and (3) reflect a basic understanding of both the possibilities and limitations of various methodological strategies for seeking answers to these questions. EASC 5030, METHODS AND TECHNIQUES OF EARTH SCIENCE will meet this objective.

The third objective of the core courses is to provide an understanding of the methodological and statistical tools to answer questions concerning the earth's environment. The specific aim is to introduce research methods and techniques utilized by contemporary earth scientists; specifically those related to computer mapping, geographic information systems, and remote sensing. The EASC 5030, METHODS AND TECHNIQUES OF EARTH SCIENCE is designed to meet this objective.

Objectives of the courses (EASC 5000, EASC 5010, EASC 5020, EASC 5030, EASC 5031) are basic to the graduate program overall. Four of the five courses will be required of all students regardless of whether they opt for applied earth sciences or general earth sciences track.

PROGRAM CONCENTRATIONS

In addition to completing the core curriculum outlined above, students must elect to complete a concentration option in either *applied* or *general* earth sciences. The overall objective of the *applied* earth sciences concentration is to support the educational needs of students seeking to develop skills in applied earth science areas. Many students enrolled in the applied program are individuals seeking mid-career

development of research and data analysis skills relevant to their areas of employment or persons seeking entry into positions requiring applied earth science skills. The *general* earth science concentration is designed to meet the educational needs of the students seeking a master's level education in preparation for pre-college or community college teaching, further graduate work, or as a general background for current or planned occupations.

The **applied earth science concentration** is specifically designed for the students with an interest in the fields of remote sensing of natural resources, computer assisted cartography, digital geographic information systems, and data analyses related to natural resources, waste disposal, locating sites for critical facilities, geophysical study of geohazards, water resource management, agriculture, urban and regional planning, and coastal zones management. This course of concentration is to provide students with the skills to: (1) determine the data requirements needed to answer such questions as those related to the location of mineral and energy resources, the selection of locations of critical facilities such as dams, waste disposal sites or nuclear reactors, environmental processes responsible for geohazards, the long-term effects of climatic change on water supply, and land use planning in coastal zones; (2) conduct computer-based regional geographic studies provide programming services for statistical, analytical and high resolution computer-graphic applications, perform tests and development on spatial data models, and evaluate digital geodata products for end-user applications; (3) evaluate and make policy recommendations on land use/land cover data, carry out spatial analyses related to natural resources management; and (4) provide expert advice on state-of-the-art developments in image processing, digital cartography, spatial data base management, and modernization of mapping technology.

The concentration in applied earth sciences encompasses a minimum of 36 credit hours divided between regular course work and internship. Students electing the applied earth sciences concentration will be required to complete three specific courses: EASC 5100, EARTH SCIENCE FIELD METHODS AND TECHNIQUES; EASC 5110, REMOTE SENSING OF NATURAL RESOURCES; and EASC 5120, DIGITAL GEOGRAPHIC INFORMATION SYSTEMS. These courses are specifically designed to prepare students to conduct applied research in organizational settings.

The **general earth science concentration** is envisioned to provide students with broad and advanced understanding of earth systems science. Focus of the program, in addition to core courses, is the study of Earth's major subsystems - atmosphere, hydrosphere and lithosphere. After completing the general concentration students will be well positioned for variety of teaching and research career options that require competency in earth and environmental sciences. In particular, they will be able to: (1) effectively serve in positions that require conceptual earth science knowledge and ability to follow current developments in earth science research; (2) design and teach inquiry-based face-to-face and online earth science courses; (3) make management decisions with awareness of nature-society and nature-human interactions; (4) serve as consultants on issues of geoenvironmental hazards, environmental justice and sustainability; (5) continue their PhD studies in the field of geo and environmental sciences.

The concentration in general earth sciences encompasses a minimum of 36 credit hours divided between regular course work and internship. Students electing the general earth sciences concentration will be required to complete three specific courses: EASC 5200, ATMOSPHERIC DYNAMICS; EASC 5210, LITHOSPHERIC MOVEMENTS; and EASC 5220 HYDROSPHERIC PROCESSES. These courses are specifically designed to prepare students to continue their graduate level studies or pursue careers in teaching or consulting.

COMPLETION OF A THESIS

The capstone of the M.S. Earth Science program is the completion of a thesis. A thesis is a directed and specialized study that integrates your research interests and applies it a real world situation using existing skills and those learned throughout the program. The thesis should be on the 'cutting edge' of new research, methodologies, applications or technologies. For example, you may want to take an existing application and cater it to your specific interest. The thesis should integrate some quantitative methods.

You and your advisor are to decide upon a research topic. The research topic should be: 1) something that interests you 2) something that challenges you 3)

something that can be completed with the resources that we have on campus or can access with local partners.

A *project option* that can be substituted for the thesis for students who have not made sufficient progress on their thesis or wish to employ project-based skills in their field of work or future field of work. However, a thesis shows employers and graduate schools that you can do high-quality, long-term work. The completion of a thesis also shows people that you are equipped with soft skills such as project planning, public speaking and presentations. Lastly, if you are looking to pursue further education, a Ph.D. granting institution may not look favorably on your application package if you have not completed a thesis. In the course of completing the thesis, students must 1) present their thesis topic before a committee 2) defend their thesis research during their last semester and 3) submit a written thesis that is approved by all committee members and the NCCU graduate school.

STUDENT RESPONSIBILITIES IN COMPLETION OF THE THESIS

The completion of a thesis is a comprehensive effort that not only elicits quality research and analysis, but also management and organizational skills to meet all deadlines. The following are student responsibilities in support of completing the thesis project.

- Meet regularly with thesis committee members on the progress of their thesis and integrate suggestions and recommendations into their plan of study.
- Deadlines are posted at the end of this document. It is your responsibility to understand and adhere to these deadlines. Failure to do so will delay your progress and potentially graduation.
- The room for both your proposal and thesis defense must be reserved with the Department Administrative Assistant at least 1 week in advance. You are to arrange with your thesis committee and our Administrative Assistant the date, time and location of your defense that works for all parties.
- A working copy of the thesis document is required 2 weeks before the deadlines for submittal to the university. You are to provide that copy to all committee members by that deadline.
- Students are required to generate all data, results and verbiage that go into their thesis, except where quoted, documented or cited.

ADMISSION TO CANDIDACY

The Graduate School at NCCU has encouraged a timeline that allows students to do adequate research on their thesis without the pressure of completing the comprehensive exam during the same semester. As a result, students are to be admitted to candidacy after they have 1) completed their language requirement 2) passed their Comprehensive Exam and 3) defended their thesis topic before the committee. Since students must be admitted to candidacy before graduating, this timeline discourages students from presenting their thesis topic, taking comprehensive exams and defending their thesis in the same semester. It is strongly suggested that students take their comprehensive exams, defend their thesis topic and pass the language requirement during or before their 3rd full semester at NCCU.

THE COMPREHENSIVE EXAM

The goal of the comprehensive exam is to ensure that students have the requisite tools and skills to perform research at graduate level. Successful completion of the comprehensive exam, language requirement and presentation of a thesis topic before a thesis committee is required for entrance to candidacy in the graduate school.

- a. The comps will be composed of 4 sections (1 section = 1 graduate class). The time limit for each section will be 1 hour and 15 minutes, making the length of the exam 5 hours, not including breaks. All students will take the comps at the same time in the same place on the same date as specified by the graduate school. Each section will be given at the same time and the new section will not start until the previous section has been collected and the time limit has been reached (Section #1 will start at 8:00, Section #2 will start at 9:20, etc.). After Section #2, students will have a 30 minute break for lunch.
- b. Each section will be equally weighted at 25 points each for a total score of 100 points. Passing will be a 75%. Students earning between 70 and 74% can retake 1 section to replace their original section grade so the minimum score of 75% can be earned. Scores earning below a 70% must have the entire exam repeated at a future time.
- c. The exam will be individualized for each student. Two of the sections will be taken from core classes (GEOMORPHIC PROCESSES, CLIMATOLOGY AND METEOROLOGY,

WATER AND MINERAL RESOURCES and METHODS AND TECHNIQUES OF EARTH SCIENCE). If more than 2 cores classes have already been taken, the student and their advisor will decide which 2 core classes will be on the comps.

- d. The section of the comprehensive exam must be written by the professor who taught the class. For example, if instructor who taught your Geomorphology course is no longer here, you must choose from the remaining core classes.
- e. For the other 2 sections, the student's graduate advisor will decide from the electives in which the students have excelled. Students must notify the graduate director via their advisor the sections they wish to take by the exam registration date.
- f. The professor who writes the section of the comp will determine what resources (book, internet, notes, calculator) and parameters will be allowed for their section of the exam. The types and amount of resources allowed for each section will be clearly articulated at the top of each section.

THE LANGUAGE REQUIREMENT

Successful completion of the M.S. program requires that student satisfy a language requirement. This is additional requirement in addition to the 36 hour requirement for the program. The student cannot be a native speaker of the language in which they wish to satisfy. A foreign language exam is offered through NCCU in Spanish, French, Swahili and German, to be given at a specified date during the semester. If students are not fluent in these languages, the following options exist:

1. Students can substitute a foreign language with a graduate level statistics course such as EDGR 5910.
2. Students can substitute a foreign language with a graduate level programming class from the math or computer science department.
3. If students have taken graduate level statistics or programming courses that did not satisfy requirements as part of their undergraduate program (cross-listed), that can satisfy the language requirement.

COURSE DESCRIPTIONS

EASC 5000. Geomorphic Process

Examines the latest research findings on the following topics: composition of the earth, plate

tectonics and diastrophism, tectonics and volcanoes, igneous, sedimentary and metamorphic processes, variations and characteristics of landforms, weathering, soil formation, geologic history and uniformitarianism, and the geologic time scale. 3 credit hours (Laboratory Required)

EASC 5010. Climatology and Meteorology

Provides recent research results on cyclones and anticyclones, severe weather conditions, weather patterns and short-range forecasting, the nature and physical factors of climate, geographic patterns of climate, air pollution and climate, structure of the atmosphere, energy and climate, heat transfer processes, atmospheric circulation, causes of clouds and precipitation, and types of climates. 3 credit hours (Laboratory Required)

EASC 5020. Water and Mineral Resources

Current scientific knowledge and research of the physical, chemical, and biological characteristics of the world's hydrosphere are provided. It also provides in-depth knowledge of the earth's natural resources, with a special emphasis on minerals. Among the topics to be examined are: surface waters, oceanic circulation, the hydrologic cycle, submarine topography, chemical substances of seawater; causes, characteristics, and types of ocean waves and tides, shoreline erosion, formation, properties, and identification of minerals; and relationships between rocks and minerals. 3 credit hours (Laboratory Required)

EASC 5030. Methods and Techniques of Earth Science

Provides an understanding of earth science research frameworks and the manner in which geodata are collected and analyzed. The following topics are covered: (1) THE SCIENTIFIC METHOD -- identification, formulation, and testing of hypotheses, theories, and models in geology, meteorology, climatology, and oceanography; (2) STATISTICAL ANALYSES -- uses of multivariate statistical techniques in the

geosciences; (3) COMPUTER MAPPING -- computers and algorithms, raster symbols and surface mapping, raster-mode measurement and analysis, vector symbols, cartometry and map projections, cartographic data structures, computer-assisted map design; (4) GEOGRAPHIC INFORMATION SYSTEMS -- data capture, structuring editing, structure conversion, geometric correction, projection conversion, spatial definition, generalization, enhancement, classification, statistical generation, retrieval, overlaying, display, analytical technique support, and data management; (5) REMOTE SENSING -- scope of remote sensing, the electromagnetic spectrum and basic matter and energy relations, atmospheric windows, power spectra, transmission and interference, sensors and platforms, the variable meaning of resolution, history of satellite sensing, multi-spectral scanning, spectral analysis. 3 credit hours (Laboratory Required)

EASC 5031. Astronomy

The overall objective of this course is to increase students' knowledge of the universe by examining the findings of recent research on physical principles governing the universe, the structures of the planets and their atmospheres, the solar system, the Milky Way, and remote galaxies. Some of the key topics to be discussed are: Solar System, Stars and Stellar Evolution, Stellar Systems and Motions, Galactic and Extragalactic Astronomy, Astronomical Instrumentation and Development, Radio Spectrum Management. 3 credit hours (Laboratory Required)

EASC 5100. Earth Sciences Field Methods and Techniques

This course is aimed at providing students with skills needed to systematically acquire new or raw data within a specific research area. This includes an organized recording or observations made in the field within a defined spatial matrix or research area and the utilization of systems of data classification subject to subsequent processing, presentation, and analysis. The term methods describes the overall research framework or

design, and techniques refers to the manner in which field data are collected. 3 credit hours (Laboratory Required)

EASC 5110. Remote Sensing of Natural Resources

This course is designed to help students obtain advanced proficiency in geographic information processing by learning how information is obtained about objects without being in direct contact with them. They will learn about specific sensors, such as cameras and multi-spectral scanning systems that are flown on aircraft or spacecraft and how the imagery obtained by those sensors is analyzed optically or digitally to yield valuable information of the earth's resources. 3 credit hours (Laboratory Required)

EASC 5120. Digital Geographic Information Systems

This course will teach students about the most recent improvements in computer processing of geographic information. Some of those improvements include algorithm development for converting geographic data into computer readable formats, their subsequent storage for modeling, and statistical analysis and the display of maps and models. Students will also learn about the latest methods of research and data symbolization and will become familiar with the practical and theoretical aspects of cartographic communication, design, and construction. 3 credit hours (Laboratory Required)

EASC 5125. Raster GIS

The different GIS data models (vector and raster) differ in not only their file format, but also the nature of data that they intend to represent. This course will focus on the various types of processing that can be performed on *raster data*. This not only includes the precursory tools through Raster Calculator, but also the creation of raster data from proprietary data sources or derived from vector data using a density calculator or interpolation methods. This course will also explore raster analyses useful to practicing earth

and environmental scientists such as landscape modeling, hydrology/groundwater modeling tools and Model Builder.

EASC 5200. Atmospheric Dynamics

This course is designed to increase students' knowledge of the earth's upper and lower atmosphere, including its general circulation and the physical bases of climate, and the smaller-scale, shorter-term phenomena that describe weather processes. Recent research on natural global chemical cycles of gases and particulates in the earth's atmosphere are considered, as well as the composition and the dynamics of the coupled upper atmospheric system. The course also discusses state-of-the-art knowledge of the sun as it relates to the earth's upper atmosphere and space environment. 3 credit hours (Laboratory Required)

EASC 5210. Lithospheric Movements

This course will present the latest research on insights into the physical and chemical characteristics and processes that produce such geologic features as hydrocarbon and ore deposits and events such as earthquakes, volcanic eruptions, and landslides. The focus is primarily on the constitution of the earth's lithosphere. A great deal of emphasis is placed on plate tectonics, which has provided earth scientists with a working model of the earth as a whole. Plate tectonics represents a unifying concept of global structure and composition, it is a fresh context for viewing earth history, and it is also a framework into which to set detailed local geo-science studies. 3 credit hours (Laboratory Required)

EASC 5220. Hydrospheric Processes

Recent research articles in scientific publications are used to improve students' understanding of the sea and the ocean basins. The emphasis is placed on physical and geologic processes in the ocean. Physical process will include state-of-the-art ideas on oceanic circulation and transport; eddy generation, physical circulation and turbulent mixing on continental shelves; mixing and circulation in estuaries; wind-generated tides and

surface and internal waves; diffusion, conduction, convection, and three dimensions turbulence; physical properties of seawater; and circulation and mixing processes in lakes. Geologic processes to be discussed will include: the structure of continental margins, oceanic rise systems and deep sea sedimentary basins; exchanges of heat and chemical elements between seawater and oceanic rocks; tectonic and volcanic activity at mid-ocean ridges; variations in chemicals and minerals in marine sediments; and sediment types as a result of paleo-environmental controls. 3 credit hours (Laboratory Required)

EASC 5600. Independent Study

This being an independent study course, the students are expected to work on individual projects as directed. Students should have a clear understanding of the concepts and issues and should be willing and able to work independently. This course will cover advanced topics or topics related to specific research interests. Regular contact with the instructor is required. 1- 6 credit hours (repeatable).

EASC 5700. Directed Research

This being a directed research course, the students are expected to work on individual projects as directed. Students should have a clear understanding of the concepts and issues and should be willing and able to work independently under research mentor's guidance. This course will cover topics related to individual students' thesis. Regular contact with the instructor is required. 1- 6 credit hours (repeatable).

EASC 5800. Internship (3)

Students must complete a supervised internship in an agency approved by the department. A written analysis demonstrating a mastery of the skills learned must be presented to a faculty committee for approval. The format of this document must meet with standards prescribed by the department.

EASC 5900. Thesis (1-6)

Students will develop a research design on an acceptable topic approved by an adviser. The format of the resulting original research must meet the standards set by the department and the Graduate School. The thesis must be successfully defended before a faculty committee. 3 credit hours

INTER-INSTITUTIONAL COURSES

Students may take courses through our inter-institutional agreement with Duke University, North Carolina State University, the University of North Carolina at Chapel Hill, or the University of North Carolina at Charlotte. The faculty advisor will determine the number of allowable inter-institutional credits. Furthermore, the advisor must give prior approval for course work to be applied towards the degree program at NCCU. Forms for taking courses at one of the cooperating institutions may be obtained from the Graduate Studies Office. Full-time students may take a maximum of 2 inter institutional courses during a semester. There is no additional charge for taking these courses.

FACILITIES

The Department is located on the first and second floor of the Mary M. Townes Science Complex. It is equipped with smart classroom technology, videoconferencing and modern science laboratories. This new state-of-the-art science facility allows for information sharing and student and faculty collaboration across the sciences.

In addition to computer labs dedicated to teaching GIS and remote sensing course, the department has 7 state-of-the-art desktops for special projects and research, 2 color printers, 1 large format plotter, GPS units, palm pilots dedicated for student research. The department also has state-of-the-art servers for internet based GIS and data applications. The hardware is used to support widely used GIS software, which includes the ESRI suite of software, ERDAS Imagine, IDRISI Kilimanjaro, and ENVI. As part of the ESRI site license agreement, the students, faculty, and staff

have access to most courses offered on ESRI's web based learning center - the virtual campus. A Broadband Seismic Station is also included in the special projects lab. NCCU is the only university in North Carolina that collects seismic data routinely included in the Advanced National Seismic System data processing infrastructure. Real time display of NCCU seismic data can be accessed on line at the Center for Research and Information web site:

http://folkworm.ceri.memphis.edu/heli_bb_other/. Students and faculty interested in geoscience education and the use of technology may use the data for development of educational and outreach materials and for research.

Soil, water, and air constituents can be analyzed in the Department's **environmental science laboratory**. Our teaching and research laboratory is equipped with many state of art analytical and monitoring instruments that can meet the need for the completion of most projects related to the topics mentioned above. Some of the instruments in our laboratory are chromatography instruments (liquid chromatography (LC-MS and HPLC), gas chromatography (GC), GC-MS, ion chromatography, atomic absorption spectrometer) for chemical analysis, PQ200 and 6-digit balance and portable monitors for PM studies, Scanning Mobility Particle Sizers (SMPS) and condensation particle counter (CPC) for ultrafine and nanoparticle exposure studies, and portable spirometers and ECG units for exposure associated physiology studies. Faculty and students in the department also has an access to the facility at Duke University SMiF (shared material instrument facilities) for TEM, SEM, XRD, clean room and others.

GRADE POINT AVERAGE AND RESIDENCE REQUIREMENTS

A cumulative grade point average of at least 3.0 is required graduation and for students to stay in good academic standings. The cumulative grade point average is computed by dividing the total

number of quality points earned by the total number of semester hours attempted. Students are also allowed no more than one (1) grade of lower than B, although their GPA may be at least 3.0. Students earning more than one C must repeat the course until a grade of B or better is earned.

FINANCIAL ASSISTANCE

Financial assistance may be available through the School of Graduate Studies as well as the Department. Assistantships are not merely a form of financial support, but should enhance students overall educational experience. Recipients are expected to provide high quality support for the university's academic endeavors while acquiring and refining their professional skills.

Assistantships may be supported through departmental or faculty grants and gifts or awards from individual donors, foundations, or state and federal agencies. The level of student support will be determined by several factors such as each student's need, merit, and the availability of funding in various sources.

STUDENT INTERNSHIPS, RESEARCH AND OTHER OPPORTUNITIES

Students may participate in a paid internship with an agency approved by the faculty during regular semesters. Participating agencies and organizations offering internships include and not limited to: the United States Environmental Protection Agency (EPA), RTI International, the Carolina Population Center (CPC), the Conservation Fund (CF), Durham Area Transportation Authority (DATA), NC Department of Transportation (NCDOT), the City of Durham Water Resources, and the National Oceanic and Atmospheric Administration (NOAA).

Students pursuing master's degree in Earth Science can also work on various topics related to environmental and environmental health. In previous years, inter-institutional and inter-departmental collaborative work with U.S. Environmental Protection Agency (EPA), Duke

University, and other departments at NCCU have been conducted. Among the potential research topics that students can work on are exposure assessment of volatile organic compounds (VOCs) and particulate matters (PMs) of all size ranges, remediation techniques in water, nanomaterial synthesis, applications of GIS in various environmental/environmental health studies, characterization of ultrafine and nanomaterials, identification of chemical pollutants in fluidal environment, post-exposure risk assessment, and exposure-disease association studies.

THE GRADUATE FACULTY

Dr. Yolanda Banks Anderson (Professor)
Environmental Science (Toxicology)
B.S., University of North Carolina at Greensboro
M.S., Harvard University School of Public Health
Ph.D. University of North Carolina_Chapel Hill

Dr. John Bang (Associate Professor)
Env. Engineering (Nano exposure and application)
B.S., University of Illinois at Urbana-Champaign.
M.D., University of Illinois at Chicago/CASHU
Ph.D., University of Texas at El Paso

Dr. Garrett Love (Assistant Professor)
Civil Engineering (Computational Science)
B.S., Massachusetts Institute of Technology
M.S., Ph.D., Duke University

Dr. Christopher McGinn (Assistant Professor)
Geography (Political Geography)
B.S., East Carolina University
M.S., University of North Carolina, Greensboro
Ph.D., University of North Carolina, Greensboro

Dr. Timothy Mulrooney (Assistant Professor)
Geography (Geographic Information Systems)
B.A. Columbia University
M.E.S. Loyola College (MD)
M.S., University of Idaho
Ph.D. University of North Carolina, Greensboro

Dr. Gordana Vlahovic (Associate Professor)

Geophysics (Seismology)
B.S., University of Zagreb
M.S., Ph.D., University of North Carolina at
Chapel Hill

Dr. Harris E. Williams (Associate professor)
Geography (Meteorology/Climatology)
B.S., North Carolina Central University

M.A., Ph.D., Arizona State University

Dr. Zhiming Yang (Assistant Professor)
Environmental Science
B.S. Jilin University, China
M.S. Ohio State University
Ph.D. Oklahoma State University

Dr. Yolanda Banks Anderson is a Professor in the Department of Environmental, Earth, and Geospatial Sciences. She received the BS degree in Medical Technology from the University of North Carolina at Greensboro (1974-1978), the MS degree in Environmental Health Sciences from the Harvard University School of Public Health (1984-1986), and the PhD in Environmental Science and Engineering from the University of North Carolina at Chapel Hill (1986-1990). She joined the faculty of NCCU as Associate Professor and Director of the Environmental Science Program in 1996. In 2007, she was named chair of the Department of Environmental, Earth and Geospatial Sciences. Her research interests are in environmental justice, environmental health and environmental monitoring. She is the Principal Investigator of the Environmental Risk and Impact in Communities of Color and Economically Disadvantaged Communities Project funded by the US Environmental Protection Agency. Currently, there are two postdoctoral research associates, one graduate student and 5 undergraduate students working in her laboratory. She has also received research and training grants from the NIH and the EPA Community-University Partnership Program. Dr. Anderson is a member of the Society of Toxicology (recently completing a year as Chair of the Career Resources and Development Committee), the North Carolina Society of Toxicology, and the American Public Health Association. She serves on the Board of Directors of the North Carolina Environmental Education Fund and previously served (for six years) on the Board of Trustees for North Carolina Environmental Defense.

Dr. John Bang is an Associate Professor and Interim Chair in the Department of Environmental, Earth, and Geospatial Sciences. He studied Biochemistry for his undergraduate study at the University of Illinois at Urbana-Champaign and continued his career path in health care field by attending medical schools (University of Illinois at Chicago 1994 and CASHU 1998). In the course of residency training (Internal Medicine at Medical college of Virginia hospital in 1994 and Anesthesiology from SUNY Brooklyn 1998), he began having more interest in overall environmental impacts on human health which eventually led him to pursue a graduate study in Environmental Sciences and Engineering at the University of Texas at El Paso (Ph.D. 2003). His distinctive performance in conducting research won him two E.P.A. grants (STAR and SCERP) during this graduate study and presidential honor at the college of sciences & engineering with active publication in national and international peer reviewed journals. His graduate work was focused on understanding the behavior of ambient ultra-fine (a.k.a. nano) particles from various sources and their cardiopulmonary effects. With his extensive level of experience with various types of environmental pollution issues and human health, his current research interest rests on nanomaterial related topics such as understanding the behavior of ultra-fine/nano particles from various sources, exposure and risk assessment of nanomaterial, nanomaterial synthesis for water and air pollution remediation, delineation of causal effects of pollutants in cardiopulmonary and endocrine pathophysiology, and local environmental health issues. For his current research activities, please visit the links below.

Home Page: <http://www.nccu.edu/academics/sc/artsandsciences/geospatialscience/faculty-and-staff.cfm>,
PIRE: <http://pire.pratt.duke.edu/>

CEINT:<http://www.ceint.duke.edu/people>

Dr. Garrett Love A product of Aberdeen, ID and Tilton, NH, Garrett Love received his BS degree in Civil Engineering from the Massachusetts Institute of Technology in 1991, followed by MS and PhD degrees in Civil Engineering from Duke University in 1997 and 2000, respectively. His academic studies have been complemented by a tour of service as a high school mathematics teacher at Central High School in Helena, Arkansas as part of the Arkansas/Mississippi Delta Corps of Teach for America (1991-1994), and by a 5-year stint (2001-2005) as a staff scientist with the Shodor Education Foundation, “a non-profit research and education organization dedicated to the advancement of science and math education, specifically through the use of modeling and simulation technologies”. Dr. Love joined the faculty of North Carolina Central University in the fall of 2005, and is currently an assistant professor in the Department of Environmental, Earth and Geospatial Sciences.

His primary academic research area is in the field of computational mechanics, notably finite element methods for impact analysis. He has been involved in a number of educational development grants as staff and instructor of the National Computational Science Institute, the SuperComputing Educational Program for conferences in 2001-2004, the SCOLLARCITY Math Science Partnership in upstate New York and the REVITALISE collaboration between East Carolina University and the National Center for Supercomputing Applications in Urbana-Champagne, Illinois, to name a few. He maintains a website of personally created educational resources for computational science at <http://www.shodor.org/~grl/Resources/> and is currently developing a new Bachelor of Science degree in Computational Science in the College of Science and Technology at NCCU. Recent research interests have followed as extensions of educational curriculum development in the application of computational methods, and incorporate such environmental problems as groundwater pollutant transport and the verification and refinement of weather models through NASA data collection.

Dr. Christopher McGinn

Dr. Timothy Mulrooney is an Assistant Professor in the Department of Environmental, Earth and Geospatial Sciences at North Carolina Central University. He earned his undergraduate degree from Columbia University, his Master’s degree from the University of Idaho and his Ph.D. from the University of North Carolina, Greensboro. At UNCG, his PhD dissertation focus was on using open source programming and data mining techniques to assess GIS metadata integrity for large spatial databases. In his work experience, he had seen an increasing schism between the rate at which data are created and the rate at which data are cataloged. Given that each metadata file contains more than 400 individual elements, efficiently extracting information from this metadata is an impossibility and little research has been done in the science of metadata and automating metadata. His research explored methodology within the open source environment in which data can be turned into information that inevitably supports the decision-making process. He has a vested interest in all forms of GIS, including GIS metadata standards, GIS education and subject areas in which GIS can be implemented at the college and high school level. Whether we realize it or not, we all use GIS in some form or another on a daily basis. Every phenomena has a spatial component and the democratization of GIS software and data can aid in a variety of different disciplines and communities within our city. He sees GIS as a powerful tool to bridge social science research with STEM disciplines and feels that GIS is an effective technical skill that can set job applicants apart from those who do not have these skills.

Dr. Gordana Vlahovic is an Associate Professor in the department of Environmental, Earth and

Geospatial Sciences. She received BS in Physics from the Faculty of Sciences at the University of Zagreb, Croatia in 1991 and PhD in Geology/Geophysics from the University of North Carolina at Chapel Hill (UNC-CH) in 1999. Before joining the NCCU faculty she worked as seismologist at the Center for Earthquake Research and Information at the University of Memphis, TN and Wave Propagation Laboratory at UNC-CH. Her primary research interests are in the area of seismotectonics and geohazards. She has worked extensively on the imaging of the intraplate seismic zones in North America by using tomography and potential field methods. Her secondary research interest is in the area of geoscience education and development of innovative, case study teaching materials and online course content. At the present she is directing NSF funded postdoctoral and graduate student research in the area of intraplate seismotectonics. During the last five years Dr. Vlahovic received more than 1.3 M in funding from NSF and National Geospatial Intelligence Agency for geophysical study of New Madrid Seismic Zone, development of geospatial partnerships and internships for students, establishment of GIS center at NCCU and creation of American Society for Photogrammetry and Remote Sensing sponsored GIS certification for students.

Dr. Harris E. Williams is an Associate Professor in the Department of Environmental, Earth and Geospatial Sciences. He holds the BS degree in geography from NCCU and the MA and Ph.D. degrees in geography from Arizona State University with a focus in water resources and climatological issues. He has 28 years of college teaching experience. He teaches Meteorology and Climatology (EASC 5010) and Geomorphic - (5000) and Lithospheric Processes (5210) at the graduate level. Dr. Williams has done post doctoral work with the Southern Fellowship Fund and the National Center for Atmospheric Research and he has participated in many workshops, including workshops on Geographic Information Systems and Remote Sensing at the United States Geological Survey and the National Weather Service Training. In addition to joining the faculty at NCCU in 1975, he served on the faculty at Elizabeth City State University, Elizabeth City, North Carolina. He has presented papers at professional meetings and published papers. He is also a participant in an American Meteorology Society Online program where he teaches classes in Online Weather Studies and Online Ocean Studies. His research focuses on water resources and the origin and spread of drought conditions.

Dr. Zhiming Yang is an Assistant Professor in the Department of Environmental, Earth and Geospatial Sciences. He received both master and PhD degree in environmental science at Ohio State University (2000) and Oklahoma State University (2005) respectively. Before he came to USA, he had worked in Chinese Research Academy of Environmental Sciences for more than ten years. During that time period, he had finished various environmental projects such as environmental impact assessment, environmental modeling and planning, environmental management and pollution control. His dissertation at Oklahoma State University was titled "Detecting greenbug infestation on wheat using ground-based multi-spectral radiometry". Between 2005 and 2010, he had worked for the Environmental Cooperative Service Center (ECSC) funded by NOAA at Delaware State University (DSU). At DSU, he had conducted many coastal environmental projects such as land use/cover changes, forest fragmentation and carbon loss, and hyper-spectral remote sensing of chlorophyll a in coastal waters. His primary research interest is to examine and study the impact of human activities on earth environment using geospatial technologies. Currently, he is conducting remote sensing studies on Eastern Tennessee Seismic Zone (ETSZ) and New Madrid Seismic Zone (NWSZ) using SAR images. The goal of these studies is to develop methods used to detect land deformation in the two seismic zones using SAR Persistent Scatterer Interferometry technique.

TITLES OF GRADUATE STUDENTS THESIS AND RESEARCH PROJECTS

David Kearny, “An Assessment of Durham County’s Water Flushing Progress”, Fall 1998.

Cato DeVane, “An Analysis of Nitrogen and Ozone Concentrations in the Charlotte, North Carolina Region”, Spring 1999.

Bettina D. Brinkley, GIS Internship at the U.S. Environmental Protection Agency, Spring 1999.

Thomas I. Parrish, IV, “Js GIS: An Experiment In Multi-Platformed GIS”, Spring 2000.

Nathanel M. Dumas, “An Analysis of City and County Land Parcel Assessments: A Case Study to Create a Parcel District Map for Durham, North Carolina”, Spring 2002.

Reginal D. Daye, “Using Geographic Information Systems to Aid in Cancer Cluster Determinations”, Spring 2002.

Porche L. Spence, “An Evaluation of Fecal Coliform Concentrations Upstream and Downstream From The Irwin Creek and Sugar Creek Waste Water Treatment Plants Located in South Central Mecklenburg County, North Carolina, 1998-2001”, Spring 2003.

Willie Woodard, “The Implementation of Geographic Information Systems in the Public Schools To Evaluate School District End of Grad Test Median Income”, Spring 2005.

Cha’ssem S. Anderson, “Bus and Bus Stop Designs Related to Perceptions Of Crime in the Triangle”, Fall 2006.

Aziz Carrell, “An assessment of the Deforestation Process in the Munessa-Shashemane Forest of Ethiopia: A GIS and Remote Sensing Approach”, Fall 2006.

Kibri E. Hutchinson, “Using GIS to Assess the Vulnerability of Eastern North Carolina Residents to a Major Hurricane”, Fall 2006.

Raymond Robinson, “Examining the Principle Differences and Similarities Of Mobility Between Commuter and Residential Students at North Carolina Central University”, Fall 2006.

Peter N. Muriuki, “An Analysis of Landslide Susceptibility Factors in The Mountains of NC”, Fall 2007

Tamara Spivey, “Wheelchair Navigation System Using the GIS Cost Distance Pathway Approach”, Fall 2007

James Trice, III, “A Geographic Information Science (GISci) Approach to Evaluating

Airboat Use in the Florida Everglades”, Fall 2007.

Candice Morrison, The Analysis of Selected Pyrethroid Pesticides In an Environmental Sample using High Pressure Liquid Chromatography Diode Array Detection (HPLC-DAD) With Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) Verification: A Post-Column Derivatization Approach”, Spring 2008.

Taihisa Hill, “Using GIS to Delineate Flood Evacuation Routes for Dominica, West Indies”, Fall 2008.

Lauren Lawrence, “Exposure Assessment of the Lung Alveolar Regions to Ultrafine Particulate Matter (UPM) during Indoor Natural Gas Burning Events: Public Health Perspective”, May 2010

Seema Chettri, “Structural Modification of Titanium containing Mesoporous Metal Oxides for Organic Pollutant Decontamination in Fluidal Media”, May 2011

Yonas Birhanemeskel, “*Development of a GIS Database for the New Madrid Seismic Zone*”, Spring 2011.

Motunrayo Akinpelu, “Building a GIS Database for the Eastern Tennessee Seismic Zone”, Spring 2011.

Frederick Ayivi, “Analysis of Land Change Detection Techniques Applied to High Resolution Satellite Imagery of Raleigh, North Carolina”, Spring 2011

Matthew Nanney, “Investigating Environmental Variables Influencing Early Archaic Archaeological Site Locations On Ft. Bragg Military Reservation, North Carolina: A GIS Approach To The Study Of Prehistoric Human-Environmental Interaction”, Fall 2011.

Jubril Davies, “Application of Monte Carlo Inversion Techniques to Geophysical Datasets”, Summer 2012.

Sanja Knezevic Antonijevic, “Analysis of November 3, 2010 Kraljevo Earthquake (MW=5.4) and its Aftershock Sequence”, Spring 2012

Tolulope Agbaje “Teleseismic P-wave travel time residual mapping in the eastern Tennessee seismic zone”, Fall 2012.

Carl Stearns, “DEM Analysis Of The Eastern Tennessee Seismic Zone”, Fall 2012.

Philip Martin, “Shear Wave Splitting Measurements In the New Madrid Seismic Zone With Local Earthquake Data”, Spring 2013.

Erik Green, “Exploring Patterns and Factors Related to Deer-Vehicle Collisions in Central North Carolina”, Fall 2013.

Vijayshree Pisupati, “A Tool for Analyzing Air Quality Data in North Carolina Using ArcGIS”, Fall 2013.

Marc Duchatalier, “Creation of a Geodatabase for Haiti”, Fall 2013.

Jessica Barnwell, “Pyrethroid Exposure Assessment Study among the Residents Living in Bed bug Infested Buildings in North Carolina”, Fall 2013.

IMPORTANT DATES, 2013 – 2014 ACADEMIC YEAR

Fall 2013:

September 6: Last day for filing applications for the master's foreign language examinations to be taken this semester

September 27: Graduation forms due to Dean's Office.

October 6: Foreign language examinations for master's degree candidates.

October 1: Last day to file applications for admission to candidacy for graduate students planning to complete degrees this semester.

October 16: Last day for graduate students to withdraw from a class with a WC grade

October 23: Last day for filing application for the master's written examination to be taken this semester

November 2: Comprehensive Exams for Master's Students

November 19: Last Day to give Final Draft of Thesis/Project Summary to Committee

November 26: Last Day to Defend Thesis/Project before Graduate Committee

November 26: Last Day to present proposal for admission to candidacy to research committee for Fall 2013 semester.

December 2: Last Day to Submit Thesis/Project Summary to Graduate School

Spring 2014:

February 7: Last day for filing applications for the master's foreign language examinations to be taken this semester

February 1: Last day to file applications for admission to candidacy for graduate students planning to complete degrees this semester.

February 14: Graduation forms due to Dean's Office.

February 22: Foreign language examinations for master's degree candidates.

March 5: Last day for graduate students to withdraw from a class with a WC grade

March 21: Last day for filing application for the master's written examination to be taken this semester

April 5: Comprehensive Exams for Master's Students

April 14: Last Day to give Final Draft of Thesis/Project Summary to Committee

April 21: Last Day to Defend Thesis/Project before Graduate Committee

April 21: Last Day to present proposal for admission to candidacy to research committee for Fall 2013 semester.

April 28: Last Day to Submit Thesis/Project Summary to Graduate School

IMPORTANT FORMS

**NORTH CAROLINA CENTRAL UNIVERSITY
DURHAM, NORTH CAROLINA
GRADUATE PROGRAMS**

APPLICATION FOR FOREIGN LANGUAGE EXAMINATION

APPLICATION FOR FOREIGN LANGUAGE EXAMINATION

Student Name _____ Banner ID# _____

Major Field _____ Minor Field _____

Exam Date _____

LANGUAGE REQUESTED (Please check)

German

Spanish

French

Statistics

Other

MAILING ADDRESS

Street _____

City _____ State: _____ Zip _____

Telephone _____

E-Mail _____

SIGNATURES

Applicant _____ Date _____

Chairperson _____ Date _____

APPROVAL FOR INTERINSTITUTIONAL REGISTRATION

North Carolina Central University • Office of the University Registrar
1801 Fayetteville Street • Durham, North Carolina 27707

FROM: _____
DEPARTMENT OR SCHOOL

This is to advise that the student referenced below has been approved to take the indicated course(s) during the indicated academic term. The equivalent course(s) at North Carolina Central University needs to be specified. Submit this form along with the *Interinstitutional Approval Form*.

STUDENT NAME _____ STUDENT ID# _____

LOCAL ADDRESS _____

TERM: _____ Fall _____ Spring _____ Summer I _____ Summer II

YEAR: _____ VISITED INSTITUTION: _____ DUKE _____ NCSTATE _____ UNC-CH

_____ UNC-C _____ UNC-G

OFFICIAL COURSE NUMBER AND COURSE NAME AS GIVEN BY THE VISITED INSTITUTION

1. _____

2. _____

EQUIVALENT COURSE AT NORTH CAROLINA CENTRAL UNIVERSITY

1. _____

2. _____

Approved by: _____ Date _____
Department Chairperson

_____ Date _____
Dean of School or College

**NORTH CAROLINA CENTRAL UNIVERSITY
DURHAM, NORTH CAROLINA
GRADUATE DIVISION**

**APPLICATION FOR ADMISSION TO CANDIDACY & MASTER'S WRITTEN
EXAMINATION**

Name: _____ Banner ID# _____

Current Address: _____

E-mail: _____

I hereby apply for admission to candidacy for the Degree _____ at the _____

20__ Commencement. Degrees held (college and dates) _____

Major Field/Core area _____ Minor Field if any _____

Upon approval of Admission to Candidacy, I apply to take the Master's Written Exam on _____

Graduate Courses completed at North Carolina Central Univ. (List by semester, including present semester)

No. & title of Major Courses	SEM/YR	CR. HRS	Major Course	SEM./YR.	CR.HRS.

Special conditions or transferred credits if any

No. & Title of Major Courses	SEM/YR	CR. HRS	Minor Courses	SEM./YR.	CR. HRS,

Program for remainder of the period of study

No. & Title of Major Courses	SEM/YR	CR. HRS	Minor Courses	SEM./YR.	CR.HRS.

DATE OF COMPLETION

Language Examination: ___

Statistics: ___

What language _____

Course No. _____

Date taken _____

Yr. Completed _____

Transcript on file? ___ yes

___ No

Subject for: (check one) ___ Thesis

___ Project

Title: _____

APPROVAL

I have checked the above courses and found them correct. This application is approved by:

Thesis/Project Committee Chair's Signature _____ Date: _____

Dept. Chairperson's Signature: _____ Date: _____

Student's Signature: _____ Date: _____

Date of admission to Candidacy:

Application is not considered complete unless accompanied with Plan of the Thesis or Project.

Form III-C

GRADUATE STUDENT REQUEST FOR TRANSFER CREDIT

(Name of university visited)

(Student's full name and Banner ID number)

(Student's local mailing address)

The above named student has requested approval to transfer credit taken during the _____
term for the following course(s) (semester) (year)

Course name and number Credit hours

1)

2).

* I recommend the above course(s) for transfer credit to the student's graduate degree program at NCCU.

Signature of Dean, Department Chair

Date

Signature of Associate Dean of the School of Graduate Studies

Date

_____ If this block is checked, the time limit in which to complete the requirements for your degree has
changed due to this transfer of credit. Your time limit will now expire with the
_____.

***Final approval granted by the School of Graduate Studies upon receipt of final, official transcript.**

**NORTH CAROLINA CENTRAL UNIVERSITY
DURHAM, NORTH CAROLINA
GRADUATE PROGRAMS
THE PLAN OF THE THESIS OR PROJECT**

****Please complete and submit with Application for Admission to Candidacy ****

Full Name _____ Banner: ID# _____

Tentative title of thesis or project:

Purpose of problems to be considered: (Please give a cogent summary of only the *purpose*.)

Sequence of steps to be taken in developing the thesis/project: (Attach additional sheet if needed.)

Brief Description of data gathering devices:

Value and Significance of the Thesis or Project:

*******Do not write below this line. To be completed by Department Chairperson *******

The Department recommends that this thesis or project be directed by _____, that the second member of student's Committee from the major area be: _____, and that the minor area or third Committee member be: _____

I certify:

- That student's plan has been examined and approved by the Department of the student's major
- That the investigation or project has merit as a learning experience for the student or as a minor problem in the current research program of the Department.
- That the student has sufficient background to undertake the task.

This application must be properly signed before submission to the Graduate Council and to the Graduate Dean. An improperly signed Plan of the Thesis or Project will not be processed.

Approved:

_____ Date: _____
Chairperson, Departmental Graduate Committee

_____ Date: _____
Department Chairperson

_____ Date: _____
Graduate Dean