2014-2015 LONG SIGNATURE SHEET

RECEIVED 01-04-16

Proposal Number: GEES 12-18-2015

Proposal Title: _ Implementation of interdisciplinary quantitative methods sequence for MA and Doctoral program in Geography, Public Policy, and Sociology

REVISED RECEIVED 01/27/16

Originating Department: ___Geography, Public Policy, and Sociology

TYPE OF PROPOSAL: UNDERGRADUATE_____ GRADUATE___X___ UNDERGRADUATE & GRADUATE___
(Separate proposals sent to UCCC and Grad. Council)

DATE RECEIVED	DATE CONSIDERED	DATE FORWARDED	ACTION	SIGNATURES
		Dec 18 '15	*Approved*	**DEPARTMENT CHAIR** Stephanie Moller - Sociology Martha Kropf - PPOL [print name here:] Cyn Cella - GEES
		2/3/16	*Approved*	**COLLEGE CURRICULUM COMMITTEE CHAIR** Janet E. Levy [print name here:] Janet E. Levy
			Approved	**COLLEGE FACULTY CHAIR (if applicable)** Elizabeth Stearns [print name here:] Elizabeth Stearns
		2/29/16	*Approved*	**COLLEGE DEAN** [print name here:] Shawn Long
			Approved	**GENERAL EDUCATION** (if applicable; for General Education courses) N/A [print name here:]
			Approved	**HONORS COLLEGE** (if applicable; for Honors courses & programs) N/A [print name here:]
			Approved	**UNDERGRADUATE COURSE & CURRICULUM COMMITTEE CHAIR** (for undergraduate content) N/A
3/2/16	4/5/16	4/5/16	*Approved*	**GRADUATE COUNCIL CHAIR** (for graduate content) Rob Roy McGregor / SUSAN MCCARTER
				FACULTY GOVERNANCE ASSISTANT (Faculty Council approval on Consent Calendar)
				FACULTY EXECUTIVE COMMITTEE (if decision is appealed)

UNC CHARLOTTE
College of Liberal Arts & Sciences
9201 University City Boulevard, Charlotte, NC 28223-0001

January 27, 2016

TO: CLAS Course and Curriculum Committee

From: Craig Allan, Department of Geography and Earth Sciences
Martha Kropf, Public Policy Doctoral Program
Stephanie Moller, Department of Sociology

RE: GEES 12-18-2015: Implementation of interdisciplinary quantitative methods sequence for MA and Doctoral program in Geography, Public Policy, and Sociology

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Thank you for the opportunity to revise our proposal. Per your suggestions, we have made the following changes:

1) We expanded on the summary to explain exactly what is included in the proposal. This section highlights that:
    a. We are creating a series of quantitative courses with the GRAD prefix. Many of these courses are simply a renumber of previous courses.
    b. The Department of Geography and Earth Sciences and the Public Policy Doctoral Program are not changing requirements; they are simply renumbering the requirements with the GRAD prefix.
    c. The Department of Sociology is changing curricular requirements. Previously, MA students we required to take SOCY 6653 (Advanced Quantitative Analysis). They were also required to take one additional methods course of their choosing (quantitative or qualitative). Now, students are required to take GRAD 6100 and GRAD 8101. They are no longer required to take an additional methods course, but they can take an additional course as part of their electives. The total number of hours required for graduation did not change. We justify this change in the proposal.
2) We further explained the use of a GRAD prefix rather than traditional cross-listing under point 4 of the justification.

    "These new consolidated courses will be offered through the Graduate School's Center for Graduate Life using the GRAD prefix. This will make the process of offering these courses easier as it limits the administrative burden associated with cross-listing courses, and it provides a home for the course offerings as the Center for Graduate Life can help coordinate and support the curriculum. Additionally, offering a single course number for each course represents a more

genuine interdisciplinary approach. Finally, by using the GRAD prefix as opposed to simply cross-listing, we might further improve efficiency by potentially expanding to more departments using these courses in the future."

3) We added a letter of support from the Center for Graduate Life.
4) We expanded on the topical content for two of the courses.
5) We added a statement about attendance to each course.
6) We added a statement to the course catalog for sociology:

   "The Sociology Graduate Program Director may waive the requirement for GRAD 6100 if the student presents evidence of quantitative skills comparable to what is learned in the course. This would not alter the total number of credit hours required for the major."
7) In terms of placing a cap on courses, we would like to keep the cap because students outside of the core departments can request permission to take the courses. We did not make a change to the proposal regarding caps.
8) If a student fails GRAD 8101 then that student would be required to retake the course. The student could choose to go back and take 6100 but it wouldn't be required. We did not mention this in the proposal since this is the typical approach for course failures.

Again, thank you for helping us to strengthen this proposal.

LONG FORM
COURSE AND CURRICULUM PROPOSAL

*To: Graduate Council

From: Craig Allan, Department of Geography and Earth Sciences; Martha Kropf, Public Policy Doctoral Program; Stephanie Moller, Department of Sociology

Date: 12/18/2016

Re: Implementation of interdisciplinary quantitative methods sequence for MA and Doctoral program in Geography, Public Policy, and Sociology

The Long Form is used for major curriculum changes. Examples of major changes can include:

Undergraduate: Major changes include new undergraduate degrees, minors, concentrations, certificates, and changes to more than 50% of an existing program (Note: changing the name of an academic department does not automatically change the name(s) of the degree(s). The requests must be approved separately by the Board of Governors.)

Graduate: Major changes include new graduate courses, major changes to an existing graduate course or major changes to an existing graduate program

Submission of this Long Form indicates review and assessment of the proposed curriculum changes at the department and collegiate level either separately or as part of ongoing assessment efforts.

*Proposals for undergraduate courses and programs should be sent to the Undergraduate Course and Curriculum Committee Chair. Proposals related to both undergraduate and graduate courses, (e.g., courses co-listed at both levels) must be sent to both the Undergraduate Course and Curriculum Committee and the Graduate Council.

University of North Carolina at Charlotte GEES 12-18-2015

New Graduate Proposal

Course and Curriculum Proposal from: Department of Geography; Public Policy Doctoral Program; Department of Sociology

Proposal Summary

This proposal has multiple components:

1) Create new quantitative courses and renumber (and rename) existing quantitative courses with GRAD numbers.
    a. GRAD 6100: Basic Statistics and Probability (new course)
    b. GRAD 8100: Accelerated Intro to Quantitative Techniques (renumber: previously PPOL 8050)
    c. GRAD 6101/8101: Linear Regression (renumber: previously PPOL 8620, SOCY 6653, and GEOG 6100/8100)
    d. GRAD 6102/8102: Categorical Outcomes
    e. GRAD 6103/8103: Classificatory Methods and Time Series (renumber, previously PPOL 8621)
    f. GRAD 6104/8104: Spatial Statistics (renumber: previously GEOG 6120/8120)
    g. GRAD 6009/8009: TOPICS

2) Revise the Sociology MA curriculum to incorporate the new courses
    a. Instead of requiring SOCY 6653, require both GRAD 6100 and GRAD 6101.
    b. Change credit hours of core requirements from 12 to 15, by requiring both GRAD 6100 and GRAD 6101. Allow a student to place out of GRAD 6100 by demonstrating relevant experience or prior coursework.
    c. Eliminate requirement for a separate course in subcategory "Research Methods Course."
    d. No change in proposed total credits for M.A.
3) Revise the Geography MA curriculum to incorporate the new courses
    a. Replace GEOG 6100 with GRAD 6101
    b. For the GIS&T concentration, replace GEOG 6120 with GRAD 6104 (renumber)
4) Revise the Geography and Urban Regional Analysis Ph.D. curriculum to incorporate the new courses
    a. Replace GEOG 8100 with GRAD 8101
    b. For the GIS&T concentration, replace GEOG 6120 with GRAD 6104 (renumber)
5) Revise the Public Policy Ph.D. curriculum to incorporate the new courses
    a. Substitute the numbering of GRAD 8100 for PPOL 8050
    b. Substitute the numbering of GRAD 8101 for PPOL 8620

Justification

1. Identify the need addressed by the proposal and explain how the proposed action meets the need.

The Departments of Geography and Earth Sciences and Sociology, along with the Public Policy Doctoral Program would like to combine their graduate quantitative courses. Currently, each department offers a section of very similar courses, but these courses often have limited enrollments. By consolidating multiple offerings of very similar courses, we are able to free up the time of faculty who may then offer more advanced quantitative courses. This is an exercise in both efficiency (by conserving faculty resources) and program enhancement (as we have freed faculty time to offer more advanced analytics courses).

The only Department that proposes a substantial change to the curriculum is the Department of Sociology. The required course that we currently teach, SOCY 6653, combines the proposed GRAD 6100 and Grad 6101. The problem is that many of our students are not ready for this fast-paced course. Dividing the course into two semesters will better prepare students to conduct quantitative research. Previously, the Sociology MA program required SOCY 6653 plus one additional methods course (quantitative or qualitative). The proposed curriculum changes require both GRAD 6100 and GRAD 6101 of Sociology MA students. We do not require an additional methods course, but students can take additional courses (including a qualitative course) as an elective. We should also mention that two of the courses listed in the catalog that previously met the requirements for the additional methods course (i.e., Data Utilization and Qualitative Research Methods) have not been taught in since before 2010 due to faculty turnover and increasing demands on faculty teaching time. The new proposal will allow our students to access much more intensive quantitative training without limiting their ability to take qualitative courses across campus.

2. Prerequisites are below
    a. GRAD 6100: Basic Statistics and Probability
        i. Prerequisites: Bachelor's degree
    b. GRAD 8100: Accelerated Intro to Quantitative Techniques
        i. Enrollment a doctoral program at UNC Charlotte
    c. GRAD 6101/8101: Linear Regression
        i. Prerequisites: Grad 6100 or comparable coursework.
    d. GRAD 6102/8102: Categorical Outcomes
        i. Prerequisites: Grad 6101/8101 or comparable coursework.
    e. GRAD 6103/8103: Classificatory Methods and Time Series
        i. Prerequisites: Grad 6101/8101 or comparable coursework.
    f. GRAD 6104/8104: Spatial Statistics
        i. Prerequisites: Grad 6101/8101 or comparable coursework.
    g. GRAD 6009/8009: TOPICS

3. Demonstrate that course numbering is consistent with the level of academic advancement of students for whom it is intended.

The only course in the sequence that is listed at the MA level-only is GRAD 6100. This course is designed for MA level students, and introduces them to statistics and multiple software packages. GRAD 6100 is considered a remedial course for doctoral students. GRAD 8100 is a refresher course for doctoral students. The remaining courses are cross-listed between GRAD 6100 and GRAD 8100 so that both MA and doctoral students may enroll.

4. In general, how will this proposal improve the scope, quality and/or efficiency of programs and/or instruction?

These new consolidated courses will be offered through the Graduate School's Center for Graduate Life using the GRAD prefix. This will make the process of offering these courses easier as it limits the administrative burden associated with cross-listing courses, and it provides a home for the course offerings as the Center for Graduate Life can help coordinate and support the curriculum. Additionally, offering a single course number for each course represents a more genuine interdisciplinary approach. Finally, by using the GRAD prefix as opposed to simply cross listing, we might further improve efficiency by potentially expanding to more departments using these courses in the future.

Choosing which courses are offered each semester and who teaches them will be decided by a committee that includes one representative from each of the following departments: Geography and Earth Sciences, Public Policy, Sociology, and the Center for Graduate Life.

The three separate departments will utilize these new courses for their graduate programs, but curricular requirements will vary across these departments. This proposal will present the new consolidated courses, and it will describe curricular changes in each department that integrate the new courses.

5. If course(s) has been offered previously under special topics numbers, give details of experience including number of times taught and enrollment figures.

GRAD 6100 was taught Fall 2015. 14 students enrolled in the course, including six sociology students and eight geography and earth sciences students.

GRAD 8103 was taught Fall 2015. 7 students enrolled in the course, including five students from public policy, 1 student from geography and earth sciences, and 1 student from HRSD. This course was added to the schedule late (over the summer) per the request of several public policy doctoral students.

Impact

1. What group(s) of students will be served by this proposal? (Undergraduate and/or graduate; majors and/or non-majors, others? Explain). Describe how you determine which students will be served.

This proposal affects graduate students in Geography and Earth Sciences, Public Policy, and Sociology because the curricular requirements of each of these programs are altered in this proposal. This proposal also has the potential to impact graduate students across the university because space permitting, they could sign up for these courses.

2. What effect will this proposal have on existing courses and curricula?
    a. When and how often will added course(s) be taught?

GRAD 6100: Basic Statistics and Probability

i. Every Fall

GRAD 8100: Accelerated Intro to Quantitative Techniques

ii. Every Summer

GRAD 6101/8101: Linear Regression

iii. Every Spring

GRAD 6102/8102: Categorical Outcomes

iv. Every Fall

GRAD 6103/8103: Classificatory Methods and Time Series

v. Every other year

GRAD 6104/8104: Spatial Statistics

vi. Every other year

GRAD 6009/8009: TOPICS

vii. Intermittently

b. How will the content and/or frequency of offering of other courses be affected?

Given that each department currently offers GRAD 6100 or GRAD 8100 every year, we free up resources. Therefore, this proposal should not reduce the frequency of offering other courses.

c. What is the anticipated enrollment in course(s) added (for credit and auditors)?
The anticipated enrollments below assume that each MA program will enroll 8 students a year, and each doctoral program will also enroll 8 students a year. It also assumes that the more advanced quantitative courses (which are optional courses) will attract fewer students.

GRAD 6100: Basic Statistics and Probability

i. Anticipated enrollment: 15 Enrollment Cap: 25 (will have a TA)

GRAD 8100: Accelerated Intro to Quantitative Techniques

ii. Anticipated enrollment: 25 Enrollment Cap: 25 (will have a TA)

1. Two sections might be offered to this course if demand supports it. This will still require fewer resources than the three separate courses currently needed in individual departments.

GRAD 6101/8101: Linear Regression

iii. Anticipated enrollment: 32 Enrollment Cap: 35 (will have a TA)

GRAD 6102/8102: Categorical Outcomes

i. Anticipated enrollment: 32 Enrollment Cap: 35 (will have a TA)

GRAD 6103/8103: Classificatory Methods and Time Series

i. Anticipated enrollment: 10 Enrollment Cap: 15

GRAD 6104/8104: Spatial Statistics

i. Anticipated enrollment: 10 Enrollment Cap: 15

GRAD 6009/8009: TOPICS

i. Anticipated enrollment: variable

d. How will enrollment in other courses be affected? How did you determine this?

Given that students are already expected to take 1 to 2 quantitative analysis courses in each program, we do not expect that the offering of GRAD 6100 or 6101/8101 to alter enrollment in other courses. Furthermore, Spatial Statistics is regularly offered by the Geography and Earth Sciences Department. This proposal simply opens it up to a broader cross-disciplinary audience. The other statistics courses will have limited enrollment and will likely attract students from across the university. Therefore, they should not profoundly affect enrollment in other courses.

e. Identify other areas of catalog copy that would be affected, including within other departments and colleges (e.g., curriculum outlines, requirements for the degree, prerequisites, articulation agreements, etc.)

Catalog copy should only be affected in Geography and Earth Sciences, Public Policy, and Sociology, and the Center for Graduate Life. We have appended the redlined graduate catalog to clarify.

III. Resources Required to Support Proposal.

Personnel

Given that this proposal enhances the efficiency of course offerings, we do not need additional faculty. We have requested a TA from the graduate school to cover the courses offered annually. This will permit a larger number of students to enroll in these higher demand courses. Instructors qualified to teach each course are listed below:

GRAD 6100: Basic Statistics and Probability

i. Dr. Stephanie Moller; Dr. Lisa Walker; Dr. Joseph Whitmeyer (Sociology)

ii. Dr. John Szmer (Political Science)

iii. Dr. Isabelle Nilsson, Dr. Elizabeth Delmelle, Dr. Wenwu Tang (Geography and Earth Sciences)

GRAD 8100: Accelerated Intro to Quantitative Techniques

iv. Dr. Stephanie Moller; Dr. Lisa Walker; Dr. Joseph Whitmeyer (Sociology)

v. Dr. John Szmer (Political Science)

GRAD 6101/8101: Linear Regression

i. Dr. Yang Cao (Sociology)

vi. Dr. John Szmer (Political Science)

vii. Dr. Isabelle Nilsson, Dr. Elizabeth Delmelle, Dr. Wenwu Tang (Geography and Earth Sciences)

GRAD 6102/8102: Categorical Outcomes

i. Dr. Yang Cao (Sociology)

ii. Dr. John Szmer (Political Science)

GRAD 6103/8103: Classificatory Methods and Time Series

ii. Dr. Joseph Whitmeyer and Dr. Yang Cao (Sociology)

iii. Dr. John Szmer (Political Science)

GRAD 6104/8104: Spatial Statistics

ii. Dr. Elizabeth Delmelle, Dr. Wenwu Tang (Geography and Earth Sciences)

GRAD 6009/8009: TOPICS

ii. Anticipated enrollment: variable

PHYSICAL FACILITY. Is adequate space available for this course?
Each of these courses will need to be taught in computer labs. Each department has access to a computer lab. Therefore, there is adequate space to teach these courses.

EQUIPMENT AND SUPPLIES: Has funding been allocated for any special equipment or supplies needed?
No

COMPUTER
The students will need access to R, SAS, STATA, GIS, and SPSS for these courses. All of these software packages are available through the university. R is freely available.

AUDIO-VISUAL.
There are no additional audio-visual needs

OTHER RESOURCES.
None

IV. CONSULTATION WITH THE LIBRARY AND OTHER DEPARTMENTS OR UNITS

A. **LIBRARY CONSULTATION.** Indicate written consultation with the Library Reference Staff at the departmental level to ensure that library holdings are adequate to support the proposal prior to its leaving the department. (Attach copy of ***Consultation on Library Holdings***). Attached in appendix to this application.

B. **CONSULTATION WITH OTHER DEPARTMENTS OR UNITS.** List departments/units consulted in writing regarding all elements outlined in IIC: Impact Statement, including dates consulted. Summarize results of consultation and attach correspondence. Provide information on voting and dissenting opinions (if applicable).

a. Attached is a letter of support from the Center for Graduate Life

C. HONORS COUNCIL CONSULTATION. In the case of Honors courses or Honors programs indicate written consultation with the Honors Council (if applicable).

V. INITIATION, ATTACHMENTS AND CONSIDERATION OF THE PROPOSAL

A. ORIGINATING UNIT. Briefly summarize action on the proposal in the originating unit including information on voting and dissenting opinions.

The Department of Sociology faculty met on November 20, 2015 and voted unanimously to support this proposal.

The Department of Geography faculty met on November 20, 2015 and voted unanimously to support this proposal.
The core faculty in the Public Policy Doctoral Program met February 2015. The proposal was approved, but the faculty were concerned that there was not a qualitative component. A small committee was formed to discuss qualitative coursework, but the Public Policy governance committee ultimately voted (April 2015) to move forward with the quantitative changes without adding a required Qualitative course.

B. CREDIT HOUR. **(Mandatory if new and/or revised course in proposal)**
Review statement and check box once completed:
☒ The appropriate faculty committee has reviewed the course outline/syllabus and has determined that the assignments are sufficient to meet the University definition of a credit hour.

C. ATTACHMENTS.

1. CONSULTATION: Attach relevant documentation of consultations with other units.

2. COURSE OUTLINE/SYLLABUS: For undergraduate courses attach course outline(s) including basic topics to be covered and suggested textbooks and reference materials with dates of publication. For Graduate Courses attach a course syllabus. Please see Boiler Plate for Syllabi for New/Revised Graduate Courses.

3. PROPOSED CATALOG COPY: Copy should be provided for all courses in the proposal. Include current subject prefixes and course numbers, full titles, credit hours, prerequisites and/or corequisites, concise descriptions, and an indication of when the courses are to be offered as to semesters and day/evening/weekend. Copy and paste the current catalog copy and use the Microsoft Word "track changes" feature (or use red text with "~~strikethrough~~" formatting for text to be deleted, and adding blue text with "underline" formatting for text to be added).

   a. For a new course or revisions to an existing course, check all the statements that apply:
   _X___ This course will be cross listed with another course.

_X___ There are prerequisites for this course.

____ There are corequisites for this course.

____ This course is repeatable for credit.

____ This course will increase/decrease the number of credits hours currently offered by its program.

_X___This proposal results in the deletion of an existing course(s) from the degree program and/or catalog.

For all items checked above, applicable statements and content must be reflected in the proposed catalog copy.

b. If overall proposal is for a new degree program that requires approval from General Administration, please contact the facultygovernance@uncc.edu for consultation on catalog copy.

4. ACADEMIC PLAN OF STUDY **(UNDERGRADUATE ONLY)**: Does the proposed change impact an existing Academic Plan of Study?

☐ Yes. If yes, please provide updated Academic Plan of Study in template format.

☒ No. NOT APPLICABLE

5. STUDENT LEARNING OUTCOMES (UNDERGRADUATE & GRADUATE): Does this course or curricular change require a change in Student Learning Outcomes (SLOs) or assessment for the degree program?

☐ Yes. If yes, please provide updated SLOs in template format.

☒ No.

6. TEXTBOOK COSTS: It is the policy of the Board of Governors to reduce textbook costs for students whenever possible. Have electronic textbooks, textbook rentals, or the buyback program been considered and adopted?

☒ Yes. Briefly explain below.

Students may participate in the textbook buyback program, but they will likely need to keep these books throughout their careers as reference books.

☐ No. Briefly explain below.

IMPORTANT NOTE: A Microsoft Word version of the final course and curriculum proposal should be sent to facultygovernance@uncc.edu upon approval by the Undergraduate Course and Curriculum Committee and/or Graduate Council chair.

1. GRAD 6100. Basic Statistics and Probability

2. Catalog Description:

GRAD 6100. Basic Statistics and Probability (3).
This course will cover basic statistics and probability theory. It will prepare students for linear regression. Students are expected to learn SAS, STATA, and R during the course of the semester by participating in modules offered by Project Mosaic. By the end of the semester, students should know the steps that need to be taken to clean data prior to analysis, strategies for combining data, basic descriptive statistics. They will also understand sampling theory, inferential statistics, and sampling distributions.

3. Pre- or Co-requisites: None. This course may not be retaken for credit.

4. Objectives of the course:

- Understand basic statistical equations and their meaning
- Understand how and why samples are used to study populations
- Understand steps in data analysis, including data cleaning and a variety of univariate and bivariate statistics.
- Basic understanding of a variety of statistical software packages

5. Instructional Method: Lecture.

6. Means of student evaluation:

Exams (40%): Students will have two exams that will test their knowledge. These exams are open book and open note. They may NOT consult with peers or the internet when completing these exams. Each exam will count toward 20% of their final grade. Students will have an opportunity to correct these two exams. Students will receive 70% credit for corrections.

Exercise Assignments (10%): Students will need to complete exercises from the textbook for most chapters. These will be graded as pass/fail. Students may work with peers as they complete the homework assignments, but students may not submit the same document. Each student must write their own answers.

Homework Assignments (20%): Students will have nine homework assignments to learn multiple statistical software packages. These assignments include the viewing of videos outside of class. Students may work with peers to complete the homework assignments, but students may not submit the same document. Each student must write their own answers.

Final Exam (30%): The final exam will be given at the scheduled exam time. It will be cumulative. It will be open note and open book, but students will have a three hour time limit.

Optional Extra Credit: Attend the following project mosaic modules. Bring notes from the modules to class for extra credit. Introduction to SAS, Introduction to STATA,

Introduction to R, Introduction to GIS. Students will receive 1 percentage point on their final exam for each class attended (Up to 4 percentage points).

7. Specify policies that apply to this course:

a. University integrity. All students are expected to abide by the Code of Student Academic Integrity (http://legal.uncc.edu/policies/ps-IOS.html).

b. Attendance: Students are expected to attend punctually all scheduled sessions in the courses for which they are registered, to demonstrate civil behavior while in class, and to complete all of the course requirements. Absences from class may be excused by the instructor for such reasons as personal illness, religious holidays, or participating as an authorized University representative in an out-of-town event. Whenever possible, students are expected to seek the permission of the instructor prior to absences.

c. Grading policy: A/B/C/Unsatisfactory. 90-100% =A; 80-89% = B; 70-79% = C. Below 70% = Unsatisfactory.

d. Disability services: Students with a documented disability, who are registered with University Disability Services (Fret 230) may receive appropriate accommodations. It is the student's responsibility to consult with Disability Services and contact the faculty member to arrange accommodation. Disability services is found at: www.ds.uncc.edu.

8. Probable textbooks or resources:

Moore, David S., George P. McCabe and Bruce A. Craig. 2014. *Introduction to the Practice of Statistics*. (8^{th} edition) New York: W. H. Freeman & Co.

9. Topical outline of course content

1. Introduction to Statistics, graphics, and statistical software packages
2. Data relationships
3. Producing Data
4. Sampling Distributions
5. Weighting
6. Random Variables
7. Probability
8. Hypothesis Testing
9. Inference
10. Two Way Tables
11. Nonparametric Tests
12. Advanced Graphics: Illustrating Spatial Relationships

1. GRAD 8100. Accelerated Intro to Quantitative Techniques (renumber: previously PPOL 8050)

2. Catalog Description:

GRAD 8100. Accelerated Intro to Quantitative Techniques (2).

This is a two week course intended to prepare students for required core economics and statistics courses. The course will cover math basics, a brief introduction to calculus (single variable derivatives and integrals), fundamentals of probability and an introduction to statistical software. The course will meet daily for ten days for three hours.

3. Pre- or Co-requisites: None. This course may not be retaken for credit.

4. Objectives of the course:

   - Review basic math and statistics.

5. Instructional Method: Lecture.

6. Means of student evaluation:

   Grading for this Course is Pass/Fail. The course cannot be repeated for credit. Students who do not pass the class cannot begin the regular course sequence but will have to take remedial courses to prepare them for success in the graduate sequence.

   Grades will be based on two exams, one at the end of the first week and one at the end of the second week.

   There may be homework assignments to solidify material covered in class and as practice for the exams.

7. Specify policies that apply to this course:

   a. University integrity. All students are expected to abide by the Code of Student Academic Integrity (http://legal.uncc.edu/policies/ps-IOS.html).

   b. Attendance: Students are expected to attend punctually all scheduled sessions in the courses for which they are registered, to demonstrate civil behavior while in class, and to complete all of the course requirements. Absences from class may be excused by the instructor for such reasons as personal illness, religious holidays, or participating as an authorized University representative in an out-of-town event. Whenever possible, students are expected to seek the permission of the instructor prior to absences.

   c. Grading policy: Pass/Fail

   d. Disability services: Students with a documented disability, who are registered with University Disability Services (Fret 230) may receive appropriate accommodations. It is the student's responsibility to consult with Disability Services and contact the faculty member to arrange accommodation. Disability services is found at: www.ds.uncc.edu.

8. Probable textbooks or resources:

John Fox. 2009. A Mathematical Primer for Social Statistics. Thousand Oaks, CA: Sage.

9. Topical outline of course content

A. Math basics
   a) Notation
   b) Algebra
   c) Graphs
   d) Important functions
   e) Area
   f) Simultaneous equations
   g) Dynamical systems

B. Introduction to calculus
   a) Limits
   b) Derivatives
   c) Integration

C. Fundamentals of probability
   a) Events
   b) Conditional Probability
   c) Random variables
   d) Distributions

D. Basic Statistics
   a) Hypothesis testing
   b) Comparison of means tests
   c) Cross-tabulations and chi-squared tests

1. GRAD 6101/8101. Linear Regression (renumber: previously PPOL 8620 and GEOG 8100)

2. Catalog Description:

GRAD 6101/8101. Linear Regression (3).

Linear regression models, and the ordinary least squares (OLS) estimators that are often used to estimate them, are robust tools employed by social scientists to both explain and predict social phenomena. Moreover, basic linear regression and OLS are part of the foundation one must have to understand more sophisticated variants of the linear model (e.g., time series, structural equations), as well as non-linear models (e.g., logistic regression, multinomial logit, Poisson regression). As such, the class has two primary purposes: 1) conveying a basic understanding of the linear regression model so that students will be able to both employ the technique in their own research and comprehend research employing the technique; and 2) provide a strong foundation in the underlying model such that they will have little difficulty in future classes that move beyond the OLS framework.

3. Pre-requisite: GRAD 6100 or equivalent. This course may not be retaken for credit.

4. Objectives of the course:

- Understand the linear regression model the basics of the linear regression model
- Understand OLS assumptions
- Understand how to diagnose whether OLS assumptions are met
- Understand how to run linear regression with STATA
- Introduce students to categorical outcomes

5. Instructional Method: Lecture.

6. Means of student evaluation:

Homework (20%): Homework will be assigned weekly, and will consist mostly of questions from the text. It is intended to provide opportunities to practice using the information learned in class and in the readings.

Replication Project (20%): Students will be asked to replicate many of the main findings from a published, peer-reviewed paper. This project is designed to give students a chance to practice applying the theory from class using Stata. The project will be handed in in three stages, and more details about what is expected in each stage will be given in class and on Moodle.

Exams (60%): There will be three exams given throughout the semester: two during the semester and one during finals week. Each exam will count for 20% of the final grade.

7. Specify policies that apply to this course:

a. University integrity. All students are expected to abide by the Code of Student Academic Integrity (http://legal.uncc.edu/policies/ps-lOS.html).

b. Attendance: Students are expected to attend punctually all scheduled sessions in the courses for which they are registered, to demonstrate civil behavior while in class, and to complete all of the course requirements. Absences from class may be excused by the

instructor for such reasons as personal illness, religious holidays, or participating as an authorized University representative in an out-of-town event. Whenever possible, students are expected to seek the permission of the instructor prior to absences.

c. Grading policy: A/B/C/Unsatisfactory. 90-100% =A; 80-89% = B; 70-79% = C. Below 70% = Unsatisfactory.

d. Disability services: Students with a documented disability, who are registered with University Disability Services (Fret 230) may receive appropriate accommodations. It is the student's responsibility to consult with Disability Services and contact the faculty member to arrange accommodation. Disability services is found at: www.ds.uncc.edu.

8. Probable textbooks or resources:

Gujarati, Damodar N. and Dawn C. Porter. 2009. Basic Econometrics. 5th Edition. NY, NY: McGraw-Hill Irwin.

Baum, Christopher F. 2006. An Introduction to Modern Econometrics Using Stata. Stata Press.

9. Topical outline of course content

1. Introduction and review of basic statistical concepts
2. Bivariate Regression
3. Estimation in multiple regression
4. Inference in multiple regression
5. Categorical independent variables
6. Regression diagnostics
7. Relaxing regression assumptions
8. Model specification
9. Regression with dichotomous and ordinal dependent variables

1. GRAD 6102/8102. Categorical Outcomes

2. Catalog Description:

GRAD 6102/8102. Categorical Outcomes (3).

While linear models like ordinary least squares regression are robust and useful, they are only applicable when your dependent variable is continuous and uncensored. Unfortunately, social scientists often want to explain phenomena that are "limited" in that they are not continuous and/or uncensored. Fortunately, there are alternative estimation techniques for analyzing most models with non-continuous (e.g., dichotomous, nominal, ordinal) and/or censored (e.g., event count or event history) dependent variables. We will examine a variety of techniques for estimating models with "limited" dependent variables.

3. Pre-requisite: GRAD 6101/8101. This course may not be retaken for credit.

4. Objectives of the course:

- Understand which statistical techniques are appropriate for quantitative outcomes
- Understand how to analyze categorical outcomes
- Understand how to present results

5. Instructional Method: Lecture.

6. Means of student evaluation:

Homework (50%): Homework will be assigned weekly, Typically, students will be provided with a dataset and asked to analyze and interpret a model using the applicable method... It is intended to provide opportunities for students to practice the material they learned in class and in the readings.

Exams (50%): There will be three exams given throughout the semester: two during the semester and one during finals week. Each exam will count for 20% of the final grade.

7. Specify policies that apply to this course:

a. University integrity. All students are expected to abide by the Code of Student Academic Integrity (http://legal.uncc.edu/policies/ps-IOS.html).

b. Attendance: Students are expected to attend punctually all scheduled sessions in the courses for which they are registered, to demonstrate civil behavior while in class, and to complete all of the course requirements. Absences from class may be excused by the instructor for such reasons as personal illness, religious holidays, or participating as an authorized University representative in an out-of-town event. Whenever possible, students are expected to seek the permission of the instructor prior to absences.

c. Grading policy: A/B/C/Unsatisfactory. 90-100% =A; 80-89% = B; 70-79% = C. Below 70% = Unsatisfactory.

d. Disability services: Students with a documented disability, who are registered with University Disability Services (Fret 230) may receive appropriate accommodations. It is the student's responsibility to consult with Disability Services and contact the faculty member to arrange accommodation. Disability services is found at: www.ds.uncc.edu.

8. Probable textbooks or resources:

J. Scott Long and Jeremy Freese. 2006. Regression Models for Categorical Dependent Variables Using Stata, Second Edition, Stata Press. ISBN 978-1597180115. (referred to as Long and Freese)

9. Topical outline of course content

1. Review of ordinary least squares regression
2. Linear probability model
3. Maximum likelihood estimation
4. Logit / probit models
5. Interaction effects
6. Ordinal logit and probit
7. Multinomial logit and probit
8. Event Count
9. Event History

1. GRAD 6103/8103. Classificatory Methods and Time Series (renumber: previously PPOL 8621)

2. Catalog Description:

GRAD 6103/8103. Classificatory Methods and Time Series (3).

The purpose of this course is to introduce students to three methods for analyzing quantitative data that are used frequently in social science and policy research. These are two classificatory methods, factor analysis and cluster analysis, and an extensive overview of time series analysis. Students are required to be familiar with the principles of statistical analysis and, in particular, with regression analysis to be enrolled in this class.

3. Pre-requisite: GRAD 6101/8101. This course may not be retaken for credit.

4. Objectives of the course:

- Understand when to use different classificatory methods
- Understand how to use different classificatory methods
- Understand when and how to use time series analysis
- Understand how to present results

5. Instructional Method: Lecture.

6. Means of student evaluation:

Homework (20%): Students will be responsible for a series of homework assignments where they will be asked to apply the topics learned in class. All assignments are due at the beginning of the class period. Late assignments will receive no credit unless you have made arrangements with me before the assignment is due.

Exams (60%): There will be two exams given throughout the semester: a midterm and a final. Each exam will count for 25% of the final grade.

Final Project (20%): Students will also be expected to present their findings related to a topic of interest to the class at the end of the semester. Each presentation should be approximately 15 minutes and should cover the following topics: (1) A brief introduction to the topic and what it was that the student were trying to test/discover (2) The methodology selected and an explanation why the technique selected was the most appropriate procedure (3) findings (4) The policy or theoretical implications of the findings. Emphasis should be on conveying findings in a non-technical fashion to a lay audience utilizing the appropriate visual aids.

7. Specify policies that apply to this course:

a. University integrity. All students are expected to abide by the Code of Student Academic Integrity (http://legal.uncc.edu/policies/ps-IOS.html).

b. Attendance: Students are expected to attend punctually all scheduled sessions in the courses for which they are registered, to demonstrate civil behavior while in class, and to complete all of the course requirements. Absences from class may be excused by the instructor for such reasons as personal illness, religious holidays, or participating as an

authorized University representative in an out-of-town event. Whenever possible, students are expected to seek the permission of the instructor prior to absences.

c. Grading policy: A/B/C/Unsatisfactory. 90-100% =A; 80-89% = B; 70-79% = C. Below 70% = Unsatisfactory.

d. Disability services: Students with a documented disability, who are registered with University Disability Services (Fret 230) may receive appropriate accommodations. It is the student's responsibility to consult with Disability Services and contact the faculty member to arrange accommodation. Disability services is found at: www.ds.uncc.edu.

8. Probable textbooks or resources:

Aldenderfer, Mark S. and Roger K. Blashfield. 1984. Cluster Analysis. Beverly Hills: Sage Publications.

Kim, Jae-On and Charles W. Mueller. 1979. Introduction to Factor Analysis: What It Is and How to Do It. Beverly Hills: Sage Publications

Ostrom, Charles. 1990. Time Series Analysis. Beverly Hills: Sage Publications.

Frees, Edward. 2004. Longitudinal and Panel Data. Cambridge, UK: Cambridge University Press.

9. Topical outline of course content

1. Principal components analysis
2. Exploratory factor analysis
3. Confirmatory factor analysis
4. Cluster analysis
5. Fixed effects time Series
6. Random effects time series
7. Mixed effects time series

1. GRAD 6104/8104. Spatial Analysis (renumber: previously GEOG 6120/8120)

2. Catalog Description:

GRAD 6104/8104. Spatial Statistics (3).

This course will introduce modern spatial statistics methods and their applications for the analysis of spatial data. Fundamental characteristics of spatial data, including spatial dependence, stationarity, and isostropy will be covered. We will focus on three main categories of spatial statistics: spatial point pattern analysis, spatial prediction and geostatistics, and spatial regression. Hands-on practices will be given to facilitate the understanding of theories and methods of spatial statistics.

3. Pre-requisite: GRAD 6101/8101. This course may not be retaken for credit.

4. Objectives of the course:

- Understand the unique characteristics of spatial data
- Understand which methods to use to analyze spatial data
- Understand how to interpret and present results from spatial analysis

5. Instructional Method: Lecture.

6. Means of student evaluation:

Lab assignments (30%): Students will be responsible for a series of lab assignments where they will be asked to apply the topics learned in class.

Quizzes (10%): There will be quizzes given throughout the semester.

Final Project (30%): Teams of one-two students may be formed to develop their projects. Students will be expected to hand in a project proposal and a final project report. The project proposal (1-2 pages) includes: project title; team members involved; and project statement and description (including the responsibility of team members). The final report (a paper: 20-30 pages for one-student team; 30-50 pages for two-student teams) is composed of at least five parts: 1) problem statement; 2) literature review: review of how others addressed similar problems; 3) methodology: discussion on how you addressed the problem; 4) a presentation and discussion of experimental results, and 5) conclusion: insights that are gained as a results of this research. Potential project ideas will be provided, but students are encouraged to develop projects based on their own research interest or experience. Grades will be based on proposals, presentation performance, and final reports. Each team will have about 15 minutes to present their projects. Note that journal quality is expected for the final report. Students will have a manuscript (almost) ready for submission to a high-quality journal by the end of the semester. The instructor will provide help/comments on improving project report during the semester.

Exam (30%): There will be one exam

7. Specify policies that apply to this course:

a. University integrity. All students are expected to abide by the Code of Student Academic Integrity (http://legal.uncc.edu/policies/ps-lOS.html).

b. Attendance: Students are expected to attend punctually all scheduled sessions in the courses for which they are registered, to demonstrate civil behavior while in class, and to

complete all of the course requirements. Absences from class may be excused by the instructor for such reasons as personal illness, religious holidays, or participating as an authorized University representative in an out-of-town event. Whenever possible, students are expected to seek the permission of the instructor prior to absences.

c. Grading policy: A/B/C/Unsatisfactory. 90-100% =A; 80-89% = B; 70-79% = C. Below 70% = Unsatisfactory.

d. Disability services: Students with a documented disability, who are registered with University Disability Services (Fret 230) may receive appropriate accommodations. It is the student's responsibility to consult with Disability Services and contact the faculty member to arrange accommodation. Disability services is found at: www.ds.uncc.edu.

8. Probable textbooks or resources:

Schabenberger, O., and Gotway, C.A., 2005, Statistical Methods for Spatial Data Analysis. Chapman & Hall/CRC, Boca Raton, FL. (for lecture)

Chun, Y., and Griffith, D.A., 2014, Spatial Statistics & Geostatistics. Sage: Los Angeles, CA. (for lab)

9. Topical outline of course content

1. Fundamentals of spatial data
2. Spatial autocorrelation
   a) global and local
3. Spatial point pattern analysis
   a) Complete spatial randomness
   b) Kernel density estimation
   c) Quadrat analysis
   d) Nearest neighborhood analysis
   e) K Function
   f) Marked point patterns
4. Spatially continuous data
   a) Covariance and semivariograms
   b) Trend surface analysis
   c) Kriging
5. Analysis of areal data
   a) Spatial regression
   b) Spatial econometrics
6. Spatiotemporal processes

Public Policy, Ph.D.

The Ph.D. in Public Policy at UNC Charlotte is an interdisciplinary program focusing on the study of policy development, implementation, and evaluation. It stresses the development of skills, tools, and specialties, as well as a theoretical understanding of them, that contribute to our understanding of the structure of institutional systems and sub-systems and of how policy should be shaped within political environments.

The Ph.D. in Public Policy prepares students to be researchers, decision makers and policy analysts in local, state or federal governments, not-for-profit agencies, for-profit institutions, and academia. The Program stresses applied and empirical policy research grounded in an interdisciplinary theoretical foundation. Students will become versed in analytical techniques suitable for research and policy analysis to address substantive issues and problems in varied geographic and political contexts. The intellectual focus of the Program is guided by three overarching themes:

Interdisciplinary Perspective: Effective policy analysis and policy formation are not informed by any single discipline. Rather, public policy requires knowledge of the historical, cultural, political, institutional, geographic, and economic dimensions of policy problems facing any community.

Applied and Empirical Policy Analysis: Public policy is an inherently applied endeavor that seeks practical solutions and cogent analysis. While theory informs all research and analysis, the purpose of policy research is to elevate public discourse and improve public decision-making.

Place-Based Research: To exercise applied policy analysis in an interdisciplinary context, policy research must be place-based. Real policy analysis, based on real data, applied to actual geographic and political settings is a strength of the Program.

Admission Requirements

The following are general guidelines for successful admissions into the Ph.D. in Public Policy Program:

A master's degree in a social science or other field related to policy studies is required for admission to full standing in the Ph.D. in Public Policy.

Exceptional performance at the master's level is required. This means a GPA of at least 3.3 in a master's degree program is required for admission. Students with baccalaureate degrees may be admitted on a conditional basis if they have an overall undergraduate GPA of at least 3.5 and are currently enrolled in a master's level program at UNC Charlotte in a field related to policy studies. However, such students will not formally be admitted to the Ph.D. program until completion of the requirements for the master's degree.

Admission to the program requires strong scores (at least at the fiftieth percentile) on the verbal, quantitative, and analytic sections of the Graduate Record Examination. The Graduate Record Examination is a required part of the application package.

Three strong, positive letters of recommendation, at least two of which must come from faculty in the student's previous academic programs. All letters should be written by individuals in a position to judge the applicant's likely success in a Ph.D. level program. Letters should address the applicant's suitability for a Ph.D. program and ability to complete the program in a timely fashion. Letters from the student's master's level program are preferred.

Admission to the program of students who are not native English speakers requires strong scores on the TOEFL exam. The TOEFL exam is a required part of the application package for non-native English speakers.

Students entering the program are expected to remedy any coursework deficiencies identified by the Admissions Committee and Program Director in the first semester after enrolling in the Program. The amount and kinds of remedial coursework required for the program depends on the background of the student and are established by the Admissions Committee and the Program Director. Possible deficiencies are indicated in the prerequisites for the required core courses of the program. This program emphasizes the quantitative and analytical skills necessary to confront the challenges of contemporary policy dilemmas that communities face at the local, state, federal, and international levels.

Documents to be submitted for application for admission:

Official transcripts from all colleges and universities attended

Official GRE scores (verbal, quantitative, and analytical)

The UNC Charlotte application for graduate admission form

Three letters of reference from academics who have taught or worked directly with the applicant

An essay that addresses professional goals and motivation for pursuing the degree, suitability for the program, career goals following the degree, and the policy specialty the applicant would pursue within the Program

TOEFL scores (if the student is not a native English speaker)

Admission Assessment

An Admissions Committee reviews applications and recommends to the Program Director whether each applicant should be admitted and, if so, under what conditions.

The Program's Admissions Committee assesses each student's previous academic coursework in light of the student's stated direction of study.This assessment is used to identify the strengths and weaknesses of the student's previous academic history and to suggest specific coursework for the student's public policy program. Any remedial coursework required for the program depends on the student's background

and will be established by the Admissions Committee and the Program Director. The Admissions Committee may also suggest specific coursework based on the student's intended direction of study within the program. The Admissions Committee conducts this assessment upon the student's acceptance and formal declaration of intent to attend. For each entering student, the Director of the Public Policy Program serves as his or her major advisor for the first year in the Program before the student chooses his or her committee chair.

Student Responsibility

Students entering the program must present evidence that their background is sufficient to undertake the coursework required of them. Such evidence ideally should include some combination of:

Familiarity with political and legal processes, behaviors, and institutions

A graduate level social science methods or statistics course

College coursework in both macro- and micro-economics

Substantial background in a public policy specialty area

Students may have completed appropriate courses to provide this background elsewhere. Normally, transcripts provide the evidence required by the Admissions Committee; however, if the student's previous experience is offered as evidence, the student must document such experience. A more detailed list of the types of prerequisite coursework can be found online at publicpolicy.uncc.edu.

Admission to Candidacy Requirements

After completing the core courses, students are required to write a qualifying examination covering the nature of the field, methodology, and economic analysis skills. After completing the qualifying examination, students take their policy field courses. Successful completion of core courses and the qualifying examinations allows students to proceed to the dissertation proposal preparation and defense stage. The dissertation proposal defense includes an oral presentation and written proposal. Prior to the proposal defense, with the guidance of their advisor, students develop a topic paper that outlines the policy area on which their dissertation will focus. After a topic approval meeting, students develop that topic paper into a full proposal. During the oral component of the proposal defense, the student addresses not only the specific research topic about which they will write but situates that topic in the larger body of relevant policy literatures; the defense serves as the comprehensive examination. Procedures for establishing the dissertation committee are addressed in the *Student Handbook* and in the Public Policy Seminar course.

Assistantships

The Ph.D. in Public Policy is committed to academic year funding for all full-time students. Additional support for summer sessions may be available through program funds and research grants working with program faculty. Available options for funding include graduate assistantships, teaching assistantships for those interested in careers in academia, and scholarships. For more information on funding options, contact the Director of the Public Policy Program.

Tuition Waivers

For full-time students with a Graduate Assistantship or Teaching Assistantship, full or partial tuition support is also available from the Graduate School's competitive Graduate Assistant Support Plan (GASP). GASP is a highly competitive multi-year support package. Students enrolled are eligible to receive full payment of in-state tuition, non-resident tuition (if required), and health insurance.

Degree Requirements

The total number of hours is established by the student's advisor according to a plan of study that must be presented after the successful completion of 18 credit hours of coursework. The Ph.D. Program requires 26 credit hours of core course credit, at least 6 credit hours of advanced analysis coursework, 18 credit hours of dissertation credit (enrollment contingent on admission to candidacy), and a minimum of 15 credit hours for specialty elective courses. It is unlikely that students will be able to complete this degree, including mastery of a subject-matter specialty, in 65 credit hours; 70-75 credit hours is more likely. Students progress through the program in five stages:

Core Courses

Qualifying Examination

Advanced Analysis Coursework and Specialty Policy Field Courses

Dissertation Proposal Defense

Dissertation

Core Courses:

The Ph.D. program requires 26 credit hours of core courses.

Introduction

~~PPOL 8050 - Accelerated Introduction to Public Policy Quantitative Techniques~~ GRAD 8100 - Accelerated Introduction to Public Policy Quantitative Techniques (2)

The Nature of the Field

PPOL 8600 - Policy Process I (3)
PPOL 8602 - Research Design in Public Policy (3)
PPOL 8635 - Ethics of Public Policy (3)
PPOL 8690 - Seminar in Public Policy (1) *

Note:

**PPOL 8690* is a one credit hour course. Students must enroll in it three separate times.*

Methods of Analysis

~~PPOL 8620 - Quantitative Methods in Public Policy I~~ GRAD 18101 Linear Regression (3)
PPOL 8630 - Advanced Program Evaluation (3)

Economic Analysis

PPOL 8640 - Economic Analysis of Public Policy I (3)
PPOL 8641 - Economic Analysis of Public Policy II (3)

Advanced Analysis Coursework

Prior to defending a dissertation proposal, students must complete at least six (6) credit hours of advanced analysis coursework at the doctoral level. Possibilities include, but are not limited to, GRAD 8101, 8102, 8103, 8104, or 98009. These credits may also be taken outside the PPOL program with the approval of the Program Director. Students are encouraged to choose courses that cover the types of analysis that are prevalent in the student's policy area of interest.

Policy Application

After students have completed the 26 core course hours and the 6 advanced analysis course hours, they are prepared to select a substantive application for their dissertation research. Students, in consultation with their advisor, take a minimum of 5 courses (15 credit hours) in a substantive area on which their dissertation will focus. While the core courses prepare students to develop, implement, and evaluate policy, the dissertation research provides the opportunity to put those tools into a substantive context. Public Policy at UNC Charlotte is in Charlotte's Urban Research University and the program is particularly strong in studying the various aspects of urban policy, including issues of economics, social inequality, education, health, development, criminal justice, and other aspects of urban life locally and globally. Thus, students should, in consultation with their advisor, develop a set of research questions and substantive interest on which their dissertation will focus. Students are encouraged to work with their advisor and the Program Director to design a program of study tailored to their policy interests by combining courses in several of these policy areas. While the particular courses required in each policy area may vary according to prerequisites needed by the student or individual programs of study, the minimum number of required courses in any given policy area is five (5) for 15 credit hours.

Examples of such areas and typical course sequences include:

Economic Policy

The Policy Field in Economic Policy focuses on the study of policy issues related to market, government, firm, and individual behavior. This specialty allows students to build knowledge regarding economic theory and tools used by economists to consider policy issues. In addition, the specialty offers several courses in which theoretical and statistical tools are applied to specific policy areas, including public economics, urban and regional economics, and health economics.

The following advanced quantitative methods courses are strongly recommended, and students are encouraged to work with their advisor to identify other relevant advanced methods courses:

BPHD 8120 - Econometrics I (3)
BPHD 8130 - Econometrics II (3)

Students are encouraged to choose courses of interest from the following offerings:

PPOL 8667 - Economic of Health and Healthcare (3)
PPOL 8705 - Advanced Urban and Regional Economics (3)
PPOL 8707 - Game Theory and Experiments (3)
PPOL 8709 - Public Economics (3)
PPOL 8711 - Monetary and Financial Theory (3)

In addition, the following economic theory courses are recommended for students without Master's level training in Economics:

PPOL 8701 - Advanced Macroeconomic Theory (3)
PPOL 8703 - Advanced Microeconomic Theory (3)

Note:

Other courses appropriate for each specialty may be available, and students may take these or substitute them for one of the listed classes in consultation with their advisor and the Program Director.

Students are encouraged to develop a focus in other related fields or design their specialty based on faculty resources available. As with all programs, such a program would need the approval of the student's advisor and the Program Director. Program faculty continue to develop additional substantive and methods courses.

Environmental/Infrastructure Policy

The Policy Field in Environmental/Infrastructure Policy focuses on environmental issues impacted by energy production and consumption, growth, pollution, and population change. This specialty allows interested students to gain knowledge on the economic factors related to environmental degradation and improvement. It also allows them the opportunity to become familiar with the scientific aspects of urban air, water, and earth systems. Policy making and policy analysis related to these issues will all be covered by courses in this specialty.

Courses for this specialty typically include:

PPOL 8600 - Policy Process I (3)
PPOL 8650 - Environmental Policy (3)
PPOL 8652 - Energy and Environmental Economics (3)

Two additional courses from these or other choices:

PPOL 8653 - Urban Air Quality (3)
PPOL 8655 - Watershed Science Policy (3)
PPOL 8656 - Earth Systems Analysis: Biogeochemical Cycles (3)

Health Policy

The Policy Field in Health Policy focuses on applied research in the organization, delivery and financing of healthcare and population-based issues in health (including mental health). A multidisciplinary faculty in epidemiology, health economics and finance, health policy, medical sociology, bioethics, and health law is ideally suited to prepare quantitative health service researchers and health policy analysts. Qualified students without a relevant Master's degree can prepare for the Ph.D. by completing coursework in the Health Administration, M.H.A., the MA in medical sociology, or the MS in Health Promotion while enrolled in the Ph.D. with a field specialty in Health Policy.

Courses for this specialty typically include:

PPOL 8661 - Social Organization of Healthcare (3)

PPOL 8663 - Health Policy (3)
PPOL 8665 - Analytic Epidemiology (3)
PPOL 8667 - Economic of Health and Healthcare (3)
PPOL 8669 - Investigating Health and Health Services (3)

Justice Policy

The Justice Policy Field provides an interdisciplinary approach to the study of crime and society's response to it. This specialty prepares students to conduct research and policy analysis on local, state, and national policies and policy initiatives and provide information for policy makers. The primary goal of this specialization is to provide students with the tools necessary for critically and objectively assessing policies related to the administration of justice. Toward that end, students gain the appropriate analytical skills, an understanding of the nature of criminal behavior and its impact, and knowledge about the criminal justice system as well as about a variety of issues related to the control of crime. They also become familiar with the process of making and implementing justice policy and with those organizations involved in this process.

Courses for this specialty typically include:

PPOL 8000 - Topics in Public Policy (1-4)
PPOL 8671 - Criminal Justice Policy (3)
PPOL 8672 - Theories of Crime and Justice (3)
Plus, one other course from the other Policy Fields.

Social Policy

The Policy Field in Social Policy prepares scholars, researchers, practitioners, and policy makers to address crucial social issues facing communities and our nation including social welfare, education, poverty, housing and homelessness and the role of public, nonprofit, and private sectors in alleviating and contributing to such problems. In addition to dealing with these topics in their own right, the social policy field focuses on the complex interrelationships among these issues and the manner in which they are influenced by--and in turn influence--prevailing patterns of racial, ethnic, and gender stratification. The social policy specialization provides the theoretical background, methodological training, and substantive knowledge that will allow students to make important contributions to the development, implementation, and evaluation of public policies addressing the most vexing and important social issues of our time.

Courses for this specialty typically include:

PPOL 8681 - Race, Gender, Class, and Public Policy (3)
PPOL 8682 - Stratification and Social Policy (3)
PPOL 8683 - Population Dynamics and Social Policy (3)

Two additional courses from these or other choices:

PPOL 8685 - Aging and Social Policy (3)
PPOL 8687 - Education Policy (3)
PPOL 8688 - Political Economy of School Reform (3)
PPOL 8689 - The Social Context of Schooling (3)

Urban Regional Development and Infrastructure

The Urban & Regional Development Policy Field stresses applied and empirical policy research that is grounded in an interdisciplinary theoretical foundation. Students will be prepared in analytical techniques suitable for research and policy analysis through courses addressing several topics at the neighborhood, city and regional levels, including: Economic Development; Transportation Policy; Infrastructure Provision; Public Service Delivery; Growth Management; Regionalism and Governance.

Courses for this specialty typically include:

PPOL 8610 - Urban Regional Environment (3)
PPOL 8611 - Metropolitan Governance and Administration (3)
PPOL 8613 - Transportation Policy (3)

Two additional courses from these or other choices:

PPOL 8612 - Theory of Urban Development (3)
PPOL 8614 - Colloquium in 20th Century Black Urban History (3)
PPOL 8615 - The Restructuring City (3)
PPOL 8616 - Urban Planning Theory and Practice (3)
PPOL 8617 - Law and Management (3)
PPOL 8618 - Growth Management Systems (3)
PPOL 8642 - Regional Economic Development (3)
PPOL 8643 - Rural Development Issues (3)
PPOL 8644 - Public Budgeting and Financing (3)

Advising/Committees

While the Program Director serves as the de facto advisor for each student for the first year, the Program Director works with the students and faculty to help the student work with a suitable advisor. Once the student is matched with the advisor, they work closely with that advisor on suggested schedules of classes, research options, and other issues important to success. After approximately one year in the program, each student is expected to have identified the faculty member with whom they would like to mentor, with the expectation that this mentor would ultimately serve on the student's committees. Following completion of the policy field courses, students establish their dissertation advisor and form a dissertation committee. The procedures for establishing these committees are in the *Student Handbook* and are addressed in the Public Policy Seminar.

Grade Requirements

A student must maintain a cumulative average of 3.0 in all coursework taken for graduate credit. An accumulation of three C grades will result in termination of the student's enrollment in the graduate program. If a student receives a grade of U in any course, enrollment in the program will be terminated.

Transfer Credit

The Program will accept up to two courses in the core curriculum as transfer credit from other regionally accredited doctoral institutions, providing that the Admissions Committee determines that these courses are equivalent to those offered in the core or one of the specialty areas. The acceptance of transfer credit is subject to the approval of the Graduate School. The grade in these transfer credits must have been A or B. All of the dissertation work must be completed at UNC Charlotte.

Language Requirement

There is no foreign language requirement.

Dissertation

The program requires that the student complete 18 hours of dissertation credit. Enrollment in dissertation credit is contingent on admission to candidacy. The dissertation topic may be proposed after the student has passed the qualifying exams. The doctoral student advances to candidacy after the dissertation proposal has been defended to, and approved by, the student's advisory committee and reported to the Director of the Ph.D. in Public Policy and the Dean of the Graduate School. The student must complete and defend the dissertation based on a research program approved by the student's dissertation committee that results in a high quality, original, and substantial piece of research.

Other Requirements

PPOL 8690 Public Policy Seminar Series
Students in the program develop their appreciation of the varied nature of policy applications and improve their communication skills by participating in at least three seminar series throughout the course of their program. This seminar also serves as a clearinghouse, introducing students to the varied faculty in the program. Each term a series of guest speakers prepare monthly seminars reflecting a range of policy

issues and challenges. Students engage in activities aimed at professional development for both practitioners and for those interested in pursuing careers in academia.

Research Opportunities

The Ph.D. Program in Public Policy has an extensive pool of professors to enhance the research opportunities and experiences for the students. Each program of study could be individually tailored for the research of the student with the possibility of individual studies under the supervision of an advisor.

Application for Degree

Each student should make application for his/her degree by completing the online Application for Degree through Banner Self Service no later than the filing date specified in the University Academic Calendar. After successful defense of the dissertation, a student will be conferred with the doctoral degree.

Residency Requirement

Students must satisfy the residency requirement for the program by completing 21 hours of continuous enrollment, either as coursework or dissertation credits. Residence is considered continuous if the student is enrolled in one or more courses in successive semesters until 21 hours are earned. All 18 hours of dissertation credit must be earned at UNC Charlotte.

Time Limits for Completion

The student must achieve admission to candidacy within six years after admission to the program. All requirements for the degree must be completed within eight years after first registration as a doctoral student. These time limits are maximums; full-time students will typically complete the degree requirements in five years.

Sociology, M.A.

The Master of Arts in Sociology provides students with theoretical and methodological skills necessary to undertake analysis of contemporary social issues and problems. The curriculum is designed to meet the needs of students seeking master's level research skills for occupations requiring such expertise: in government, marketing, program planning and evaluation, business, the media, and in the nonprofit sector. The curriculum also prepares students who wish to pursue the Ph.D., whether in sociology or a related discipline. The Department of Sociology is a core part of the Ph.D. programs in Public Policy and Organizational Science at UNC Charlotte.

Program of Study

Coursework concentrates on building skills in research design, sampling, data analysis, interpretation and sociological theory. Students complete either a thesis, with oral defense, or a research practicum. Either option entails the student applying sociological knowledge to a problem/topic of his/her interest. In addition to traditional classroom courses, students can tailor their coursework to specific areas of interest through individualized tutorials. A variety of research interests are represented among the Sociology faculty. Among these are Education, Healthcare, Group Processes (Social Psychology), Social Movements, Stratification, Organizations, and Mathematical Sociology. Through coursework and tutorials students can gain a substantive knowledge base that complements their social research skills.

Additional Admission Requirements

An overall undergraduate GPA of 3.0 or above
Acceptable score on the Graduate Record Examination (GRE)
Demonstrated undergraduate competence in research methods, theory and statistics for social research.
Eighteen credit hours of social science undergraduate courses.

Prerequisite Requirements

Research Methods, Theory, Statistics for Social Research

Degree Requirements

The program requires 35 credit hours of coursework. To provide all students with a solid grounding in theory and methods of sociological inquiry, ~~12~~ 15 credit hours of core courses are required (Pro-Seminar, Social Theory, 2 Sstatistics courses, and Research Methods). In addition to the core, students must take ~~one additional course in research methods and~~ at least two elective courses in the department. Students must complete either a thesis (6 credit hours) or a research practicum (6 credit hours). The remaining 8 credit hours are electives.

Core Courses (~~12~~ 15 credit hours)*

SOCY 5151 - Pro-seminar: Social Problems and Social Policy (3)
SOCY 6651 - Social Theory (3)
SOCY 6652 - Issues in Social Research (3)
GRAD 6100: Basic Statistics and Probability~~SOCY 6653 - Advanced Quantitative Analysis~~ (3)
GRAD 6101: Linear Regression (3)

Note:

**Students must earn at least a B in each Core Course. Students earning a C in one of these courses must repeat the course and earn at least a B the next time it is offered. Students earning a C in two of these courses will be suspended from the program. The Sociology Graduate Program Director may waive the requirement for GRAD 6100 if the student presents evidence of quantitative skills comparable to what is learned in the course. This would not alter the total number of credit hours required for the major.*

~~Researeh Methods Course (3 credit hours)~~

~~*Select at least one of the following:*~~
SOCY 6090 - Topics in Sociology ~~(3) *(as appropriate, and with permission of the Graduate Program Director)*~~

SOCY 6136 - Qualitative Research Methods (3)
SOCY 6617 - Data Utilization (3)
SOCY 6630 - Investigating Health and Health Services (3)
SOCY 6640 - Evaluation Research for Applied Sociology (3)

Restricted Elective Courses (6 credit hours)

Select at least two SOCY courses.

Thesis or Research Practicum (6 credit hours)

Select one of the following:
SOCY 6897 - Research Practicum (1-6)
SOCY 6996 - Thesis (1-6)

Unrestricted Elective Courses (8 credit hours)

Students may take elective courses (up to 6 credit hours) from other departments as long as courses are at the graduate level (5000 or above).

Admission to Candidacy Requirements

Completion of at least 24 credit hours of required work.

Assistantships

The Department of Sociology offers both teaching assistantships and research assistantships; the latter are dependent upon faculty research funding. Teaching assistants assist faculty with coursework, or teach the undergraduate lab sections in research methods and statistics. They are paid approximately $10,000 for nine months of twenty hours per week work during the academic year. The workload and pay for research assistants varies. Assistantships are awarded on the basis of merit and experience.

Internships

While there is no formal system of ongoing internships, agencies do contact the department to find students who would be interested in an internship. Consequently, internships are optional and dependent upon a match between an agency's needs and a student's skills and interests.

Advising

The Graduate Director advises all graduate students until they select a person to serve as their Committee Chair.

Transfer Credit

With departmental approval, students may transfer in up to six credit hours of graduate work for which the applicant received a grade of B or above from another institution, related UNC Charlotte degree program or related post-baccalaureate work.

Committee

The student's committee shall consist of three faculty members: the Chair and two other individuals who assist with completion of the thesis or research practicum. One member of the committee, not the chair, may be from outside the department.

Thesis

Students formulate a theoretically motivated or applied research question or argument and collect or analyze existing empirical data to answer that question.

Research Practicum

As an alternative to the traditional thesis, students have the option of a research practicum. This may be combined with an internship. The student works with an organization or agency to complete a research evaluation project for the agency.

Research Opportunities/Experiences

Faculty members are actively engaged in research and students are strongly recommended to work with faculty to develop research expertise. In addition, a number of faculty members have funded research projects or internships on which qualified graduate students are able to work.

Tuition Waivers

Both out-of-state and in-state tuition assistance may be available and are awarded on the basis of merit and experience.

Financial Assistance

Other than the assistantships and waivers described above, the Department offers the Pearson Fellowship, which is awarded annually to a graduate or undergraduate student who has interests and goals in improving race relations, expanding social justice, and establishing a more peaceful world. The award is made every spring and consists of $1,000 to be applied to tuition at UNC Charlotte.

Geography, M.A.

The M.A. in Geography at UNC Charlotte emphasizes the application of geographic skills, methods, and theories to problem solving in contemporary society. To this end, students are offered a solid foundation in research methods, problem formulation and solution, quantitative methods, computer applications and Geographic Information Systems (GIS). Faculty and students are active in the community and, when possible, students are encouraged to complete their programs with either funded or unfunded private or public sector internships.

One of the program's greatest strengths is the close relationship between its students and faculty and among the students themselves. Small class sizes, close student and faculty contact and a strong sense of community are considered essential components of the learning and teaching environment at UNC Charlotte.

The applied geography program at UNC Charlotte is recognized as one of the best of its kind in the country. Its graduates go directly into jobs as professional geographers, research and/or marketing specialists, location analysts, planners, transportation specialists, and consulting. About 10 percent of the more than 250 graduates of the program have gone on to study in Ph.D. programs.

Additional Admission Requirements

It is the policy of the Department of Geography and Earth Sciences to provide equal opportunities to all students regardless of race, creed, color, gender, or national origin. The Department maintains slightly different requirements than the general requirements for admission to graduate study at UNC Charlotte. The Department requires that applicants demonstrate evidence of suitability for the programs via evaluation in the five major areas listed below. These are weighted equally.

All applications for admission to the M.A. in Geography program are reviewed by the Geography Graduate Advisory Committee. The Department admits applicants on a competitive basis as space in the program allows and grants exceptions to the minimum standards if deemed in the best interests of the program.

- **Grade Point Average (GPA):** In general, the Department would prefer an overall undergraduate GPA above 3.1 (or a 3.1 for the last 2 years) and a GPA of 3.2 in the major. However, averages less than these will not exclude applicants if the other elements of the application are strong.
- **Letters of Recommendation:** Three letters of reference are required. Letters from college or university teachers who have worked with and/or taught applicants are preferred. These letters will be evaluated on the basis of how well the applicant is suited in terms of intellect, motivation and temperament to do graduate coursework.
- **Personal Essays:** Applicants must write a personal essay which directly addresses why they wish to do graduate work in geography and why they wish to participate in the M.A. program at UNC Charlotte. They should address directly how the program at UNC Charlotte fits their career and/or professional goals and how they would benefit from and contribute to the M.A. in Geography at UNC Charlotte. This essay is very important in determining the applicant's commitment to graduate education and to a professional career in geography or a related field. Careful consideration of what goes into this essay is time well spent.
- **Scores on the Graduate Record Exam (GRE):** In general, the department would prefer scores in the range of 150 or more on each of the Verbal and Quantitative portions of the GRE. Analytical scores are expected to be above 3.5. Again, scores less than these suggested minimums will not automatically exclude applicants if the remainder of the applicant's file is strong.
- **Transcripts of College Coursework:** The transcripts will be evaluated on the basis of types of courses attempted, range of geography, statistical and computer coursework attempted. Not only will the applicant be evaluated on the strength of the performance in these areas, but also on the range, depth and suitability of the applicant's preparation for graduate level coursework.

Additional Requirements for International Applicants

Applicants whose native language is not English must demonstrate their proficiency in English by taking the Test of English as a Foreign Language (TOEFL) examination. Overall scores of 84 with scores of 21 or above on individual sections (listening comprehension; structure and written expression; vocabulary and reading comprehension) are preferred.

Prerequisite Requirements

(Minimum Preparation Suggested for Students Entering the Program)

All prospective graduate students must demonstrate competence in the undergraduate subject matter in their area of study. While the department does not require that applicants have a degree in Geography, prospective graduate students should provide evidence that they are prepared to immediately take full advantage of graduate level coursework in Geography.

Students applying to the program should, at a minimum, be familiar with the concepts and materials offered in courses such as basic Economic Geography, Introduction to Spatial Analysis, Location Theory, and Introduction to Research Methods or Statistics. Any student wishing to pursue additional training in Geographic Information Systems (GIS) should have basic cartography preparation and computer file management and data base skills.

Assistantships

Graduate assistantships are awarded on a competitive basis and arranged for either one entire semester or for an entire academic year (2 semesters or 9 months). They are normally scheduled for 16 weeks per semester and the student works 20 hours per week.

Degree Requirements

The M.A. in Geography requires a minimum of 36 credit hours of graduate work. Three specific courses (12 hours) are required of all students except those pursuing the Community Planning Track. Of the remaining 24 credit hours, a minimum of 12 credit hours must be completed through 5000-6000 level geography coursework. Up to 12 credit hours may be taken in related work which includes all transfer credit, credit by exam, and coursework in other departments at or above the 5000 level. At the discretion of the department, transfer credit totaling up to 6 hours may be accepted from accredited universities. No student may take more than 6 credit hours in graduate level independent study (GEOG 6800).

Required Courses

(for all except the Community Planning Track)

- ~~GEOG 6100 - Quantitative Methods in Geography~~ GRAD 6101 – Linear Regression(3)
- GEOG 6131 - Research Design Fundamentals (3)
- GEOG 7900 - Individual Research Project (1-6)

Elective Courses

- Other 5000 or 6000-level courses in Geography with a minimum of 12 credit hours
- Related work (outside the department) or transfer credits in courses numbered 5000 and above with a maximum of 12 credit hours

Advising

Upon admission to the program each student will be assigned a faculty advisor from the student's declared area of interest. This advisor will help guide the student through the design and implementation of a program of study tailored to the student's specific needs and career goals. The advisor will be available to the student for advice on academic and other matters. Students must confer with their advisors regularly concerning academic matters.

More often than not, students will not work with the same advisor throughout the entire program. Once the student has become familiar with the program and the faculty, it is possible to change advisors by obtaining prior approval from the faculty member with whom the student wishes to work. Advisors should be chosen to match, as nearly as possible, the student's academic and career interests. No student will be allowed to register for a course without an advising session with their advisor. The advisor will remove the advising hold at this session.

All students are required to formulate a complete plan for their M.A. during pre-registration for second semester. This plan must be approved by their advisor and will serve as a guide to their course of study while at UNC Charlotte.

Academic Standards

From the date of admission to graduation, the Department conducts a continuous review of student academic and professional performance. In addition to evaluations conducted within the courses taken by students, the faculty conduct a thorough review of student performance on a regular basis. Continuation in the program is contingent upon a favorable review during these evaluations. Students who consistently show borderline course performance, who are not developing good applied skills in the practice of their chosen area of study, who fail to complete coursework on a timely basis, or who otherwise perform unprofessionally or unsatisfactorily, may be required to complete additional courses or may be terminated from the program.

All graduate students are subject to academic suspension and/or termination. Department academic standards deviate slightly from University policies stated in appropriate catalogs. A student must maintain a cumulative average of 3.0 in all coursework taken in the program. An accumulation of one (1) marginal (C) grade results in the student being placed on probationary status within the program and could lead to the student being required to re-take the course, and a potential loss of funding if the student is receiving departmental or internship funding. An accumulation of two (2) marginal (C) grades results in suspension of the student's enrollment in the graduate program. A graduate student whose enrollment has been suspended because of grades is ineligible to register in any semester or summer session unless properly reinstated through the suspension appeal process. An accumulation of three (3) marginal (C) grades or one (1) unsatisfactory (U) or one (1) NC grade results in termination of the student's enrollment in the graduate program. In order to continue a program of study, the student must pursue reinstatement through the termination appeal process or wait a period of two years before applying for readmission to the program.

Special care should be exercised in completing the requirements of a course in which a grade of Incomplete (I) is received. With the exception of GEOG 6131 , where incomplete grades are not normally given, incomplete work must be finished during the next semester in residence, but not later than 12 months after the end of the term in which the "I" was assigned, whichever comes first. However, the course instructor has the option of specifying a completion deadline anytime within the 12-month period. If the "I" is not removed during the specified time, a grade of U is automatically assigned. In any case, a student will not be allowed to schedule the final comprehensive examination until all incomplete grades are removed. Also, with the exception of GEOG 7900 , no student may have more than two incomplete grades at any time. Students with two or more incompletes may not register for another term.

Concentrations and Tracks

Students may elect to study in one or a combination of three concentrations (Location Analysis, Urban-Regional Analysis, GIS&T) and one track (Community Planning).

Location Analysis Concentration

The Concentration in Location Analysis offers coursework in retail location, applied population analysis, facility siting, office and industrial location, trade area analysis, real estate development, location research, and regional economic development.

This concentration prepares students for jobs in location research with retail companies, real estate developers, consulting firms, commercial banks, and economic development agencies or for continued academic training in economic geography and location analysis. Some courses are taught by practitioners in the career fields listed above.

Coursework

The following courses are suggested for a concentration in location analysis:

- GEOG 5108 - Sport, Place and Development (3)
- GEOG 5155 - Retail Location (3)
- GEOG 5255 - Applied Population Analysis (3)
- GEOG 6000 - Topics in Economic Geography (3)
- GEOG 6030 - Topics in Geographic Techniques (3)
- GEOG 6103 - Real Estate Development (3)
- GEOG 6301 - Industrial Location (3)
- GEOG 6305 - Site Feasibility Analysis (3)
- GEOG 6306 - Store Location Research (3)

Urban-Regional Analysis Concentration

The Concentration in Urban-Regional Analysis offers coursework in community development, regional development, GIS based analysis, site feasibility analysis, public facility siting, urban economics and social geography.

Students normally gain employment in public sector community development and economic development as well as the private sector.

Graduates of the M.A. in Geography program hold positions in a number of local and regional agencies in North Carolina and South Carolina as well as in other states such as California, Colorado, Connecticut, Florida, Georgia, Kentucky, New York, and Washington. They have responsibility for a broad range of development issues and tasks including economic development, geographic information systems, housing, land use, community and neighborhood analysis. Job placement for graduates has been very successful.

Coursework

Students normally choose courses from the following for a Concentration In Urban-Regional Analysis:

- GEOG 5101 - Cartographic Techniques (3)
- GEOG 5103 - Computer Mapping (3)
- GEOG 5108 - Sport, Place and Development (3)
- GEOG 5120 - Introduction to Geographic Information Systems (4)
- GEOG 5130 - Advanced Geographic Information Systems (4)
- GEOG 5210 - Urban Planning Methods (3)
- GEOG 5255 - Applied Population Analysis (3)
- GEOG 5260 - Transportation Policy Formulation (3)
- GEOG 5265 - Transportation Analysis Methods (3)
- GEOG 6015 - Topics in Regional Geography (3)
- GEOG 6103 - Real Estate Development (3)
- GEOG 6123 - Urban Regional Environment (3)
- GEOG 6210 - The Restructuring City (3)
- GEOG 6211 - Cities and Immigrants (3)
- GEOG 6212 - Urban Labor Markets (3)
- GEOG 6300 - Applied Regional Analysis (3)

- GEOG 6301 - Industrial Location (3)
- GEOG 6305 - Site Feasibility Analysis (3)
- GEOG 6400 - Advanced Seminar in Spatial Decision Support Systems (SDSS) (4)
- GEOG 6500 - Urban Planning: Theory and Practice (3)

Geographic Information Science and Technologies (GIS&T) Concentration

Given the increasingly diverse uses of geospatial technology in government, industry, and academia, this concentration prepares students for jobs with public agencies and private companies, such as GIS systems designers, geospatial analysts, geospatial project coordinators, geospatial information technologists, cartographers, spatial planners, and remote sensing analysts.

The Concentration in Geographic Information Science and Technologies (GIS&T) offers coursework giving each student the opportunity to acquire and apply GIS&T tools and techniques, specifically digital image processing, environmental, transportation and urban applications of GIS, GPS, GIS programming and customization, geocomputation, geovisualization, location modeling, network analysis, planning applications of GIS, remote sensing, spatial database design, spatial decision support systems, spatial optimization spatial statistics and geostatistics.

Coursework

- ~~GEOG 6100 - Quantitative Methods in Geography~~ GRAD 66101 – Linear Regression (3)
- GEOG 6131 - Research Design Fundamentals (3)
- GEOG 7900 - Individual Research Project (1-6)

Elective Courses

A total of 24 credit hours originating from the following lists of GIS&T elective courses are recommended for a Concentration in GIS&T*. In customizing their programs, students should endeavor to take at least 3 to 6 elective hours of geography courses in the areas of community planning, transportation, locational analysis, or urban regional analysis.

GIS&T Tools and Techniques Elective Courses

- GEOG 5120 - Introduction to Geographic Information Systems (4) **
- GEOG 5102 - Cartographic Design and Map Construction (3)
- GEOG 5150 - Spatial Database Development with GPS and GIS (4)
- GEOG 5000 - Topics in Geography (3)
- ESCI 5170 - Fundamentals of Remote Sensing (4)
- ESCI 5180 - Digital Image Processing in Remote Sensing (4)
- ~~GEOG 6120 - Spatial Statistics~~ GRAD 61045 - Spatial Statistics (3)

GIS&T Applications Elective Courses

- GEOG 5101 - Cartographic Techniques (3)
- GEOG 5131 - Environmental Modeling with GIS (4)
- GEOG 5132 - Spatial Modeling for Social and Economical Applications (4)
- GEOG 6030 - Topics in Geographic Techniques (3)
- GEOG 6121 - Advanced Seminar on Spatial Modeling (3)
- GEOG 6122 - GIS&T and Urban Regional Analysis (3)
- GEOG 6400 - Advanced Seminar in Spatial Decision Support Systems (SDSS) (4)
- GEOG 6402 - Multi-Attribute Assessment/Evaluation for Planning and Decision-Making (3)

- GEOG 6404 - Spatial Data Analysis in GIS (3)
- GEOG 6406 - Spatial Information and Mobility (4)
- GEOG 6407 - Geocomputation (3)
- GEOG 6408 - Spatial Optimization (3)

Notes:

**In addition, selected coursework offered by the Department of Civil and Environmental Engineering and the College of Computing and Informatics is available to students with the approval of their academic advisor, provided that course prerequisites are satisfied. Students can also elect to complete an internship with a private company or a public agency for credit to acquire practical experiences in GIS&T.*

***Unless students have had a substantial introductory GIS course prior to entering the M.A. program, GEOG 5120 is strongly recommended as this course serves as a foundation for the other GIS&T courses.*

Community Planning Track

The Community Planning Track is structured to provide students with grounding in planning skills, methods and theory, and practical experience for careers in community planning. That structure is supported by interdisciplinary perspectives from core coursework in Architecture, Economics, Geography, and Public Administration.

Graduates have been hired by local and regional planning agencies to give the track an excellent placement success rate. Perhaps a third of the students who pursue the program are practicing planners who wish to build and improve their professional skills.

The track comprises an interdisciplinary curriculum of 36 required credit hours. Core requirements and approved electives are listed below:

Core Courses (21 credit hours)

- GEOG 5210 - Urban Planning Methods (3)
- ~~GEOG 6100 - Quantitative Methods in Geography~~ GRAD 6101: Linear Regression (3)
- GEOG 6500 - Urban Planning: Theory and Practice (3)
-
- GEOG 6501 - Community Planning Workshop (3)
- or ARCH 6050 - Community Planning Workshop (3)

- ARCH 5214 - Dilemmas of Modern City Planning (3)
- ECON 6250 - Advanced Urban and Regional Economics (3)
- MPAD 6128 - Foundations of Public Policy (3)

Elective Courses (9 credit hours minimum)

Select from the following:

- GEOG 5120 - Introduction to Geographic Information Systems (4)
- GEOG 5130 - Advanced Geographic Information Systems (4)
- GEOG 5209 - Small Town Planning (3)
- GEOG 5255 - Applied Population Analysis (3)
- GEOG 5260 - Transportation Policy Formulation (3)
- GEOG 5265 - Transportation Analysis Methods (3)

- ARCH 6050 - The Architecture of Settlements (3)
- ARCH 6050 - Public Spaces in Cities (3)
- ARCH 6050 - Urban Transit and City Form (3)
-
- ARCH 7103 - Design Studio: Topical (6)
- or ARCH 7104 - Final Project/Thesis Studio (6)
-
- MPAD 6102 - Foundations in Public Administration (3)
- MPAD 6131 - Public Budgeting and Finance (3)

Capstone Research Project (6 credit hours)

- GEOG 7900 - Individual Research Project (1-6) *(taken in final semester)*

Research Options

The program requires all students to complete a thesis-quality, individual capstone research project. Although individual research experiences may differ, students should pursue research experiences that are appropriate to departmental faculty resources, individual student's programs and career goals, and the availability of opportunities that exist to work with allied agencies or clients on or off campus. One of three options, depending on the previously stated stipulations, will be available: 1) a research experience similar to that of a traditional academic thesis; 2) a research experience which involves a paid internship funded by and arranged with a public or private agency or client; and 3) a research experience involving an internship that is not funded, but arranged with a public or private agency or client. Each of these options fulfills program requirements equally. Each will produce a finished research effort of thesis quality.

Not every student can expect to develop a capstone research project that is similar to a traditional academic thesis. It does, however, provide a choice for students to pursue a research problem in a direction of his/her individual interest. Students who ultimately plan to pursue a Ph.D. degree might be more inclined and encouraged toward that option. The same is true of students who wish to complete their master's program with that kind of individual research activity. In all cases, students must work closely with their advisor and program committee to choose the option which best fits both their particular program and prevailing circumstances.

Not every student can expect to engage in a capstone research project that is a paid internship because the number of students frequently exceeds a matching number of opportunities funded in that manner. Unpaid internships provide the same caliber of experience and training in an applied environment. In some cases, that experience may relate student with nonprofit agencies or social services that simply do not have the resources to fund an internship. In either case, the topic of the internship is defined by the client's problem or needs.

Committees

All GEOG 7900 Research Projects are evaluated by a committee of faculty. Committees must have a minimum of three members composed of the graduate faculty of the department--or related departments. Committee members may include outside members from other departments or internship coordinators from off-campus agencies when appropriate.

Admission to Candidacy Requirements

The Admission to Candidacy form should be filed upon successful completion of a minimum of 18 credit hours of graduate work. Deadlines are posted on the Graduate School's website. Completed forms forwarded to Graduate School must include a

capstone research project title and the names of faculty who comprise the student's committee.

Comprehensive Examination and Capstone Defense

To complete the program, each student must pass a written comprehensive examination covering both general aspects of the discipline and an oral defense of the individual capstone research project. It is the responsibility of the advisor or committee chair, in consultation with the student, to arrange both the examination and defense.

The Written Exam

The student must respond to three questions submitted by the faculty. These questions are solicited from the entire graduate faculty of the department by a memo sent by student's advisor who then administers the examination. The written comprehensive exam is normally taken during the third semester (for full-time students) and in no case should the student take this exam before accumulating 27 credit hours of completed coursework including courses in progress. This exam may not be administered if the student has outstanding incomplete grades in any coursework.

The Defense

The defense of the individual research project (GEOG 7900), the capstone, is generally administered at the discretion of the committee chair and the student. When the advisor is satisfied that the student's research and writing has progressed sufficiently, the research document is provided to the other members of the independent research committee; if they agree that the document is ready for a defense, an oral exam is scheduled.

Geography and Urban Regional Analysis, Ph.D.

The Ph.D. in Geography and Urban Regional Analysis focuses on the theoretical and empirical analysis of metropolitan areas and their broader regional, national and global contexts. At the core of this program is the recognition that cities are complex systems made up of environmental and human elements, with critical multiscalar interactions and outcomes. Although the processes and issues that frame urban-regional analysis are global in scope, the research lens of the Ph.D. program is focused on the United States, and, especially regional topics and research questions. Indeed, the Charlotte area and other urban and metropolitan regions in the southeastern United States offer laboratories for examining economic, social, and environmental change processes that are at work across the world.

Building on the strengths and research interests of the graduate geography faculty and colleagues across campus, there are currently three broad research clusters within the doctoral program. These include:

Urban/Regional Systems

Human-Environmental Interactions

Geographic Information Science (GIScience)

The theoretic and empirical understanding of these research areas is guided by multiscalar analytical techniques, both quantitative and qualitative.

The research clusters provide opportunities for integration and complementarity, with shared methods and theoretic structures; as well as, the focus on the urban-regional scale. In line with current research trends, scholarship that bridges human geography and environmental systems is an area of significant interest. In this context, GIScience is both a research focus and fundamental research tool.

A cornerstone of the program is the student's research dissertation. Each dissertation is expected to be based on independent and original research which contributes to the body of knowledge in the field, leading to publication in peer-reviewed journals.

Additional Admission Requirements

In addition to the general requirements for admission to the Graduate School, the following are required for study to the Ph.D. in Geography and Urban Regional Analysis:

Under most circumstances, students admitted to the program will have:

A M.A or M.S. degree in geography or field related to the primary emphases of the Program.

A master's level GPA of 3.5 out of 4.0. In exceptional cases, students with baccalaureate degrees may be admitted if they have an overall undergraduate GPA of at least 3.6 and meet other admission requirements. Students without master's degrees may be required to complete substantial prerequisites necessary to work at a Ph.D. level.

Graduate Record Examination (GRE) with minimum scores of 150 on both the verbal and quantitative sections and a 3.5 or above on the analytical portions. Applicants must have taken the GRE; no other test will be accepted in its place.

TOEFL exam scores of at least 84 on the Internet-based test for applicants whose native language is not English. The program expects a minimum score of in the low to mid 20s on each of the components of the TOEFL. In addition, international students who will be teaching assistants will be required to undergo evaluation by the English Language Training Institute at UNC Charlotte prior to beginning their assistantship.

GIS proficiency at a minimum of the applications level is required. Other remedial coursework, as determined by the Geography Graduate Advisory Committee, may also be required depending on the background of the student.

Three letters of recommendation, at least two of which must come from faculty in the student's previous academic programs.

A personal statement which directly addresses why the student wishes to do graduate work in geography and why they wish to participate in the Ph.D. program in Geography and Urban Regional Analysis at UNC Charlotte. The statement should address directly how the program at UNC Charlotte fits career and/or professional goals and how the applicant would benefit from and contribute to the Ph.D. in Geography and Urban Regional Analysis at UNC Charlotte. This statement is very important in determining the applicant's commitment to graduate education and to a professional career in geography or a related field.

Degree Requirements

The Ph.D. acknowledges the value of coursework as background and preparation for research, but the primary emphasis is on the development of research skills and the completion of a research project on a problem significant to urban regions.

Total Hours Required

51 credit hours of approved coursework is required, encompassing 33 credit hours in core and elective courses and 18 credit hours of dissertation units.

Coursework

While the curriculum and experiential background of all students accepted into the program will be evaluated upon entry, students entering the program would, at a minimum, be required to demonstrate proficiencies at the level of Intermediate GIS (UNC Charlotte equivalent GEOG 4120 or a minimum of two courses such as basic and intermediate GIS); a Master's level research design course (UNC Charlotte equivalent GEOG 6200 or a Master's level research thesis); and a Master's level quantitative methods course (UNC Charlotte equivalent of ~~GEOG 6100~~GRAD 6100). Students who fail to meet these minimum requirements would not be permitted to enroll in courses for which they do not have the prerequisites.

Core Courses (required of all students)

All students are required to complete a minimum of 24 credit hours. Students can take related courses outside the program with prior approval.

~~GEOG 8100 - Quantitative Methods in Geography~~ GRAD 8101 – Linear Regression (3)
GEOG 8123 - Urban Regional Environment (3)
GEOG 8124 - Seminar in Geographic Theory and Research Design (3)

Note:

All program-approved courses are open to graduate students only.

Grade Requirements

All graduate students are subject to academic suspension and/or termination. Department academic standards deviate slightly from university policies stated in appropriate catalogs. A student must maintain a cumulative average of 3.0 in all coursework taken in the program. An accumulation of one (1) marginal (C) grade results in the student being placed on probationary status within the program and could lead to the student being required to re-take the course, and a potential loss of funding if the student is receiving University-sourced funding. An accumulation of two (2) marginal (C) grades results in suspension of the student's enrollment in the graduate program. A graduate student whose enrollment has been suspended because of grades is ineligible to register in any semester or summer session unless properly reinstated through the suspension appeal process. An accumulation of three (3) marginal (C) grades or one (1) unsatisfactory (U) or one (1) NC grade results in termination of the student's enrollment in the graduate program. A second failure in the candidacy examination; the dissertation proposal defense; or final dissertation defense also results in dismissal from the program. In order to continue a program of study, the student must pursue reinstatement through the termination appeal process or wait a period of two years before applying for readmission to the program.

Transfer Credit

Six credit hours or two courses of Ph.D.-level coursework can be transferred from another accredited graduate program as part of the 51 credit hour requirement. Transfer credit beyond this limit must be approved by the Graduate Program Director, in consultation with the student's advisor.

Comprehensive Exams

Following successful completion of the core coursework and upon the recommendation of the Faculty Advisor, a student will take a written, comprehensive examination. The purpose of the examination is to evaluate the student's mastery of the body of knowledge in his/her research focus area, as well as to demonstrate the research skills and methods that characterize scholars in this subfield of geography.

The comprehensive exam will be comprised of three parts. Part I addresses the theoretic and contemporary literature of geography generally covered in the core coursework and seminars. Part II will assess student's competency in research methods and techniques. GIScience is a key element of this component.

Finally, Part III will evaluate student competence in his/her research concentration.

The comprehensive examination will be written and graded by an Examination Committee made up of faculty teaching in the doctoral program. This committee will be appointed by the Graduate Coordinator in consultation with the Faculty Advisor.

If a student fails the comprehensive examination or any portion of the exam, he/she must wait until the next semester to retake the examination. During the interim period, the student may be required to retake courses in which the Examination Committee determines there is a deficiency.

Advisor/Advisory Committee

All students in the program will have both a Dissertation Advisor approved by the Program Coordinator and an Advisory Committee. The Dissertation Advisor will help a student formulate a Program of Study including a potential dissertation topic by no later than the end of the second semester of study (or 12 hours of coursework in the case of part-time students). The Dissertation Advisor serves as Chair of the Advisory Committee and must be a member of the Graduate Faculty of UNC Charlotte. The Advisory Committee should have at least four members, three of whom are chosen by the student. The final member of the Committee will be a Graduate School representative to the Committee. That appointment will be made by the Dean of the Graduate School.

Dissertation Proposal and Advancement to Candidacy

Advancing to candidacy requires that the student pass the comprehensive exam and write and successfully defend a dissertation proposal. The proposal must be submitted to the student's Advisory Committee for preliminary approval and then to the Program Coordinator and the Dean of the Graduate School. Successful defense of the dissertation proposal is followed by advancement to candidacy.

Dissertation

The student must complete and defend a dissertation. The dissertation represents an original and substantial research product. The student must orally present and defend the dissertation before his/her Advisory Committee in a defense that is open to the university community. A copy of the dissertation must be made available to the Geography Graduate Faculty at least three weeks prior to the defense. While the defense presentation is open to the university community, the deliberations of the Advisory Committee are held in Executive Session. The dissertation will be graded on a Pass/Unsatisfactory basis by the student's Advisory Committee and the Dean of the Graduate School. The dissertation defense is the final examination. It is a Graduate School requirement that a student that fails the final examination twice will be terminated from the program.

Time Limits for Completion of the Degree

It is generally expected that full-time students will complete coursework within a three-year time frame and the dissertation will be completed one to two years later. Students must achieve admission to candidacy within six years after admission to the program. All requirements for the degree must be completed within eight years after first registration as a doctoral student. Further, the oral examination in defense of the dissertation must be passed within five years after being advanced to candidacy.

Residency Requirements

Residency requirements for the program include completing 21 credit hours of continuous enrollment, either as coursework or dissertation credits. Residence is considered to be continuous if the student is enrolled in one or more courses in successive semesters until 21 credit hours are earned.

UNC CHARLOTTE
J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Stephanie Moeller

From: Bridgette Sanders

Date: December 4, 2015

Subject: GRAD 6100 – Basic Statistics and Probability

Summary of Librarian's Evaluation of Holdings:

Evaluator: _Bridgette Sanders_____ Date: _December 4, 2015 ____

Please Check One:

Holdings are superior	____
Holdings are adequate	__XX__
Holdings are adequate only if Dept. purchases additional items.	_____
Holdings are inadequate	_____

Comments:
Atkins Library has an excellent set of databases in the proposed area of study. Journal articles and books that are not held by the Library can be obtained through Interlibrary Loan.

The major databases that will provide research support for this course are *MathSciNet, arXiv, Web of Science, and ScienceDirect.*

In addition to these electronic resources, the library holds over 1,000,000 print volumes and has access to approximately 70,000 electronic books and 50,000 print and electronic serials.

Overall, Atkins Library has adequate resources to support the proposed course. I would suggest buying monographs as funds permit to keep the collection current. Otherwise, the collection is adequate.

Bridgette Sanders
Evaluator's Signature

12-4-15
Date

Revised 10/29/08
OAA jdp

UNC CHARLOTTE
J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Stephanie Moeller

From: Bridgette Sanders

Date: December 4, 2015

Subject: GRAD 8100 – Accelerated Intro to Quantitative Techniques

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Summary of Librarian's Evaluation of Holdings:

Evaluator: _Bridgette Sanders_____ Date: _December 4, 2015 ____

Please Check One:

Holdings are superior	____
Holdings are adequate	__XX__
Holdings are adequate only if Dept. purchases additional items.	____
Holdings are inadequate	____

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Bridgette Sanders
Evaluator's Signature

12-4-15
Date

Revised 10/29/08
OAA jdp

UNC CHARLOTTE
J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Stephanie Moeller

From: Bridgette Sanders

Date: December 4, 2015

Subject: GRAD 6101/8101 – Linear Regression

Summary of Librarian's Evaluation of Holdings:

Evaluator: _Bridgette Sanders_____ Date: _December 4, 2015 ____

Please Check One:

Holdings are superior	____
Holdings are adequate	__XX__
Holdings are adequate only if Dept. purchases additional items.	____
Holdings are inadequate	____

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Bridgette Sanders
Evaluator's Signature

12-4-15
Date

Revised 10/29/08
OAA jdp

UNC CHARLOTTE
J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Stephanie Moeller

From: Bridgette Sanders

Date: December 4, 2015

Subject: GRAD 6102/8102 – Categorical Outcomes

Summary of Librarian's Evaluation of Holdings:

Evaluator: _Bridgette Sanders_____ Date: _December 4, 2015 ____

Please Check One:

Holdings are superior	____
Holdings are adequate	__XX__
Holdings are adequate only if Dept. purchases additional items.	____
Holdings are inadequate	____

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Bridgette Sanders
Evaluator's Signature

12-4-15
Date

Revised 10/29/08
OAA jdp

UNC CHARLOTTE
J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Stephanie Moeller

From: Bridgette Sanders

Date: December 4, 2015

Subject: GRAD 6103/8103 – Classificatory Methods and Time Series

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Summary of Librarian's Evaluation of Holdings:

Evaluator: _Bridgette Sanders_____ Date: _December 4, 2015 ____

Please Check One:

Holdings are superior	_____
Holdings are adequate	__XX___
Holdings are adequate only if Dept. purchases additional items.	_____
Holdings are inadequate	_____

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Bridgette Sanders
Evaluator's Signature

12-4-15
Date

Revised 10/29/08
OAA jdp

UNC CHARLOTTE
J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Stephanie Moeller

From: Bridgette Sanders

Date: December 4, 2015

Subject: GRAD 6104/8104 – Spatial Statistics

Summary of Librarian's Evaluation of Holdings:

Evaluator: _Bridgette Sanders_____ Date: _December 4, 2015 ____

Please Check One:

Holdings are superior	____
Holdings are adequate	__XX___
Holdings are adequate only if Dept. purchases additional items.	_____
Holdings are inadequate	_____

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Bridgette M Sanders
Evaluator's Signature

12-4-15
Date

Revised 10/29/08
OAA jdp

UNC CHARLOTTE
The Graduate School

The University of North Carolina at Charlotte
9201 University City Boulevard
Charlotte, NC 28223-0001

Graduate School

704/687-3375
FAX 704/687-3279

MEMORANDUM

To: Graduate Council

From: Katherine Hall-Hertel, Associate Dean, Graduate School

Date: January 20, 2016

RE: GRAD Quantitative Skills Courses

Please accept this memo in support of the proposed GRAD courses. The Center for Graduate Life has collaborated with Public Policy and Sociology to offer these courses on quantitative skills and methodologies. By offering them through the CGL, these courses are available to any qualified graduate student. We believe this makes good use of our limited resources by opening courses to greater numbers of graduate students across campus.

This series of courses complements the professional development courses offered through the CGL. We are happy to support this centralized effort.