UNIVERSITY OF MARY WASHINGTON -- NEW COURSE PROPOSAL

Electronically submit this completed form with attachments in one file to the Chair of the College Curriculum Committee.

COLLEGE (check one):  Arts and Sciences X Business  Education

Proposal Submitted By: Caitlin Finlayson Date Prepared: November 4, 2014

Course Title: Introduction to Quantitative Methods in Geography

Department/discipline and course number*: GEOG 252

*This course number must be approved by the Office of the Registrar before the proposal is submitted.

Number of credits proposed: 3  Prerequisites: 6 hours in Geography or permission of instructor

Will this be a new, repeatable “special topics” course? (Do you want students to be able to take this new course more than once if the topic changes?)

NO X YES

Date of first offering of this new course: FALL SEMESTER, year Spring 2016

Proposed frequency of offering of the course: Every other year

List the faculty who will likely teach the course: Caitlin Finlayson

Are ANY new resources required? NO X YES Document in attached impact statement

This new course will be (check all that apply):

Required in the major General Elective

Elective in the major X General Education**

**AFTER the new course is approved, a separate proposal must be sent to the General Education Committee.

Catalog Description:
An introduction to the quantitative methods used by geographers to analyze and interpret geographic data and solve geographic problems. Includes descriptive and inferential statistics, and an exploration of how quantitative research questions and techniques are situated within the broader discipline of geography.

COURSE HISTORY

Was this course taught previously as a topics or experimental course? YES X NO

Course Number and Title of Previous Course Semester Offered Enrollment
GEOG 200C-01 Spatial Statistics Fall 2014 18

X CHECK HERE if the proposed course is to be equated with the earlier topics or experimental offerings. This means that students who took the earlier “topics” course will only be able to take the new course if they made a C- grade or lower in the earlier course.

NOTE: If the proposed course has not been previously offered as a topics or experimental course, explain in the attached rationale statement why the course should be adopted even though it has not been tried out.

REQUIRED ATTACHMENTS:
1. Rationale Statement (Why is this course needed? What purposes will it serve?)
2. Impact Statement (Provide details about the Library, space, budget, and technology impacts created by adding this new course. Include supporting statements from the Library, IT Department, etc. as needed.)
3. Sample Syllabus

Department Chair Approval: Jackie Gallagher Date: Nov 6 2014
CCC Chair Approval: Date: 11/20/14
UCC Chair Approval: Date:________
New Course Proposal:
Introduction to Quantitative Methods in Geography

Rationale Statement
The Department of Geography is currently offering a special topics course on Spatial Statistics (Fall 2014). Student demand for this course is high and we would like to make it a permanent offering. While statistics are increasingly being used by numerous sub-disciplines within geography, the Department of Geography does not currently offer a course on statistical techniques that are commonly used in geographic research. This course would provide students with a much-needed foundation in quantitative methods utilized within the geographic discipline, including descriptive and inferential statistics, research analysis and design, and mixed-methods approaches. This course would be beneficial to the department by offering students a broader foundation in geographic methodology, and would also be beneficial for other students interested in statistical techniques often utilized by spatial scientists. Since this course is specifically geared for geography majors and students interested in geography and geographic techniques, we are setting the prerequisite to any 6 hours in geography or permission of instructor.

Impact Statement
No new resources would be required to offer this course. No new acquisitions of library materials or technology would occur. The library already has access to the journal articles needed by the course, such as those published in the Annals of the Association of American Geographers.

There are no space demands, as GEOG 252 is taught by existing faculty in a rotation with other classes.

Sample Syllabus
See attached syllabus.
Introduction to Quantitative Methods in Geography
GEOG 252
TR xx-xx
Monroe Hall xxx

Contact Information
Instructor: Caitie C. Finlayson, Ph.D.
Office: Monroe Hall 322
Email: cfinlay@umw.edu
Office Hours: Tuesday and Thursday xx-xx and by appointment

Description
This course provides an introduction to the quantitative methods used by geographers to analyze and interpret geographic data and solve geographic problems. It is designed to provide students with a broad foundation in quantitative geographic research and an understanding of how quantitative research questions and techniques are situated within the broader discipline of geography.

Core topics include research design, descriptive and inferential statistics, hypothesis formulation and testing, and analyzing spatial patterns. Students will engage in a hands-on application of several quantitative research techniques and will become familiar with commonly-used statistical software. The course will focus on understanding, applying, and interpreting statistical techniques, rather than the derivations of methods or performance of calculations. Through this course, students will have a greater appreciation for the types of research questions asked by geographers and will be better able to analyze and interpret geographic data.

Because this is an introductory course, no previous knowledge of statistics or software is required.

Objectives
A student who successfully completes GEOG 252 should be able to:

- Describe the philosophical assumptions that underlie geographic research
- Explain how quantitative methods fit within the discipline of geography as a whole
- Understand the purpose, meaning, and use of statistics in geographical research
- Answer spatial questions using basic statistical methods
- Use computer software to assist in geographic problem solving
- Apply statistical techniques to real geographical problems

Required Materials
2. Basic calculator (no graphing or scientific calculators allowed during exams)

You will also be responsible for material from journal articles and other assigned readings.

**Lectures, reading, and study guides**

You are responsible for material in lectures, journal articles, and any other supplementary materials. Please do not ask me to make copies of the notes for you. You are responsible for retrieving any notes from classes that you have missed. In general, I will post the PowerPoint presentations from the lectures, but not lecture notes. You are expected to have access to a printer and to be able to print out additional readings and handouts when necessary.

Please do not feel the need to read the textbook before coming to class. Often, understanding mathematical concepts like statistics is best learned by attending and participating in the lecture, completing a practice activity and then reviewing the textbook.

You should, however, read all assigned journal articles before the day they are discussed. I will give you more specifics about these dates throughout the semester, and you should check Canvas often for details about additional assigned readings.

**Course Policies**

**Attendance**

Attendance is not required; however it is strongly advised. There will be no make-up opportunities for in-class assignments, labs, or other projects that contribute to your participation grade.

If you miss an in-class activity or lab and have a valid excuse (illness with doctor’s note, etc.), you are expected to contact a classmate for the assignment instructions and turn in the missed assignment the next time you are in class. Please do not contact me to find out what you missed in class.

Students should come to class on time. If you have a work or other obligation and know you will be late to class, please contact me in advance and take a seat at the back of the class when you arrive in order to minimize disruption.

**Classroom Etiquette**

In order to create an environment where students are able to interact and learn it is imperative that electronic devices be limited to classroom-related usage only. All students are required to sign and submit an electronic device pledge. If you are expecting an important phone call you are to notify me during the beginning of the class.

**Canvas website and email**

Please be sure that you have access to the course website on Canvas. You will need your UMW email account name and password to access this site. In Canvas, I can only send email to your UMW account. If you use a different account, it is your responsibility to set up your UMW account to forward to your preferred email.

**Religious Days**

If you wish to participate in religious day activities that interfere with scheduled class days or assignments, please inform me during the first week of class.
Assignments and Responsibilities

Evaluation for this course will be through:
- Assignments and lab activities
- Three in-class exams

Grading and Evaluation

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Assignments and labs</td>
<td>40%</td>
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<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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</tbody>
</table>

Grading Scale
A (94-100), A- (90-93), B+ (87-89), B (84-86), B- (80-83), C+ (77-79), C (72-76), C- (70-71)
D+ (66-69), D (60-65), F (0-59)

Final Grades will follow the breakdown listed above and grades will not be rounded. That means that 89.9% earns a B+ even though it is just one point from an A. There has to be a cutoff at some point, and that means that some students barely make a grade, but others barely miss it. Do your best in ALL of your work so that you don’t fall just short of your goal.

Mid-term Grades
A “U” grade will be assigned if, at the time of mid-term grading, your grade in the course is below 70%.

Exams
Each exam is graded out of 100 points, is worth 20% of your grade, and consists of matching, short answer, and extended response questions. After the first person finishes an exam, all late arrivals will be required to take a make-up exam. All absences for exams must have a valid excuse that is given in advance of the exam. In the case of unexpected illness, you must provide me with a doctor’s excuse within 3 days of the missed exam in order to take a make-up exam. Failing to do so will result in a zero. All make-up exams include an extended essay component.

Assignments and Labs
Over the course of the semester, we will complete 8 in-class lab activities and 3 out-of-class assignments. You will be given instructions for completing each of the in-class lab activities. Some will be completed individually and others with the assistance of your classmates. Check each lab instructions for further details, and as always, check with the instructor if you have questions regarding whether or not the lab activity can be completed with the assistance of your classmates. Each lab activity is worth 10 points each.

Each of the 3 homework assignments is to be completely and turned in independently. You will receive instructions on how to complete each assignment, as well as details about the formatting requirements. Each assignment will be formatted as a professional memo and is worth 25 points each.

Over the course of the semester, we will have other small activities which will contribute to your assignment and lab grade.
Honor Code Statement
The Honor Code will be followed, although students are expected to work together during in-class group activities. Individual assignments that are written up and handed in for a grade should be completed on your own. Please pledge your work accordingly.

Disability Statement
The Office of Disability Resources has been designated by the University of Mary Washington as the primary office to guide, counsel, and assist students with disabilities. If you receive services through that office and require accommodations for this class, please make an appointment with me as soon as possible to discuss your approved accommodations. I will hold any information you share with me in strictest confidence unless you give me permission to do otherwise.

If you have not made contact with the Office of Disability Resources and have reasonable accommodation needs, I will be happy to help you contact them. The office will require appropriate documentation of a disability. Their phone number is 540-654-1266. The office is located in Lee Hall, Room 401.
Schedule
I will announce any changes to the schedule in class. If you are absent, it is your responsibility to ask another student if changes have been made.

## Course Schedule

<table>
<thead>
<tr>
<th>Week One</th>
<th>Lecture Topics</th>
<th>Readings/Exams</th>
<th>Assignments/Labs</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Introduction to Statistical Methods in Geography</td>
<td>Salkind – Chapter 1</td>
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<tr>
<td>Week Two</td>
<td>Descriptive Statistics</td>
<td>Salkind – Chapter 2</td>
<td>Lab 1: Using Excel to work with data and calculate statistics</td>
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<tr>
<td>Week Three</td>
<td>Understanding Variability</td>
<td>Salkind – Chapter 3</td>
<td>Lab 2: Working with SPSS: Computing variance</td>
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<tr>
<td>Week Four</td>
<td>Charting and Displaying Statistical Data</td>
<td>Salkind – Chapter 4</td>
<td>Assignment 1: Illustrating data with SPSS</td>
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<td>Week Five</td>
<td>EXAM 1: Chapters 1-4 and additional assigned readings</td>
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<tr>
<td>Thursday</td>
<td>Mixed Methods and Descriptive Spatial Statistics</td>
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<td>Thursday</td>
<td>Lab 3: Exploring Mixed-Methods: Qualitative GIS</td>
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<td>Thursday</td>
<td>Montello and Sutton. 2006. Data in Space and Place: Introduction to Geospatial Analysis. In Montello and Sutton <em>An Introduction to Scientific Research Methods</em></td>
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<td>Week Six</td>
<td>Correlation Coefficients</td>
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<td>Week Seven</td>
<td>Hypothesis Testing</td>
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<td>Week Eight</td>
<td>NO CLASS – Fall Break</td>
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<td>Week Eleven</td>
<td>Testing Between the Means of Dependent Samples</td>
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<td>Week Eleven</td>
<td>Lab 7: Dependent Sample Testing with SPSS</td>
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<td>Week Twelve</td>
<td>Analysis of Variance and Factorial Analysis of Variance</td>
<td>Salkind – Chapters 13 and 14</td>
<td>Lab 8: One and Two-Factor ANOVA</td>
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<tr>
<td>Week Thirteen</td>
<td>Correlation Coefficients and Linear Regression</td>
<td>Salkind – Chapters 15 and 16</td>
<td>Assignment 3: Linear Regression</td>
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<tr>
<td>Week Fourteen</td>
<td><strong>NO CLASS – Southeastern Division of the AAG Annual Meeting and Thanksgiving</strong></td>
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<tr>
<td>Week Fifteen</td>
<td>Nonparametric Testing and Inferential Spatial Statistics</td>
<td>Salkind – Chapter 17</td>
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The final exam for this course will be on xxx from xx until xx and will cover chapters 10-17 and additional assigned readings