GEOG 247: QUANTITATIVE ANALYSIS IN GEOGRAPHY
FALL 2019

TIME & LOCATION: BOLTON B40
(Lecture) Tuesday/Thursday 9:30 AM-10:45 AM, Bolton B40
(Lab, Sec. 801) Wednesday 3:00 PM-4:15 PM, Bolton 293
(Lab, Sec. 802) Friday 10:00 AM-11:15 AM, Bolton 293

Instructor Information
Instructor: Hyejin Yoon
Office: Bolton 462
Email: yoon3@uwm.edu
Office Hours: Tuesday and Thursday 3:30 PM–4:30 PM or by appointment
Department of Geography: Main office: Bolton 410

Teaching Assistant (TA) for Lab Sections
Teaching Assistant: TBA
Office: Bolton TBA
Email: TBA
Lab Sections: 801, 802
Office Hours: TBA

Prerequisite
Successful completion of the UWM Quantitative Literacy (QL) Part A requirement

Course Description and Objectives
Geography 247: Quantitative Analysis in Geography is an introductory course that
concentrates on the basic elements of statistics. In particular, this course focuses on both
descriptive and inferential statistics. Throughout the semester, we will discuss the nature of
probability and statistics, the normal distribution, statistical sampling, and various methods
of describing data. In addition, we will cover some specific methods of data analysis, such
as hypothesis testing, correlation analysis, regression analysis, and analysis of variance
(ANOVA). This course can also be used to fulfill the UWM QL Part B requirement.

In this course:

1) You will learn the basic elements of statistics
2) You will develop a basic understanding of the difference between descriptive and
   inferential statistics.
3) You will develop a basic understanding of the various statistical methods used to
describe and analyze data in human and physical geography.
4) You will apply your knowledge of statistics through the use of relevant data, and
   practice developing hypotheses about geographic data and the natural or social
   phenomena these data aim to represent.
Required Materials


Credit hours: The course has three credit hours (undergraduate) consisting of two 75 minute lectures and one 75 minute lab each week.

Time investment: In order to comply with a Higher Learning Commission requirement, we provide the following information on the investment of time by an average student to achieve the learning goals of the course.
- 28.5 hours of lecture (excluding exams)
- 17.4 hours of lab session
- 3 hours 50 minutes of exams (three exams)
- at least 74 hours on assignments
- at least 33 hours of other preparation and study. Total: at least 154.8 hours.

UWM email account: Please be sure to write “Geog 247 class” in the subject of any emails you send. To prevent emails from being placed in my spam folder, please do not send emails from any non-UWM email account.

SUGGESTED EMAIL FORM
- Have the subject start with [Geog 247]
- Make sure who you are writing to
- Put your name at the end

Canvas website: There are separate Canvas websites for the lecture and lab components of this course. Lecture notes can be downloaded from the Canvas website for the lecture component. Students should download and print the lecture notes before coming to class.
This way the lecture notes can be brought to class and referenced during the lecture. In addition, all lab exercises will be submitted to a Canvas. Directions for accessing the lecture notes and submitting lab exercises will be demonstrated for the class.

Other materials for lab: Access to a computer with Microsoft Excel, calculator, lead pencil and/or a pen

Course Requirements and Grading Policy

Examinations (55% of the final grade): During the course of the semester, there will be three exams. All three exams will be administered in Bolton B92. The first two exams will be administered during regular class time and the final exam will be held during the scheduled time listed in the lecture schedule below. These exams will not be cumulative. However, it should be understood that portions of the material covered in this class are related in some form. While you will not be tested on the same specific topics more than once, some of the concepts discussed in this course are interconnected and build upon each other. The first midterm exam will be worth 15% and the second midterm exam and final exam will be worth 20% of your final grade (total of 55%). You need to bring an engineering calculator for each examination. The engineering calculator is required for the examinations.

Make-up exams may be permitted at the discretion of the instructor for legitimate reasons only, such as an illness, emergency, or religious observance. However, requests for make-up exams will be considered only if the student contacts me in a timely manner, preferably before the exam, but within 24 hours following the date of the exam, and provides a verifiable written documentation of their absence. Do not assume that you will automatically be allowed to make-up an exam.

Lab Exercises (25% of the final grade): There will be eight lab exercises during the course of the semester. You are to submit your completed exercises to the D2L dropbox for your lab section by the beginning of the next lab period after the exercise was assigned. For most exercises, you will be submitting both a Microsoft Word document and a Microsoft Excel file. You should name each file using the following convention: “exercise number_first name_last name” (e.g. Exercise1_Jon_Doe). You must complete the lab exercises individually. The teaching assistant for your lab section will provide instruction and grade your lab exercises. If you have questions about the lab exercises, please discuss them with your teaching assistant before consulting your instructor.

To be fair to students who turn their work in on time, you will not receive credit for assignments turned in late, unless a documented medical or personal emergency arises. Please contact the instructor or the TA immediately if an emergency arises, or if you know you will have a problem turning your work in on time.

Please note that “the D2L dropbox didn’t work” is not an acceptable excuse for a late assignment; you are responsible for making sure your assignment reaches the dropbox by the due date. You should email the instructor and TA immediately—and before the
assignment is due—if you have technical difficulties submitting your assignment to the D2L site.

*** There is an attendance check for all the labs session throughout the semester. You will get bonus points if you attend all the labs. Your TA and I will decide this bonus point when we compute your final grade.

**Class Project (10% of the final grade):** There are two objectives for the class project. First, you will collect your own data (either primarily or secondarily). Second, you will analyze the data using many of the statistical methods that are highlighted in this class. In this project, you need to collect the GEOGRAPHIC data, and provide descriptive statistics of the data. In addition, your project report will provide logical conclusions, predictions through mathematical models that we highlight in the class during the semester. Further details will be provided in class.

**Pop quizzes and take home exercises (10% of the final grade):** There will be 5 to 10 pop quizzes and take home exercises throughout the semester. Unexcused absences will affect your grade. Late submission of take home exercises will not be allowed. Home exercises ask you to provide logical thinking to get answers, and software using is not allowed for the home exercises.

Listening to the lectures and taking notes are essential to achieving success in this course. If you attend class regularly, take good notes, and study the notes often, you will do well in the lecture portion of this course.

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Percentage of Final Grade</th>
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<tbody>
<tr>
<td>Exams</td>
<td>55%</td>
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<tr>
<td>Lab Exercises</td>
<td>25%</td>
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<tr>
<td>Class Project</td>
<td>10%</td>
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<tr>
<td>Pop quizzes and take home exercises</td>
<td>10%</td>
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***Finality of Grade: All grades, once released on D2L or PAWS, are final except in cases of clerical error.

**Academic Dishonesty Policy**

Plagiarism and cheating will not be tolerated in this class. Students engaging in plagiarism and cheating will receive a zero grade and may be subject to disciplinary proceedings resulting in an academic penalty or disciplinary penalty for academic dishonesty. Academic Dishonesty includes, but is not limited to, cheating on a test, plagiarism and collusion. Student academic misconduct procedures are specified in Chapter UWS 14 and the UWM implementation provisions (Faculty Document 1686). An information booklet on the UWM Disciplinary Guidelines is available in the Office of the Dean of Students, Mellencamp Hall, Room 118.

**Grading scale:**

- A = over 90 -100%
- A- = over 88 -89.99%
- B+ = over 85 -87.99%
- B = over 80 -84.99%
- B- = over 78-79.99%
- C+ = over 75-77.99%
- C = over 70 -74.99%
- C- = over 68 -69.99%
- D+ = over 65 -67.99%
- D = over 62-64.99%
- D- = over 60-61.99%
- F = 0-59.99%
Success in this course: (1) Always attend class; (2) Reference the textbook for additional context or clarification; (3) Complete all assignments (labs and take home exercises) on time; (4) Seek help at the earliest possible opportunity if you need additional assistance; (5) Study your lecture notes

Class Etiquette

I expect that you will conduct yourself in both lecture and lab in the same manner that you would like to be treated. Your attitude in class should be professional and respectful. Class disruptions will not be tolerated, as it erodes the educational environment for everyone.

Wireless & Electronic Devices

All wireless and electronic devices must be shut down during the class period. You will not need your laptop during our lectures.

Special Accommodations

If you will need special accommodations in order to meet any of the requirements of this class, please contact me within the first two weeks of the semester.

Other University Policies
Please see: http://www.uwm.edu/Dept/SecU/SyllabusLinks.pdf
### Tentative Lecture Schedule (subject to change without notice; check D2L for updates)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lab Topics and Assignments</th>
<th>Textbook Chapter</th>
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<tbody>
<tr>
<td>1</td>
<td>Sep. 3, 5</td>
<td>Introduction; Review Syllabus, D2L. The nature of probability and statistics. Review: simple math functions (symbols)</td>
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<tr>
<td>2</td>
<td>Sep. 10, 12</td>
<td>Frequency distributions and graphs. Practice to make histograms, pie graphs, ogive, and scatter plots.</td>
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<td>3</td>
<td>Sep. 17, 19</td>
<td>Data description – Central tendency. Data description – Measures of Variation and position (Quartile, Percentile)</td>
<td>3</td>
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<tr>
<td>4</td>
<td>Sep. 24, 26</td>
<td>Data description – Measures of Variation and position (Quartile, Percentile)</td>
<td>3</td>
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<td>5</td>
<td>Oct. 1, 3</td>
<td>Review for Exam 1 (Oct. 2). EXAM 1 (Oct. 4)</td>
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<td>6</td>
<td>Oct. 8, 10</td>
<td>Probability and counting rules. Different types of probability. Visit AGSL on Oct. 11 at 10 am.</td>
<td>4</td>
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<tr>
<td>7</td>
<td>Oct. 15, 17</td>
<td>Probability and counting rules. Discrete probability and distribution</td>
<td>4 &amp; 5</td>
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<td>8</td>
<td>Oct. 22, 24</td>
<td>The normal distribution. Guest lecture- What is geographic data and how to find by GIS librarian at AGSL</td>
<td>6</td>
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<tr>
<td>9</td>
<td>Oct. 29, 31</td>
<td>The normal distribution. Project data due (Nov. 1)</td>
<td>6</td>
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<td>10</td>
<td>Nov. 5, 7</td>
<td>Review for Exam 2 (Nov. 6). EXAM 2 (Nov. 8)</td>
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<td>11</td>
<td>Nov. 12, 14</td>
<td>Confidence intervals and hypothesis testing. Guest Lecture – Mr. Wei Xu (Nov. 13)</td>
<td>7</td>
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<tr>
<td>12</td>
<td>Nov. 19, 21</td>
<td>Confidence intervals and hypothesis testing</td>
<td>7, 8</td>
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<tr>
<td>13</td>
<td>Nov. 26, 28</td>
<td>Hypothesis testing/ Testing the difference between two means, tow proportions, and two variances</td>
<td>8, 9</td>
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<td>NO CLASS on Nov. 28</td>
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<tr>
<td>14</td>
<td>Dec. 3, 5</td>
<td>Correlation and regression analysis. Guest lecture-spatial regression and ANOVA</td>
<td>10, 12</td>
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<td>15</td>
<td>Dec. 10, 12</td>
<td>Correlation and regression analyses. Analysis of variance. Final projects are due in Canvas Assignment on Dec. 15 by midnight</td>
<td>12</td>
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<td></td>
<td>Dec. 19</td>
<td>Final Exam: 7:30 am-9:30 am. Final Exam: 7:30 am-9:30 am (BOLTON B40)</td>
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