Course Title:
Quantitative Methods in Geographical Research

Course Number:
GEOG 5113-101

Course Description:
Statistics is pervasive in our everyday lives whether we recognize it as such or not. Market reports, opinion polls, political analysis, and environmental and economic reports all use (and misuse) statistics and statistical data. Professionally, statistics is very widely used in research and is almost indispensable for summarizing, characterizing, revealing, and understanding hidden patterns and relationships in data. Therefore, understanding basic statistical concepts is important, even necessary, in helping you make sense of your world. This course will help you develop or improve your statistical literacy by emphasizing concepts and critical thinking over computation. Emphasis will be placed on the logic of the scientific method and how to analyze data to identify patterns and draw valid conclusions.

Class Dates, Location and Hours:
Dates: October 29 – November 4, 2012
Location: U.S. Coast Guard, San Diego, Wardroom. Directions available from gate guard.
Hours: Mon-Fri 4:30 pm-8:00 pm, Sat 8:00 am-4:30 pm, Sun 8:00 am-12:30 pm.
Last day to enroll or drop without penalty: September 30, 2012

Site Director:
Mikel Siphaxay. Phone: 619-322-1724. Fax: 858-569-0519. Email: ousandiego@ou.edu

Professor Contact Information:
Course Professor: Renee A. McPherson, Ph.D.
Mailing Address: Department of Geography and Environmental Sustainability
University of Oklahoma
100 East Boyd Street, Suite 510
Norman, OK 73019
Telephone Number: (405) 325-2583
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E-mail Address: renee@ou.edu
Professor availability: The professor will be available via e-mail to students before and after the class sessions. On-site office hours are half an hour before and after each class session, by appointment.

Textbook(s) and Instructional Materials:
Student materials are available at the Follett/AP Bookstore located in the Oklahoma Memorial Union, 900 Asp Ave., Norman, OK. Orders can be placed online at www.oklahomauinunion.bkstr.com or by telephone at 866-369-9713 (toll free in the U.S.) or 405-325-5960 (outside the U.S.). E-mail orders may be sent to oklahomauinunion@bkstr.com. Representatives are available from 8 a.m. to 6 p.m. CST Monday through Thursday and 8 a.m. to 5 p.m. CST on Friday. Summer hours: 8 a.m. to 4 p.m. CST. Faxed orders may be placed 24 hours a day to 866-223-5607 (toll free in the U.S.) or 405-325-7140 (outside the U.S.).


Note: The Follett/AP Bookstore is the Advanced Programs contractual textbook provider. Should text changes become necessary after publication of the course syllabus, Advanced Programs will facilitate text returns/refunds only for texts purchased through the Follett/AP Bookstore.

**Course Objectives:**

The objective of this course is to gain an understanding of statistical principles and their application. We will learn how to collect data, summarize data, examine data for patterns and relationships, and analyze data so we can draw meaningful conclusions. We will also learn how to interpret and judge statistical information, including information embedded in computer output, information reported in the popular press or information contained in published research. As much as possible, we will use Microsoft Excel for the statistical analyses, as it is a common tool used in business, government, and other organizations. Hopefully, students will have laptops with Excel (via MS Office), but if not, we will either use a computer lab (if available) or work in teams. This course will be taught assuming no prior experience in statistics or use of Excel’s statistical tools. Given the fast pace of this one-week course, it will be to your benefit to learn the basics of Excel and read the first two chapters in the textbook before the first class.

**Course Outline:**

I. Understanding Data and the Research Process  
   a. Types of Statistical Studies  
   b. Sampling  
   c. Data Types and Measurements

II. Describing Data  
   a. Picturing Distributions  
   b. Shapes of Distributions  
   c. Measures of Variation  
   d. Normality and the Central Limit Theorem

III. Understanding Relationships  
   a. Variables, Relationships, Measurement, Reliability, and Validity  
   b. Correlation and Causation

IV. Statistical Inference  
   a. From Samples to Populations  
   b. Hypothesis Testing

V. Other topics, including practical uses of statistics, may be covered if time permits.

**Assignments, Grading, and Due Dates:**

The course format consists of traditional lectures and group discussion. Grading will consist of the following components.

1. Short assignments will earn 25% of your grade. This includes the pre-seminar due the first day of class assignments (see below), as well as additional in-class assignments. These assignments usually will be extensions or modifications of discussion questions dealt with in class or raised by the readings. Students will form hypotheses and develop and analyze appropriate statistical methodology.

2. Participation: thoughtful participation throughout the course will help solidify your learning, as well as adding to the educational environment: 10% of your course grade.

3. A final examination will be given in class on the last day. This will be based on material covered during the class discussions and may also require elaboration or extension of these materials and ideas. This will be worth 40% of your grade.

4. Completion of the post-seminar assignments (see below) will be worth 25% of your total grade.
Pre-Seminar Assignments:

The first pre-seminar assignment is to complete the introduction and first unit of the ActivStats CD-ROM. When loading the ActivStats CD for the first time, make sure you create a new student file. I will ask for a copy of this file later as proof you completed the assignments, so make sure you know where it is stored, back it up (e.g., copy it to a thumb drive regularly or email it to yourself), and open this same file for subsequent uses of ActivStats. When creating your student file, make sure to select “Excel” for Step 1 and “Bennett, Briggs, Triola; 3rd ed” for Step 2. Once the student file is created, do the tutorial to learn all the features of ActivStats and how to use them. There is also an Excel tutorial and add-ins that you should install. As you complete each activity, a checkmark will appear. A printout showing the answers from the end-of-unit test will suffice as proof that this was accomplished. This assignment is due on the first day of class. Beyond this assignment, I recommend that you complete as much of the CD-ROM as you can before class. Due date: October 29, 2012

The second pre-seminar assignment is to bring to class an article from the popular literature (e.g., newspaper, magazine, Internet) that uses statistics. Write up a brief description (two pages) of the use of statistics in the article. Explain what the article means, and evaluate their results. This includes thinking about the following questions: Do the authors do a good job of explaining what is involved? Do the conclusions follow from the information given? Do you consider this a good use or a bad use of statistics? What additional information would you like to have? Be prepared to discuss the article and its use of statistics on the first night of class. Due date: October 29, 2012

Post-Seminar Assignments:

The first post-class assignment is to complete all of the assigned activities from the ActivStats CD. Email me your student file showing checkmarks for all the assigned activities. In addition, there will be selected questions from the homework section of the CD that you will have to answer. You will be assigned these during class. Due date: November 16, 2012

The second post-seminar assignment will be assigned during class. Due Date: November 21, 2012

Grading: This is a letter-graded course: A, B, C, D, or F, where A ≥90%, B is 80-89%, C is 70-79%, D is 60-69%, and F <60%.

NOTICE: Failure to meet assignment due dates could result in a grade of I (Incomplete) and may adversely impact Tuition Assistance and/or Financial Aid.
POLICIES AND NOTICES

Attendance/Grade Policy

Attendance and participation in interaction, individual assignments, group exercises, simulations, role playing, etc. are valuable aspects of any course because much of the learning comes from discussions in class with other students. It is expected that you attend all classes and be on time except for excused emergencies.

Excused absences are given for professor mandated activities or legally required activities such as emergencies or military assignments. Unavoidable personal emergencies, including (but not limited to) serious illness; delays in getting to class because of accidents, etc.; deaths and funerals, and hazardous road conditions will be excused.

If you are obtaining financial assistance (TA, STAP, FA, VA, Scholarship, etc.) to pay all or part of your tuition cost, you must follow your funding agency/institution’s policy regarding “I” (Incomplete) grades unless the timeline is longer than what the University policy allows then you must adhere to the University policy.

Students who receive Financial Aid must resolve/complete any “I” (Incomplete) grades by the end of the term or he/she may be placed on “financial aid probation.” If the “I” grade is not resolved/completed by the end of the following term, the student’s Financial Aid may be suspended and make the student ineligible for further Financial Aid.

Students are responsible for meeting the guidelines of Tuition Assistance and Veterans Assistance. See the education counselor at your local education center for a complete description of your TA or VA requirements.

Academic Honesty

Honesty is a fundamental precept in all academic activities and … [you] have a special obligation to observe the highest standards of honesty. Academic misconduct in any form is inimical to the purposes and functions of the University and is therefore unacceptable and is rigorously proscribed. Academic misconduct includes:

- cheating (using unauthorized materials, information, or study aids in any academic exercise), plagiarism, falsification of records, unauthorized possession of examinations, intimidation, and any and all other actions that may improperly affect the evaluation of a student’s academic performance or achievement; assisting others in any such act; or attempting to engage in such acts.

All acts of academic misconduct will be reported and adjudicated as prescribed by the student code of the University of Oklahoma. All students should review the “Student’s Guide to Academic Integrity” found at http://www.ou.edu/provost/integrity

Accommodation Statement

The College of Continuing Education [Advanced Programs] is committed to making its activities as accessible as possible. For accommodations on the basis of disability, please contact your OU Site Director.

Course Policies

Advanced Programs policy is to order books in paperback if available. Courses, dates, and professors are subject to change. Please check with your OU Site Director. Students should retain a copy of any assignments that are mailed to the professor for the course. Advanced Programs does not provide duplicating services or office supplies.

Copyright

Any and all course materials, syllabus, lessons, lectures, etc. are the property of professor teaching the course and the Board of Regents of the University of Oklahoma and are protected under applicable copyright.

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INSTRUCTOR VITA
Renee A. McPherson, Ph.D.

Education
- B.S. University of Wisconsin, Madison, WI, Mathematics and Meteorology with Honors
- M.S. University of Oklahoma, Norman, OK, Meteorology
- Ph.D. University of Oklahoma, Norman, OK, Meteorology

Current Positions
- 2012-present  Associate Professor, Geography and Environmental Sustainability, University of Oklahoma (OU), Norman, OK
- 2012-present  Director of Research, South Central Climate Science Center, Norman, OK
- 2010-present  State Climatologist of Oklahoma, Oklahoma Climatological Survey, Norman, OK
- 2007-present  Adjunct Associate Professor, OU School of Meteorology, Norman, OK

Major Areas of Teaching and Research Interest
- Applied and Regional Climatology
- Impacts of Climate Variability and Change
- Land-Air-Vegetation Interactions
- Mesoscale Meteorology
- Surface Weather and Climate Observing Systems

Representative Publications and Presentations

Representative Honors and Awards Received
- Innovations in American Government Award, Winner, Harvard University, OK-First Project
- Special Award to the Oklahoma Climatological Survey for its “actions during the May 3, 1999 tornado outbreak,” American Meteorological Society
- Subject Matter Expert, Metadata Joint Action Group, Committee for Integrated Observing Systems, Office of the Federal Coordinator of Meteorology
- Technical Innovation Award for development and implementation of the Sperry-Piltz Ice Accumulation Index, Oklahoma Public Works Association
- Phi Beta Kappa, University of Wisconsin-Madison
Major Professional Affiliations

- Member, American Meteorological Society (AMS) Commission on the Weather and Climate Enterprise
- Member, AMS Water Resources Committee
- Chair, Metadata Working Group, AMS Network of Networks Committee
- Member, American Association of State Climatologists
- Member, American Association of Geographers