Course Title:
Quantitative Methods in Geographical Research

Course Number:
GEOG 5113-102

Course Description:
Statistics is pervasive in our everyday lives whether we recognize it as such or not. Market reports, opinion polls, political analysis, 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: June 11-17, 2012
Hours: Mon-Fri 6:00 p.m.-9:30 p.m.; Sat 8:00 a.m.-4:30 p.m.; Sun 8:00 a.m.-12:00 p.m.
Last day to enroll or drop without penalty: May 13, 2012

Site Director:
Phone: 703-418-4800; Fax: 703-418-2730; E-mail: apwashington@ou.edu

Professor Contact Information:
Course Professor: Aondover Tarhule
Mailing Address: Department of Geography and Environmental Sustainability
University of Oklahoma
100 E. Boyd St., SEC 510
Norman, OK 73019
Telephone Number: (405) 325-0540
Fax Number: (405) 325-6090
E-mail Address: atarhule@gmail.com
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.oklahomaunion.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 oklahomaunion@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. The computer platform that we will use for statistical analyses is Microsoft Excel. Hopefully students will have laptops with Excel (via MS Office), but if not, we will work around this by using a computer lab (if available) or working in groups. This course will be taught assuming no prior experience in statistics or Excel; however 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 (1-2)
   a. Types of Statistical Studies
   b. Sampling
   c. Data Types and Measurements
   d. Dealing with errors

II. Describing Data (3-5)
   a. Frequency Tables
   b. Picturing Distributions
   c. Shapes of Distributions
   d. Measures of Variation
   e. Normality and the Central Limit Theorem

III. Understanding Probability and Relationships (6-7)
   a. Probability
   b. Variables, Relationships, Measurement, Reliability and Validity
   c. Correlation and Causation

IV. Statistical Inference (8-9)
   a. Sampling Distributions
   b. Estimating population means and proportions
   c. Hypothesis Testing

V. Practical Use of Statistics
   a. t-tests, Two way Tables and ANOVA
   b. Hypothesis testing with two-way Tables.

**Assignments, Grading and Due Dates:**

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

1. Pre-seminar assignment: This assignment is due the first day of class and represents 15% of your grade.

2. Short assignments will earn 40% of your grade. These assignments will usually be extensions or
modification of one of the discussion questions dealt with in class or raised by the readings. Students will form hypotheses and develop and analyze appropriate statistical methodology.

3. Participation: thoughtful participation throughout the course will help solidify your learning, as well as adding to the educational environment: 5% of your course grade.

4. 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.

The first pre-seminar assignment is to complete Pages 1-1 through 3-2 on the ActivStats CD (including the Quizes). 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 and make sure you 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 print-out 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.

The second pre-class assignment is to read first the article on the course D2L website titled “Bad Statistics and Binge Drinking”. In that article, the writer takes umbrage at the inappropriate use of statistics to make sweeping conclusions and generalizations. After reading the article, find and bring to class 5wo articles from the popular literature (e.g., newspaper, magazine, Internet) that uses statistics. One of these articles should show what you consider to be poor use of statistics and the other a good use of statistics. For each article, write no more than a 2 page outline (i.e. 4 pages maximum for the two articles) making your case that is a bad/good use of statistics. Use the article on the D2L page as guide about the kinds of issues that make your case. This includes thinking about the following questions: Do the authors do a good job of explaining their data, including its possible limitations? What appears to be their hypothesis? Is it clear? Is the data structured in such manner as to answer the question conclusively and persuasively? Do the conclusions follow from the information given? Why do you consider this a good use or a bad use of statistics? What additional information would you like to have? Be prepared to submit and defend your write up on the first night of class.

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

For more information about Advanced Programs, visit our website at: http://www.goou.ou.edu/
INSTRUCTOR VITA

Aondover Tarhule, Ph.D.

Education

- Ph.D. Geography McMaster University, Hamilton (Ontario, Canada).
- M.S. Geography, McMaster University, Hamilton (Ontario, Canada)
- M.S. Environmental and Resources Planning University of Jos, Nigeria
- B.S. Geography (First Class Honors), University of Jos, Nigeria

Current Positions

- Chair, Department of Geography, University of Oklahoma, Jan 1, 2009 to present
- Associate Professor (tenured), College of Atmospheric and Geographic Sciences, University of Oklahoma, July 2005 to present.

Frequently Taught Advanced Programs Courses

GEOG 6240: The Geography of African Development

Major Areas of Teaching and Research Interest

- Hydrology and water resources
- Hydroclimatic variability and Tree ring analysis
- Climate information use

Representative Publications and Presentations


Representative Honors and Awards Received

- Recipient: Scholar-Teacher Award for Excellence in Teaching and the innovative use of research for teaching, College of Geosciences, Jan 2005.
- Presidents Distinguished Faculty Mentoring Program, The University of Oklahoma, 2003-06

Major Professional Affiliations

- Association of American Geographers,
- International Water Resources Association,
- International Geographical Union