



**GEOGRAPHY FINAL COURSE OUTLINE: FALL 2012
GEOGRAPHY 605
GFC Hours (3-3)**

Statistic Analysis: Basic & Beyond

Section	Days	Time	Location
LEC01	Fr	13:00 - 15:45	ES 342
LAB01	We	14:00 - 16:45	ES 415

Instructor: Mark Fuller	Office: ES 436
Telephone: 220 8343	Email: mcfuller@ucalgary.ca

The appropriate emergency evacuation assembly point for classes taught in Earth Sciences is ICT food court.

Official Course Description:

Introduction to applied statistics, particularly as they are used in geographical analysis. Topics include sampling design, summary statistics, probability theory, inferential statistics, and multivariate analysis. Laboratory exercises give students hands-on experience in computer-based statistical analysis

Prerequisite:

Consent of the Department

Text(s)/Readings:

(1) Chatterjee, S & A.S. Hadi (2006) *Regression Analysis by Example* (4th Edition) (New York: Wiley) (QA 278.2.C5).

The Laboratory chapters “FR” (above) refers to the required text *Fox and Weisberg (2011)*:

(2) Fox, J & S. Weisberg (2011). *An R Companion to Applied Regression (Second Edition)* (Sage Publications: California). On reserve in the University of Calgary Library (9781412975148).

Recommended supplemental texts: (A) Kennedy, P (2003) *A Guide to Econometrics* (5th Edition) (Oxford: Blackwell) (HB139.K45) (B) Maddala, G.S. (1992) *An Introduction to Econometrics* (2nd Edition) (New York: Macmillan) (HB139.M22)

Recommended supplemental R Software Documentation: (C) R manuals and links to documentation (<http://www.r-project.org/>) (D) Farnsworth, G (2006) *Econometrics in R* (<http://cran.r-project.org/doc/contrib/Farnsworth-EconometricsInR.pdf>)

Grading (Weighting):

Components must total 100% (In calculating the final grade, the term work should count for not less than 50%. Any tests carried out during the last two weeks (14 days before end of lectures) may not account for more than 10% of the final grade, except in the case of take home examinations or projects).

Laboratory Assignments: Equating to 50% of overall mark for this unit. There will be 5 assignments, each of which is worth 10% of your overall mark for this course. Laboratory assignments (1) and (2) will be assessed on a pass/fail basis (fail = 0%, pass=100%), whilst the remaining assignments will be assessed using the assessment criteria outlined below. In the event that a student fails either of the assignments (1) and (2) they will have ONE opportunity to improve their performance to attain a passing grade. Assignments will be handed out at the end of the appropriate lab periods and handed in at the beginning of a specified and subsequent lab period.

Personal Project: Equating to 40% of overall mark. Focus to be determined for each student in line with their MGIS focus. Students must have a dataset by the end of class on Week 9. The project is to be handed in at the beginning of class Week 13.

Class Presentation: Equating to 10% of the overall mark. Student groups will design a 30 minute presentation of a practical application of the concepts to be presented during the middle weeks (5, 6, 7) of the course. 5% of the grade will be my marks for the presentation (awarded to the presenters), and 5% of the grade will be a constructive class critique of the presentation (awarded to the student doing the critique).

A late work penalty of 10% per day (including weekends) will be deducted from your work unless you are able to provide evidence of extenuating circumstance. It is essential to pass all elements/components to pass the course as a whole.

Lecture Outline

Week 1: Introduction to Course

Week 2: Introduction to Regression (**Chapter 1**)

Week 3: Simple Linear Regression (**Chapter 2**)

Week 4: Statistical Inference for Regression (**Chapter 2**)

Week 5: Multiple Linear Regression (**Chapter 3**)

Week 6: Regression Diagnostics: Detecting Model Violations (**Chapter 4**)

Week 7: Qualitative Variables as Predictors (**Chapter 5**)

Week 8: The Problem of non-linearity and non-constant variance (**Chapter 6**)

Week 9: READING DAYS

Week 10: The Problem of non-constant variance (**Chapter 7**)

Week 11: The Problem of Correlated Errors (**Chapter 8**)

Week 12: Analysis of Collinear Data (**Chapter 9**)

Week 13: Variable Selection Procedures (**Chapter 11**)

Laboratory Outline

Week 2: Assignment #1: Introduction to R-Project (FR 1, 2)

Week 3: Exploratory Data Analysis (EDA) (FR 3)

Week 4: Assignment #2: EDA (FR 3)

Week 5: Graphics in R (FR 7)

Week 6: Assignment #3: Properties of Estimators

Week 7: Fitting Linear Models (FR 4)

Week 8: Assignment #4: Simple Regression Models (FR 4)

Week 9: Diagnostic Problems in Linear Models (FR 6)

Week 10: Assignment #5: Multiple Regression Models (FR 4, 6)

Week 11:

Week 12: Project Work

Week 13:

Texts

The Lecture “**Chapters**” (above) refer to those from *Chatterjee and Hadi (2006)*:

The Laboratory chapters “**FR**” (above) refers to the required text *Fox and Weisberg (2011)*:

Grading System:

96-100	A+	77-80	B	59-61	C-
90-95	A	71-76	B-	55-58	D+
86-89	A-	65-70	C+	50-54	D
81-85	B+	62-64	C	0-49	F

For additional detailed course information posted by the Instructor see Blackboard at:

<http://blackboard.ucalgary.ca/>

Writing across the Curriculum

Writing skills are not exclusive to English courses and, in fact, should cross all disciplines. The University supports the belief that throughout their University careers, students should be taught how to write well so that when they graduate their writing abilities will be far above the minimal standards required at entrance. Consistent with this belief, students are expected to do a substantial amount of writing in their University courses and, where appropriate, members of faculty can and should use writing and the grading thereof as a factor in the evaluation of student work. The services provided by the Writing Centre in the Effective Writing Office can be utilized by all undergraduate and graduate students who feel they require further assistance.

Principles of Conduct

The University of Calgary Calendar includes a statement on the Principles of conduct expected of all members of the University community (including students, faculty, administrators, any category of staff, practicum supervisors and volunteers) whether on or off the University's property. This statement applies in all situations where the members of the University community are acting in their University capacities. All Members of the University Community have a responsibility to familiarize themselves with this statement which is available at: <http://www.ucalgary.ca/pubs/calendar/current/j-2.html>

Plagiarism

Academic dishonesty is not an acceptable activity at the University of Calgary and students are **strongly advised** to read the Student Misconduct section in the University Calendar. Quite often, students are unaware of what constitutes academic dishonesty or plagiarism. The most common are 1) presenting another student's work as your own 2) presenting an author's work or ideas as your own without proper referencing and 3) using work completed for another course. This activity will not be tolerated in this course and students conducting themselves in this manner will be dealt with according to the procedures outlined in the calendar. <http://www.ucalgary.ca/honesty/plagiarism>

Disability Resource Centre Accommodations

If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

Freedom of Information and Protection of Privacy

FOIP: The Freedom of Information and Protection of Privacy (FOIP) legislation disallows the practice of having students retrieve assignments from a public place, e.g., outside instructor's office, the department office, etc. Term assignments will be returned to students individually, during class or during the instructor's office hours; if students are unable to pick up their assignments from the instructor, they provide the instructor with a stamped, self-addressed envelope to be used for the return of the assignment.

Re: Posting of Grades and Picking-up of Assignments

- All assignments will be handled through Blackboard or personally.
- Their own grades will be available to each student on Blackboard by password access. Grades will **not** be available at Geography's main office.

Contact Information for Student and Faculty Representation

- SU VP Academic Phone: 220-3911 and e-mail: suvpaca@ucalgary.ca
- SU Faculty Rep. Phone: 220-3913 and e-mail: arts1@ucalgary.ca
- The students ombudsman office information can be found at:
<http://www.su.ucalgary.ca/page/affordability-accessibility/su-structure/contact-info>

Campus Safewalk

Campus Security, in partnership with the Students' Union, provides the Safewalk service, 24 hours a day, to any location on Campus including the LRT, parking lots, bus zones and University residences. Contact Campus Security at 220-5333 or use a help phone, and Safewalkers or a Campus Security officer will accompany you to your Campus destination.

Faculty of Arts Program Advising and Student Information Resources

- Have a question, but not sure where to start? The new Faculty of Arts Program Information Centre (PIC) is your information resource for everything in Arts! Drop in at SS110, call us at 403-220-3580 or email us at artsads@ucalgary.ca. You can also visit the Faculty of Arts website at <http://arts.ucalgary.ca/undergraduate> which has detailed information on common academic concerns.
- For program planning and advice, contact the Student Success Centre (formerly the Undergraduate programs Office) at (403) 220-5881 or visit them in their new space on the 3rd Floor of the Taylor Family Digital Library.
- For registration (add/drop/swap), paying fees and assistance with your Student Centre, contact Enrolment Services at (403) 210-ROCK [7625] or visit them at the MacKimmie Library Block.

Contact for Students Union Representatives for the Faculty of Arts:

arts1@su.ucalgary.ca, arts2@su.ucalgary.ca, arts3@su.ucalgary.ca, arts4@su.ucalgary.ca