

# Western University

## GEOG2210B Introduction to Spatial Analysis

### Course Outline

Winter 2016

- Specifics are subject to change -

### ***Instructor Information***

*Name and title:* Dr. Adam G. Yates

*Contact:* Office – 2403  
Email – adam.yates@uwo.ca

*Office Hours:* Wednesdays 3:00pm - 4:00pm (or by appointment)

### ***Course Information***

Lecture Room: B&GS 0153  
Days: Tuesday  
Hours: 10:30pm – 12:30pm

Lab Rooms: SSC 1425  
Section 002: Tuesday 1:30pm – 3:30pm  
Section 003: Wednesday 11:30am – 1:30pm  
Section 004: Wednesday 1:30pm – 3:30pm  
Section 005: Thursday 9:30am – 11:30am

### ***Course Syllabus***

#### **Course description**

This course introduces students to research design and methodology with a focus on data description and analysis. It presents the general concepts of conducting research with a focus on the key aspects of study design. The course emphasizes techniques for analyzing qualitative and quantitative data by teaching the fundamental underpinnings of statistical methods.

#### **Course Objectives**

By the end of the semester, you will:

- Have a thorough understanding of the basic components of research methodology including, formulating a research problem, conceptualizing a research design, collection and processing of data.
- Have a basic understanding of the fundamentals and theoretical underpinnings of statistical analysis of data.
- Be able to utilize basic statistical methods.
- Be able to critically evaluate the work of others who employ statistical methods.

## **Antirequisites**

Biology 2244A/B, Economics 2122A/B, 2222A/B, Health Sciences 3801A/B, MOS 2242A/B, Psychology 2810, 2820E, 2830A/B, 2850A/B, 2851A/B, the former 2885, Social Work 2205, Sociology 2205A/B, Statistical Sciences 2035, 2037A/B if taken before Fall 2010, Statistical Sciences 2141A/B, 2143A/B, 2244A/B, 2858A/B and the former 2122A/B

## **Prerequisites**

1.0 course from Geography 1100, 1300A/B, 1400F/G, 1500F/G or the former Geography 020E; or enrollment in the Major in Physical Geography or in an Honors Earth Science Program for Professional Registration.

### **Prerequisite checking:**

Unless you have the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

If you find that you do not have the course requisites, it is in your best interest to drop the course well before the end of the add/drop period. Your prompt attention to this matter will not only help protect your academic record, but will ensure that spaces become available for students who require the course in question for graduation.

## **Course Materials**

### **Reading assignments**

*Course textbook readings*

*Burt et al. (2009), Elementary Statistics for Geographers, 3<sup>rd</sup> Edition, The Guilford Press.*

This text is required reading for the course and all students are strongly encouraged to purchase a copy as the lectures will draw from the text and as such the text will provide important supplementary information for integrating and contextualizing the lecture and lab materials. Copies of the text are available on 2-hour reserve at the Weldon Library.

*Kumar (2005), Research Methodology, 2<sup>nd</sup> Edition, SAGE Publications.*

This text is recommended reading for the course. The first third of the course will cover topics described in chapters throughout this book. Copies of the text are available on 2-hour reserve at the Weldon Library.

### **Calculator**

A reasonable quality calculator is *required* for the laboratory exercises and the examinations. One with statistical functions (normally a “ $\Sigma$ ” key) may be most useful for this course, but any calculator with square root and square functions will suffice. It is your responsibility to know how to use your calculator, and to ensure its functionality during examinations.

## ***Methods of Evaluation***

### **Course Evaluation**

#### *Laboratory Exercises and Assignments*

Laboratory exercises are the means by which you gain practical experience of material discussed in lectures. They provide an opportunity to explore and learn. Although a portion of marks are awarded for these exercises, note that they are primarily instructional rather than evaluative.

Material required for laboratory exercises are taught in the preceding lecture. Considerable effort has been made to incorporate background information, examples and guidance in the exercise materials. Each exercise consists of a brief explanation with worked examples of the particular statistical technique explored in the exercise, relevant applications and examples, followed by the actual exercise. The material and explanations make reasonable assumptions about your knowledge of earlier material. Review and definition of questions prior to lectures and exercises, combined with cumulative understanding are key to this course.

Effective and full use of the laboratory time is a key to success in the course; therefore you are required to attend lab classes. The effectiveness of a laboratory session depends on your preparation and diligence in using the allocated time slot. You must *start working on the lab exercise beforehand, and, during the allotted two hour slot, work with the Teaching Assistant on difficulties and barriers you have encountered.* You should bring a calculator to all lab classes.

Electronic versions of all assignments will be handed in via *OWL* prior to the *beginning* of the next laboratory session on the due date provided on the course outline (usually one week later, *see late policy*). It is the student’s responsibility to ensure that completed assignments are properly uploaded to *OWL* – no exceptions. Graded exercises will be returned the lab after they are due.

#### *Examinations*

There will be a midterm exam and a final examination. The mid-term exam (1.5 hours) will be held during lecture in mid-February. The final examination (3 hours) will be scheduled during the examination period at the end of the winter term. The midterm and final examinations assess knowledge of lecture, lab and assigned reading materials. Both examinations will consist of multiple choice questions.

### *Course Evaluation Summary*

Lab Assignments	30% (6% for each of 5 assignments) – hand written exercises consisting of short answer questions
Midterm Exam	35% - exam will cover all lecture, lab and reading material covered/assigned prior to Feb 23.
Final Exam	35% - exam will cover all lecture and seminar material covered/assigned to date.

Your evaluation will base on your knowledge of course materials as substantiated in the midterm tests, final exam, class and tutorial participations. It may not be easy to get a good mark in this course. Here are some ways that may help you obtain a mark of 70 or above in this course. Attend and participate lecture and laboratory sessions. Before class, make sure you read the entire lecture and reading materials and bring to class concepts, theories and terms that are not clear for you. During class, take reasonable notes, ask questions for clarification of any terms, concepts or theories you have not understood. After class, combine your notes on assigned reading materials and the one you took in the class and learn an integrated concepts, theories and definitions. Ask for help in case you need additional clarification using office hours and tutorial sessions.

### **Course Schedule**

#### *Lectures, Labs, and Readings*

This course will be using OWL to deliver lectures, lab exercises and assignments as well as to post grades. Lecture notes will be posted 2 to 7 days prior to a lecture session. It is your responsibility to print out these lectures and bring them to class. The lecture notes contain illustrations, examples, formulas, tables etc... that will make following a lecture easy in class. Lab exercises in this course contain brief reviews of lecture material and worked examples as well as the lab assignment.

#### *Predicted Lecture Schedule*

<b>Day</b>	<b>Topics</b>	<b>Text Readings</b>
Jan. 5	Course Introduction, Overview of Research Process	Kumar (Ch. 1-2)
Jan. 12	Formulating a Research Problem	Kumar (Ch. 4-6)

Jan. 19	Research Design	Kumar (Ch. 7-8)
Jan. 26	Data Collection, Sampling, Data	Kumar (Ch. 9,12) Burt et al (Ch. 1,6)
Feb. 2	Displaying and Interpreting Data	Burt et al (Ch. 2)
Feb. 9	Describing Data with Statistics	Burt et al (Ch. 3)
<b>Feb. 16</b>	<b>No Lectures - Reading Week</b>	
Feb. 23	Random Variables and Probability Distributions	Burt et al (Ch. 5)
Mar. 2	Mid-term Exam	None
Mar. 9	Hypothesis Testing	Burt et al (Ch. 8,9)
Mar. 16	Hypothesis Testing	Burt et al (Ch. 8,9)
Mar. 23	Analysis of Variance	Burt et al (Ch. 11)
Mar. 30	Correlation and Linear Regression	Burt et al (Ch. 4,12)
Apr. 6	Correlation and Linear Regression	Burt et al (Ch. 4,12)

*Seminar schedule (Subject to change until Jan 7)*

Day	Topics
Week 1	No Lab
Week 2	No Lab
Week 3	No Lab
Week 4	No Lab
Week 5	No Lab
Week 6	Lab #1 – Data Compilation and Presentation
<b>Week 7</b>	<b>No Lab - Reading Week</b>
Week 8	Lab #2 – Descriptive Statistics (Lab #1 due)

Week 9	No Lab
Week 10	Lab #3 – Probability Distributions (Lab #2 due)
Week 11	Lab #4 – T-tests and F-tests (Lab #3 due)
Week 12	Lab #5 – ANOVA (Lab #4 due)
Week 13	No Lab (Lab #5 due)
Week 14	No Lab

## Course Policies

### *Late Policy*

All article summaries must be handed in before the allocated deadline. Late submissions will be penalized at a rate of 10% per day for the first seven days. A mark of 0%-mark will be recorded if work is submitted more than a week late.

### *Extensions*

If you have genuine extenuating circumstances and will not be able submit an assignment on time, you may submit a written request for extension, clearly outlining why you should be granted an extension. This request must be submitted to the course instructor at least seven days before the assignment is due.

### *Accommodation*

If you have genuine extenuating circumstances and failed to submit an assignment on time, you must submit a signed doctor's letter or other legitimate documentation explaining why you failed to meet the deadline. This documentation should be submitted directly to the Dean's Office, not the course instructor. It is the Dean's Office that will determine if accommodation is warranted.

*NOTE: Also see UWO's Policy on Accommodation for Medical Illness ([http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)).*

### *Illness*

If you have an illness during the term that affects your work or ability to write exams or to complete work on schedule, please contact me as soon as you can, so I that can help with any accommodation. Also, please refer to Western's Policy on Accommodation for Medical Illness:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)

You can download a Student Medical Certificate (SMC) from: <https://studentservices.uwo.ca> under the Medical Documentation heading.

## ***Additional Statements***

### **Attendance**

Attendance at lectures and labs will not be taken. However, the course material is cumulative and poor attendance may make it difficult for the student to keep up with subsequent material. Regular attendance is thus strongly recommended. It is the student's responsibility to keep up with course material of missed lectures and labs.

### **Statement on Use of Electronic Devices**

Students are encouraged to bring their cell phones to class for participation in class polls. Outside of use for polls, students will have their cell phones turned off.

No electronic devices, excepting calculators, will be allowed during tests and examinations.

### **Statement on Academic Offences**

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

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Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

### **Mental Health**

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit the site below for more information on mental health resources:

<http://www.uwo.ca/uwocom/mentalhealth/>.

### **Western's commitment to accessibility**

The University of Western Ontario is committed to achieving barrier free accessibility for persons studying, visiting and working at Western.

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

## **Support Services**

Registrarial Services: <http://www.registrar.uwo.ca/>

Student Development Services: <http://www.sdc.uwo.ca/>