

**THE UNIVERSITY OF WESTERN ONTARIO**  
**DEPARTMENT OF GEOGRAPHY**  
**GEOGRAPHY 3223A: Decision-making with GIS**

	<b>Lectures</b>	<b>Labs</b>
<b>Location:</b>	SSC-1059	SSC-1316A
<b>Days:</b>	Wednesday	Thursday
<b>Hours:</b>	10:30am - 12:30 pm	3:30 - 5:30 pm

**Website:** <http://publish.uwo.ca/~jmalczew/3223.htm>

**Prerequisites:** Geography 2220A/B

“Unless you have either 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.”

**Instructor:** Jacek Malczewski

Office: SSC 2422

Phone: 661-2111 ext.85030

E-mail: [jmalczew@uwo.ca](mailto:jmalczew@uwo.ca)

Office hours: Monday 1:30 – 2:30pm

Wednesday 9:30 – 10:30am

## **Course Syllabus**

**Objectives:** This course introduces you to the principles of integrating GIS and decision analysis. Selected GIS-based decision-making techniques are applied in practical sessions. A range of applications from both public and private sector organizations are covered.

The course is problem based, and applied - you must practice problems and do all exercises in order to fully understand the material and successfully complete the course. The course material is cumulative. You should review lectures and readings weekly - do not expect success if you only study and practice before exams.

### **SCHEDULE OF CLASSES**

<b>Date/Lecture #</b>	<b>Topic</b>	<b>Reading - textbook</b>
10/09/2014	Introduction: course outline	Ch. 1, p. 3-14
Lec. 1	GIS and multicriteria decision analysis	Ch. 2, p. 15-80; Ch. 3, p. 81-100
24/09/2014	No class (Field camps)	
Lec. 2	Evaluation criteria	Ch. 4, p.103-136
Lec. 3	Decision alternatives and constraints	Ch. 5, p. 137-158
Lec. 4	Criterion weighting	Ch. 6, p. 177-195
22/10/2014	Mid-term exam	
Lec. 5	Decision rules (Additive weighting methods)	Ch. 7, p. 197-217
Lec. 6	Decision rules (Analytic Hierarchy Process)	Ch. 7, p. 217-223
Lec. 7	Decision rules (Ideal point methods)	Ch. 7, p. 223-226
Lec. 8	Decision rules (Fuzzy aggregation methods)	Ch. 7, p. 230-233
Lec. 9	Sensitivity analysis	Ch. 8, p. 261-269
Lec. 10	Synthesis	Ch. 10, p. 311-339

## Require reading (textbook)

Malczewski J. (1999) *GIS and Multicriteria Decision Analysis*, New York: Wiley.

## LAB SCHEDULE

Date	Topic	% of final mark	Due date
02/10/14	1. Structuring decision problem: Evaluation criteria	5	09/10/14
09/10/14	2. Decision alternatives and constraints	5	16/10/14
16/10/14	3. Assigning criterion weights	5	06/11/14
23/10/14	No lab		
30/10/14	No lab		
06/11/14	4. Decision rules: 1	5	13/11/14
13/11/14	5. Decision rules: 2	5	27/11/14
20/11/14	No lab		
27/11/14	6. Sensitivity analysis	5	04/12/14

1. Laboratory exercises are the means by which you can gain practical experience in lecture material. They provide the opportunity to explore and learn.
2. The lab component of the course consists of six assignments worth 30% of your final grade.
3. Assignments will be explained and discussed during lab sessions. If you have problems with any aspect of the assignments, please come and talk to me during my office hours.
4. Computer software will be used in the preparation of the assignments. It is essential that students unfamiliar with computers and quantitative analysis take extra time (in addition to regular lab time) to familiarise themselves with software to be used in this course.
5. Attendance at labs is mandatory and absence will be *penalised by deduction of 2% of the total course mark* for each lab missed. Assignments handed in after the due date will not be accepted. Medical and compassionate grounds, accompanied by suitable documentation, may be accepted as justification for absence or late assignment submission.
6. You are encouraged to work on labs in groups; however, the write-up must be independent. *All assignments must be your own.* Plagiarism among students or of an author's work will result in *automatic failure* in the course (see the UWO calendar); it is the responsibility of the student to know the rules!).

## MARKING SCHEME

Grads will be based on composite performances for the following:

Mid-term Exam (open-book, 100 min. Oct. 22, 2014)	30%
Final Exam (open-book, cumulative, 2 hours, TBA)	40%
Exercises	30%

The exams are designed to assess individual competence in course material. The focus is on material covered in lectures and labs. An open-book format applies. The final exam is cumulative. A restricted open-book format applies; only a calculator, textbook and lecture notes can be used in the test and exam. A calculator is essential for the mid-term test and final exam.

**Note:** In accordance with university policy, missed tests and exams cannot be made up except on written medical grounds and notification prior to test/exam date (see <http://counselling.ssc.uwo.ca/procedures/examinations.asp>).

For UWO Policy on Accommodation for Medical Illness and a downloadable SMC see:

[http://www.uwo.ca/univsec/handbook/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf)

Downloadable Student Medical Certificate (SMC): <https://studentservices.uwo.ca> under the Medical Documentation heading

Students seeking academic accommodation on medical grounds for any missed tests, exams,

participation components and/or assignments worth 10% or more of their final grade must apply to the Academic Counselling office of their home Faculty and provide documentation. Academic accommodation cannot be granted by the instructor or department.

## **Additional Statements**

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

No electronic devices 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)”

“All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).”

“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.”

### **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://westernusc.ca/services/>

Social Science Academic Counselling: <http://counselling.ssc.uwo.ca/>

Students who are in emotional/mental distress should refer to Mental Health@Western

<http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.