

**Western University**  
**Department of Geography and Environment**  
**Geography 3223A: Decision-making with GIS**  
**Course Outline: Section 001 Fall 2020**  
*Syllabus subject to modification*

**Instructor Information**

**Name:** Jacek Malczewski

**Contact information:**

Office: Zoom meeting

Virtual office hour: Tuesday 11:00 – 12:00 or by appointment via email

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Although I will usually reply the same day, please allow up to 48 hours. Please email from your @uwo.ca account and use “Geog3223 – Email Topic” in the subject line.

**TA Information**

**Name:** Heather Peacock

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**Course Description**

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

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.”

**Course Objectives and Format**

There are two main objectives of this course: (1) to develop knowledge and critical understanding of the principles of integrating GIS and decision analysis, and (2) to develop practical skill with GIS-based multi-criteria decision making methods including geo-spatial data management, computation, analysis and interpretation.

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 required readings weekly - do not expect success if you only study and practice before exams.

Classroom Location: SSC-1059; Day: Thursday; Hours: 10:30-12:30

This is an integrated lecture-lab and a hybrid in classroom/online-based course that will cover theoretical and applied concepts and methods through lectures, assignments, and readings. The course material is organized into 8 Units.

Units 0, and 1 will be delivered asynchronously on-line. These will consist of pre-recorded PowerPoint/Audio Units that you may access from the Resources module on the OWL site.

Units 2, 3, 4, 6, and 7 will be delivered on-campus. These will be made up of PowerPoint presentations, assignments and readings. The PowerPoint presentations and assignments will be posted under the Resources module on the OWL site 2 days before scheduled dates. Some of the readings will be provided in an audio format online.

### SCHEDULE

Date	Topic	Unit #	Required readings
10/09/2020	Introduction	<a href="#">0</a> ▶	
17/09/2020	GIS and multicriteria decision analysis	1 ▶	Malczewski 1999 Ch. 1, p. 3-14; Ch. 3, p. 81-100 <a href="#">Malczewski 2006</a>
24/09/2020	Evaluation criteria (Lab 1)	2*	Malczewski 1999 Ch. 4, p.103-122
01/10/2020	Decision alternatives (Lab 2)	3*	Malczewski 1999 Ch. 5, p. 137-160
08/10/2020	Criterion weighting (Lab 3)	4*	Malczewski 1999 Ch. 6, p. 177-195
22/10/2020	Additive weighting methods (Lab 4)	5*	Malczewski 1999 Ch. 7, p. 197-223 <a href="#">Malczewski 2000</a>
29/10/2020	Reference point methods (Lab 5)	6*	Malczewski 1999 Ch. 7, p. 223-226
<b>05/11/2020</b>	<b>Fall Reading week</b>		
<b>12/11/2020</b>	<b>TEST 1</b>		
19/11/2020	Sensitivity analysis (Lab 6)	7*	Malczewski 1999 Ch. 8, p. 261-269
<b>03/12/2020</b>	<b>QUIZ</b>		

**Note:** ▶ audio unit; \* in-class integrated lecture-lab sessions.

Lecture slides and audio recordings are the copyright of the instructor, and may not be disseminated, shared, or made available online.

### Required readings

Malczewski J. (1999) *GIS and Multicriteria Decision Analysis*, New York: Wiley (the textbook is available in the BookStore). You will require the textbook as lectures and labs are directly related to material/figures from the text. The lecture notes and labs will guide you into what sections (and what ‘depth’) you are required to understand.

Malczewski (2000) [On the use of weighted linear combination method in GIS: common and best practice approaches](#). *Transactions in GIS*, 4(1), 5-22.

Malczewski J. (2006) [GIS-based multi-criteria decision analysis: a survey of the literature](#). *International Journal of Geographical Information Science*, 20(7), 703–726.

## LAB SCHEDULE

Date	Lab #	Topic	% of final grade	Due date
24/09/2020	1	Evaluation criteria	7	01/10/2020
01/10/2020	2	Decision alternatives	7	08/10/2020
08/10/2020	3	Criterion weighting	7	22/10/2020
22/10/2020	4	Additive weighting methods	7	29/10/2020
29/10/2020	5	Reference point methods	7	10/11/2020
19/11/2020	6	Sensitivity analysis	7	26/11/2020

1. The lab component of the course consists of six assignments worth 42% of your final grade.
2. Assignments will be explained and discussed during lab sessions.
3. 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.
4. ***An assignment loses 20% of its total possible value for each day late. Assignments more than 3 days late will not be accepted.*** Medical and compassionate grounds, accomplished by suitable documentation, may be accepted as justification for late assignment submission.
5. 15% of each assignment grade is for proper layout and organization and neatness.
6. While you are encouraged to study with others in the class, your work must always be your own (see *Statement on Academic Offences* below)

## MARKING SCHEME

**Grades will be based on composite performances for the following:**

**Test 1** (open-book, 2 hours, Nov. 12) 44%

**Test 2 /Quiz** (open-book, 30 minutes, Dec. 3) 14%

**Exercises** 42%

Students are responsible for material covered in the lectures as well as the assigned readings. The tests and quiz are designed to assess individual competence in course material. An open-book format applies. However, 'open book' here means you are free to use required readings and any material provided to you on your OWL course site. **All work must be done independently.** Not adhering to these conditions will be considered a scholastic offence (see *Statement on Academic Offences* below)

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. 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.

## Make-up Examinations

Makeups will be granted with approved documentation only. All documentation for missed exams/tests must be provided to the Academic Counselling Office within 48 hours of the scheduled exam, otherwise the instructor will assign a grade of zero.

The format and content of make-ups may differ substantially from the scheduled test or examination.

## Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).

### **Academic Consideration for Student Absence**

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the term, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student's final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For Western University policy on Consideration for Student Absence, see [Policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs](#) and for the Student Medical Certificate (SMC), see: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

### **Religious Accommodation**

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the [Western Multicultural Calendar](#).

### **Contingency plan for an in-person class pivoting to 100% online learning**

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as

determined by the course instructor.

## Statements concerning Online Etiquette

Some components of this course will involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- Please “arrive” to class on time
- Please use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- Ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive or personal material
- To minimize background noise, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise
- In order to give us optimum bandwidth and web quality, please turn off your video camera for the entire class unless you are invited to speak
- Please be prepared to turn your video camera off at the instructor’s request if the internet connection becomes unstable
- Unless invited by your instructor, do not share your screen in the meeting

The course instructor will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- If you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question
- Remember to unmute your microphone and turn on your video camera before speaking
- Self-identify when speaking
- Remember to mute your mic and turn off your video camera after speaking (unless directed otherwise)

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

## **Additional Statements**

### **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 Department of Geography strives at all times to provide accessibility to all faculty, staff, students and visitors in a way that respects the dignity and independence of people with disabilities.

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.

### **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/>.

### **Support Services**

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

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

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

### **Important Dates**

September 9: Classes resume

September 17: Last day to add a first term half course

October 12: Thanksgiving Holiday

November 2-8: Fall reading week

November 12: Last day to drop a first term half course without penalty

November 30: Last day to drop a full course without penalty

December 9: Classes end

December 10: Study day

December 11-22: Examination period