



Department of Geography & Environmental Management

GEOG 310 GEODESY & SURVEYING, Fall 2019

Course Outline

Instructor:	Prof. Jonathan Li, Office: EV1-111, Ext. 34504, E-mail: junli@uwaterloo.ca
Teaching Assistants:	Seyed Yusof Ghiasi, syghiasi@uwaterloo.ca Zihao (Roy) Yang, zh2yang@uwaterloo.ca
Office Hours:	Thursday 15:30 – 16:30, or by appointment.
Lecture hours: Lab Hours:	Lecture Hours: Thursday 8:30-10:20, Classroom MC 4061 Lab 101: Monday 13:30-15:20 Lab 102: Friday 8:30-10:20 Lab 103: Monday 11:30-13:20 Lab 104: Tuesday 08:30-10:20 Lab Room: EV2-1002A, door code: 1324
Course Description:	Concepts of geodesy and surveying, earth's gravity field and the geoid, and measurement techniques applied to geomatics are examined. Field studies include the use of level, total station, and GPS for doing distance and angle measurements, leveling, traversing and topographic surveying.
Course Objectives:	To provide students a general understanding of geodesy and surveying; to familiarize with surveying instruments and operations, to apply typical surveying computations
Prerequisites :	GEOG 181 Principles of GIScience. Knowledge of algebra, plane and analytical geometry, and plane trigonometry are strongly required.
Required Textbook:	<ul style="list-style-type: none"> Jack C. McCormac, Wayne Sarasua, William Davis, 2012. <i>Surveying</i>, 6th Edition, Toronto: Wiley, ISBN 978-0-470-49661-9, 379p.
Recommended Readings:	<ul style="list-style-type: none"> James Anderson, Edward Mikhail, 1998. <i>Surveying: Theory and Practice</i>, 7th Edition, Boston: WCB/McGraw-Hill, ISBN 9780070159143, 1167p. Charles D. Ghilani, 2017. <i>Elementary Surveying: An Introduction to Geomatics</i>, 15th Edition (Editions 10th to 14th), Pearson, ISBN ISBN-13: 9780134604657,
Course Webpage:	Students registered in the course can access the course website via UW Learn (http://www.learn.uwaterloo.ca). The course website provides access to lecture presentations, lab assignments, and tutorial slides). In addition, the course website supports announcements, discussion groups and e-mail. Please use the UW Learn e-mail tool for sending messages related to this course, but please carefully review the policy on email correspondence (below) before sending any email to the instruction team.

Course Evaluation:	<ul style="list-style-type: none">• Lab assignments (Labs 1 to 4 @8% each, Labs 5 to 6 @4% each) 40%• Mid-term exam (1.5 hours, closed book) 20%• Final exam (2.5 hours, closed book) 40%	
Assignments:	Assignments must be typed (A4 size, 12pt, single spaced) and printed out, submitted to TAs with hardcopies during the lab section on each specified deadline date determined by the TAs. Students will be provided with an answer template, and the hand-written field notes generated during the field surveys required to complete the assignments. Apply the geometric calculation techniques learned in class to those measurements obtain in field, and then interpret the results in the answer document. Show all mathematical working in your answer document, and include any graphs, tables and figures that are mentioned explicitly in the text.	
WEEKLY CLASS SCHEDULE		
Week/Date	Lecture Topics/Readings	Lab Assignments (LA)
1/5-Sep	Lecture 1: Course introduction & Measurements, Chs 1/2	No lab
2/12-Sep	Lecture 2: Leveling, Chs 6/7/8	Operating Instruments
3/19-Sep	Lecture 3: Angle measurement, Chs 9/10/11	Lab#1 Differential Levelling
4/26-Sep	Lecture 4: Distance measurement, Chs 3/4/5;	Lab#2 Measuring Angles
5/3-Oct	Lecture 5: Traverse surveys, Chs 9/12	Lab#3 Trigonometric Leveling
6/10-Oct	Tutorial #1: Lectures 1 – 5	Lab#4 Traversing
7/17-Oct	Reading Week: no lecture and no lab.	
8/24-Oct	Midterm Exam (in class, 1.5 hrs closed book)	Lab#3 and Lab#4 continued
9/31-Oct	Lecture 6: Route surveys: H-curves, Ch 22	Lab#3 and Lab#4 continued
10/7-Nov	Lecture 7: Route surveys: V-curves, Ch 23	Lab#5 Computing H-curves
11/14-Nov	Lecture 8: GPS principles, Ch 15	Lab#6 Computing V-curves
12/21-Nov	Lecture 9: GPS surveys, Ch 16	Lab#5 and Lab#6 continued
13/28-Nov	Tutorial #2: Lectures 6-9	Lab#5 and Lab#6 continued

CALCULATORS AND CRIB SHEETS: Calculators are required for the labs, mid-term and final exams but are not provided. Only calculators that are approved by the Math faculty are permitted in GEOG310. Buying one of these calculators at the start of term (for \$12 - \$15 at Walmart) is strongly recommend, and bringing it to every class.

Students are permitted to bring one page (double-sided, A4 size) of hand-written equations-notes (aka a “crib sheet”) into each exam. Your crib sheet will be subject to inspection by exam proctors, and may be collected at the end of the test. Hand-written notes only: photocopies are not permitted.

POLICY ON CELL PHONES: There is no valid academic reason to be using a cell phone during class. It is distracting to you, it is distracting to the instructor, and to the others around you. Therefore, during class, please keep cell phones in your bag/jacket on mute, rather than on your desk. Students often use their cell phone as a calculator, but this is not recommended because you will need an actual calculator during Labs and exams.

SUBMITTING WORK: Unless otherwise noted, all lab assignments should be typed and printed out, submitted to TAs in the format of A4-size hardcopies during each lab section. Each assignment will have a specified due date and time on UW Learn.

LATE SUBMISSION: Any work submitted after the deadline will not be graded without a verifiable reason, for which official documentation is provided; for example, a notice or certificate of death in the event of bereavement, or a University Illness verification form.

STUDENT COLLABORATION: All assignments and exams are to be completed individually by each student. These pieces of work are expected to be the student’s original work and to reflect her/his own thinking. Student collaboration in classroom exercises and during labs is permitted and encouraged, as long as all submitted work reflects each student’s own thinking.

READABILITY AND CLARITY: Students are expected to present well organized and properly written work. The instruction team reserves the right not to grade any work submitted that does not meet commonly recognized standards of readability and clarity.

ILLNESS DURING TERM: Please refer to the UW Policies regarding documentation and the management of requests for accommodation due to illness during the term. Illness verification forms are required for any student seeking accommodation for any course requirement missed due to an illness. Please refer to http://www.registrar.uwaterloo.ca/students/accom_illness.html for more information.

ACCOMMODATIONS DUE TO ILLNESS

MISSED DUE DATES AND MIDTERM EXAM: If an assignment or midterm is missed because of illness, and all of the proper documentation is submitted on time, the weight of the missed assignments will be added to the final exam. Assignment due dates will not be extended under any circumstances and the midterm exam will not be written at a different time.

If the midterm exam is missed for any reason, where sufficient other assignments have been completed during the term, a student’s final grade may be calculated based on a reweighting of their other grades.

POLICY ON REGRADING ASSIGNMENTS:

If you notice an error in the assessment of your work please follow these steps:

1. Wait 72 hours after the assignment was returned before requesting a regrade.
2. All requests for work to be regraded must be submitted to the instructor from your UW email account, in a message that fully describes the errors you believe were made. Verbal requests for regrades will not be accepted.
3. When writing your request, please follow the policy on student email (see below). Be as specific as possible and list all relevant details, e.g., “my marks were summed incorrectly for Questions 1–5”.
4. If another student’s work is used as an example or reason for an error in grading, both assignments will be subject to a regrade.
5. The entire assignment will be regraded, not just the errors indicated in the written request. The resulting grade may increase or decrease depending on the result of the regrading.

ATTENDANCE: Attendance will not be taken at any lectures or labs. However, it is highly recommended that students attend all scheduled lectures and labs, since research shows very clearly that students who attend class earn higher grades.

POLICY ON EMAIL CORRESPONDENCE: Face-to-face contact time is available through office hours, during and after lectures, and in the tutorials. Discussion forums are available in LEARN for any inquiries that are of general interest (e.g., clarification of assignment instructions, or a concept introduced in class). Students are strongly encouraged to attend office hours to discuss any issues related to the course, and email should only be used when none of these other

options is appropriate. However, if your question or concern cannot wait until the next lecture or office hour then please remember these policies when sending email to the instructor or TAs:

- Always send emails from your UW email account or from the email tool within UW LEARN. The instruction team reserves the right not to respond to emails sent from non-UW accounts.
- All emails should have the following subject line: "GEOG310: <<insert your subject here>>"
- The instructor must be copied on all course-related email communication with the TAs (the TAs are instructed not to respond to direct emails without the instructor cc'd).
- If your email includes an attachment, describe the contents of the attachment in the email.
- Be polite, respectful and professional.
- Proofread your email and use correct grammar and punctuation.
- Always use an appropriate greeting, and sign your full name.
- Allow the instructor or TA at least two business days to respond before sending the request again. Mark all urgent matters "URGENT" in the subject line.
- The instructor and TAs reserve the right to reply to you along with the entire class, if the question is deemed to be relevant to other students on the course. Alternatively, we may post the question and response in a discussion forum on LEARN. The questioner's identifying personal information will be removed from such announcements.

UW / FACULTY OF ENVIRONMENT POLICIES

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here: <http://uwaterloo.ca/academicintegrity>.

ENV students are strongly encouraged to review the material provided by the UW's Academic Integrity office specifically for students: <http://uwaterloo.ca/academicintegrity/Students/index.html>.

Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Student who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also visit this webpage: <https://uwaterloo.ca/library/get-assignment-and-research-help/academic-integrity/academic-integrity-tutorial>.

Discipline: When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline, <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>.

Religious Observances: Student needs to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

Grievance: Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance: <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70>. When in doubt please contact the department's administrative assistant for further assistance.

Appeals: A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Turnitin: Plagiarism detection software (Turnitin) will not be used to screen assignments on this course.

Unclaimed Work: Unclaimed assignments will be retained for at least one month after term grades become official in quest. After that time, they will be destroyed in compliance with UW's confidential shredding procedures.

Note for students with disabilities: AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Co-op interviews and class attendance: Co-op students are encouraged to try and choose interview time slots that result in the least amount of disruption to class schedules. When this is challenging, or not possible, a student may miss a portion of a class meeting for an interview. Instructors are asked for leniency in these situations; but, a co-op interview does not relieve the student of any requirements associated with that class meeting. When a co-op interview conflicts with an in-class evaluation mechanism (e.g., test, quiz, presentation, critique), class attendance takes precedence and the onus is on the student to reschedule the interview. CECA provides an interview conflict procedure to manage these situations. Students will be required to provide copies of their interview schedules (they may be printed from JobMine/WaterlooWorks) should there be a need to verify class absence due to co-op interviews.

Intellectual Property: Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as: Lecture content, spoken and written (and any audio/video recording thereof); Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides); Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).