CIV E 250 Plane Surveying

Winter 2025 - January 06 to April 09

Class time: Monday, Wednesday, Friday 13:00-13:50 Location: CCIS L2-200

Instructor:

Roberta Holtner, BSc, P.Eng, she/her
N/A
rholtner@ualberta.ca
N/A
Office Hours: See eClass for times and location

Course Description:

*4.5 (fi) (either term or Spring/Summer, 3-0-3) Basic surveying concepts and instrumentation, measurement errors, coordinate systems, leveling, traversing, layout surveys, earthwork volumes, conventional, and digital mapping, GIS concepts, aerial photography, and GPS.

Prerequisites: MATH 101 and 102

Course synchronous and asynchronous content delivery schedule:

All course content is synchronous

Land Acknowledgment:

The University of Alberta respectfully acknowledges that we are located on Treaty 6 territory, a traditional gathering place for diverse Indigenous peoples including the Cree, Blackfoot, Métis, Nakota Sioux, Iroquois, Dene, Ojibway/ Saulteaux/Anishinaabe, Inuit, and many others whose histories, languages, and cultures continue to influence our vibrant community.

TA Information:

Peter Kaheshi - kaheshi@ualberta.ca
Please see eClass for office hours schedule and location. Both will change throughout the term.

Lab Sections:

Section	Day	Time	Location
LAB H11	Monday	14:00 - 16:50	NRE L2-020
LAB H12	Monday	17:00 - 20:00	ETLC E1008
LAB H20	Tuesday	09:30 - 12:20	ECERF W2-010
LAB H21	Tuesday	14:00 - 16:50	NRE L2-020
LAB H31	Wednesday	14:00 - 16:50	ETLC E1008
LAB H41	Thursday	09:30 - 12:20	NRE L2-020

LAB H42	Thursday	14:00 - 16:50	NRE L2-020

Course Objectives & General Content:

Students will be able to complete field surveys using the various types of terrestrial survey equipment.
Students will be able to explain the different products of remote sensing, along with the uses of each.
Students will be able to calculate positions for both pre- and post- planning of various types of construction projects (i.e. roads, buildings, etc).
Students will use GIS software to work with publicly available GIS files.

Learning Outcomes:

By the end of this course, students should be able to:

1. Understanding of basic concepts and computational procedures used in plane surveying
2. To be able to estimate the required accuracy of surveying they may be involved in
3. To give an understanding of the interaction and importance of surveying and engineering
4. The use of new and novel measurement techniques not previously a part of surveying

Marking Scheme:

Activity	(A)Synchronous	Due/Scheduled	Weight
Labs	Synchronous	See schedule	25%
Term Project	Synchronous	See schedule	15%
Quizzes	Synchronous	See schedule	20%
Final Exam	Synchronous	Friday, April 11, 2025	40%

The deferred exam for this course will be held on May 02, 2025.

The Faculty recommended grade point average for a 200 level course is 2.8.Instructors have the leeway to deviate from this average and can assign grades based on their own scheme. All grades are approved by the department chair (or delegate). The office of the Dean has final oversight on all grades.

Term Work

All term work solutions will be posted no later than the last day of classes. All term work will be returned to students by the final day of classes, with the exception of major term work due in the last week of classes. The latter will be returned by the day of the final examination or the last day of the examination period if there is no final examination in the course as per university policy; instructors will make accommodations to return these term work. It is the responsibility of the student to pick up all their term work at the specified time and place. Any unreturned term work, shall be retained and then shredded six months after the deadline for reappraisal and grade appeals. Final examinations will be kept for one year as required by

university guidelines and the Government of Alberta's Freedom of Information and Protection of Privacy Act.

Additional Notes

Grading
Labs - 25% (5 labs at 5% each)
Field survey labs must be attended in order to be awarded a grade. Missed field labs may be made up at a later date, with prior approval.

Term Project - 15%
A group project that students are required to participate in. Students must attend all field work in order to be awarded a grade. Grades will be adjusted based on an individuals level of participation.

Quizzes - 20% total (see schedule and eClass for relevant dates)
Quiz 1 (10%), Quiz 2 (5%), Quiz 3 (5%)

Final Exam - 40% total
The final exam will cover material from the entire term. Students will have the option to use their quiz grade for the corresponding final exam topic OR can write the portion of the final exam and use that grade. If a topic is written during the final exam, the quiz grade cannot be used. For example, a grade of 80% is achieved on the curves quiz. If the final exam portion on curves is written and the grade is 70%, the grade for the final exam portion will be 70%. If the curves portion is not written, the final exam grade for this topic will be 80%.

All portions (quizzes, labs, term project, and final exam) must each have a combined average of 50% in order to pass the class.

Grades will be awarded as follows:
A+ (95+) A (90+) A- (80+) B+ (75+) B (70+) B- (65+) C+ (62+) C (59+) C- (56+) D+ (53+) D (50+) F (<50)
The final calculated grade will be rounded up to the nearest whole number.

Calculator Policy

Approved programmable or approved non-programmable calculators are permitted in examinations. Any calculator taken into an examination must have a sticker identifying it as an acceptable programmable calculator (green sticker) or non-programmable calculator (gold sticker). Students can purchase calculators at the University Bookstore with the stickers already affixed. Calculators purchased elsewhere can be brought to the Student Services where the appropriate sticker will be affixed to the calculator.

Expectations for AI use

In this course, we commit to AI use guided by ethical and transparent principles. While students are allowed to use advanced automated tools (such as ChatGPT or Dall-E 2) for certain written assignments, it is crucial to adhere to the following guidelines:
Seek prior approval from the instructor for AI use in specific assignments.
When allowed, clearly attribute and cite any AI-generated content in your work, including prompts and AI outputs as part of your academic record. Include an additional reflection component in your assessments, discussing how AI tools contributed to your learning process.
IMPORTANT: Please note that AI use is strictly prohibited in assessments and assignments not approved by the instructor. Failure to abide by this guideline may be considered an act of cheating and a violation as outlined in the relevant sections of University of Alberta (November 2022) Code of Student Behaviour .

Text and References (Mandatory):

There is no mandatory textbook.

Text and References (Recommended):

Any textbook that discusses surveying and applications for construction.

Website:

eClass

Previous Examples of Evaluative Materials:

Examples will be available on eClass.

Lab Information:

Lab Topic	Date
Lab 1: Remote Measurements	2025-01-20
Lab 2: Topographic Surveys	2025-01-27
Lab 3: Control Surveys	2025-03-03
Lab 4: Route Design	2025-02-24
Lab 5: GIS	2025-03-10
Lab 6: Term Project - Site Plan	2025-03-17

Did you know that the University of Alberta has various low-to-no-cost services to help students succeed? Visit http://www.deanofstudents.ualberta.ca/ for information about the academic, wellness, and various other support services available to U of A students. It's never too early or too late to seek help!

TENTATIVE SCHEDULE

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	
				January 1	2	3		
WEEK 1 LECTURE LAB	5	6 Course Intro	7 **NO**	8 Math Review	9 **LABS**	10 Total Station	11	JANUARY
WEEK 2 LECTURE LAB	12	13 Total Station	14	15 Field Notes	16	17 Total Station	18	
WEEK 3 LECTURE LAB	19 Pre-Lab 1 DUE	20 Total Station	21 **REMOTE**	22 Total Station	23 **MEASUREMENTS**	24 Total Station	25	
WEEK 4 LECTURE LAB	26 Pre-Lab 2 DUE	27 Horizontal Curves	28 **TOPOGRAPHIC**	29 Horizontal Curves	30 **SURVEYS**	31 Horizontal Curves	1 **February**	
WEEK 5 LECTURE LAB	2 Pre-Lab 3 DUE	3 Vertical Curves	4 **CONTROL**	5 Vertical Curves	6 **SURVEYS**	7 CAD for curves	8	FEBRUARY
WEEK 6 LECTURE LAB	9	10 GNSS	11	12 GNSS	13 **Quiz: Total Station** (90 minutes) @ 1800	14 No class Lab 3 Due for everyone	15	
WEEK 7 LECTURE LAB	16	17	18 **READING**	19 **WEEK -**	20 **NO**	21 **CLASSES**	22	
WEEK 8 LECTURE LAB	23 Pre-Lab 4 DUE	24 Term Project	25	26 GIS	27	28 GIS Term Project Signup Lab 4 Due for everyone	1 **March**	
WEEK 9 LECTURE LAB	2 Term Project Pre-Lab Due	3 GIS Demo	4	5 GIS Demo	6	7 GNSS	8	MARCH
WEEK 10 LECTURE LAB	9 Proposal/ Pre-Lab 5 Due	10 GNSS	11	12 Remote Sensing	13 **Quiz: Curves** (60 minutes) @ 1800	14 No class Lab 5 Due for everyone	15	
WEEK 11 LECTURE LAB	16	17 Remote Sensing	18 **TERM**	19 Remote Sensing	20 **PROJECT**	21 LiDAR Demo	22	
WEEK 12 LECTURE LAB	23	24 Aerial Imagery Demo	25 **TERM**	26 Remote Sensing	27 **PROJECT**	28 **Quiz: GIS** (50 minutes) in class	29	
WEEK 13 LECTURE LAB	30	31 Resections	April 1	2 Areas & Volumes Last Day to Withdraw	3	4 Course Review Term Project Due	5	
WEEK 14 LECTURE LAB	6	7 Course Review Student Led	8	9 Course Review Student Led Last Day of Classes	10	11 **FINAL EXAM** **@1300**	12	APRIL
WEEK 15	13	14	15	16	17	18 **STATUTORY HOLIDAY**	19	
WEEK 16	20	21 **STATUTORY HOLIDAY**	22	23	24	25	26	
WEEK 17 CIV E 251	27	28	29 FIELD SCHOOL	30	May 1 SPRING TERM	2	3	

University and faculty policies

Respect and professionalism

The Faculty of Engineering is committed to fostering and protecting an equitable, inclusive, and respectful work and study environment in line with University of Alberta policies and professional engineering industry standards.

The faculty prepares students to uphold industry standards to become a Professional Engineer (P.Eng). Therefore, respect, professionalism, and accountability must be upheld within the Faculty of Engineering and the University of Alberta.

Academic integrity and student conduct

The University of Alberta is committed to the highest standards of academic integrity and honesty, as well as maintaining a learning environment that fosters the safety, security, and the inherent dignity of each member of the community, ensuring students conduct themselves accordingly. Students are expected to be familiar with the standards of academic honesty and appropriate student conduct, and to uphold the policies of the University in this respect.

Students are particularly urged to familiarize themselves with the provisions of the Student Academic Integrity Policy and the Student Conduct Policy, and avoid any behaviour that could

potentially result in suspicions of academic misconduct (e.g., cheating, plagiarism, misrepresentation of facts, participation in an offence) and non-academic misconduct (e.g., discrimination, harassment, physical assault). Academic and non-academic misconduct are taken very seriously and can result in suspension or expulsion from the University.

All students are expected to consult the Academic Integrity website for clarification on the various academic offences. All forms of academic dishonesty are unacceptable at the University. Unfamiliarity of the rules, procrastination or personal pressures are not acceptable excuses for committing an offence. Listen to your instructor, be a good person, ask for help when you need it, and do your own work -- this will lead you toward a path to success. Any academic integrity concern in this course will be reported to the College of Natural and Applied Sciences. Suspected cases of non-academic misconduct will be reported to the Dean of Students. The College, the Faculty, and the Dean of Students are committed to student rights and responsibilities, and adhere to due process and administrative fairness, as outlined in the Student Academic Integrity Policy and the Student Conduct Policy. Please refer to the policy websites for details on inappropriate behaviours and possible sanctions.

The College of Natural and Applied Sciences (CNAS) has created an Academic Integrity for CNAS Students eClass site. Students can self-enroll and review the various resources provided, including the importance of academic integrity, examples of academic misconduct & possible sanctions, and the academic misconduct & appeal process. Students can also complete assessments to test their knowledge and earn a completion certificate.

"Integrity is doing the right thing, even when no one is watching." -- C.S. Lewis

The Faculty of Engineering expects an environment free of harassment, discrimination, and bullying. We encourage you to talk to the Office of Safe Disclosure and Human Rights about experiences, questions, or concerns. Additional resources and support for students are attached below.

Engineering students studying in the province of Alberta must also follow the Code of Ethics set by the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

Course outline policies, course requirements, evaluation and grading information can be found in the University Calendar.

Safety during learning activities

In all Faculty of Engineering courses, labs, seminars or other learning activities, safety is of paramount importance. In some cases, laboratory work in a program requires high standards for risk management to keep potential hazards safely under control.

Anyone found to be unable to function safely in the class, lab, seminar or other learning activity may be asked to leave or be removed for their and the safety of other participants and instructors in alignment with the Student Academic Integrity Policy and Student Conduct Policy. As members, or prospective members, of the engineering profession, it is your responsibility to identify and inform the proper authorities of unsafe work.

Audio and video recording

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan.

Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Only those items specifically authorized by the instructor may be brought into the exam facility. Students must not bring any unauthorized electronic device into an examination room, including cell phones or other devices.

Student services and support

Health & Wellness Support

Counselling and Clinical Services

Free, short-term, appointment-based counselling and psychiatric services. Also offers drop-in workshops. Book an initial consultation. Visit uab.ca/CCS to learn more.

Wellness Supports Social Workers

Free one-on-one support for students in the areas of housing, finances, academics, personal wellness, life skill development, family dynamics, system navigation, and any area of life where there is a desire to invite change. Visit uab.ca/wellness to learn more.

Sexual Assault Centre

Free, anonymous, and confidential drop-in counselling. Visit uab.ca/UASAC to learn more.

The Office of Safe Disclosure & Human Rights (OSDHR)

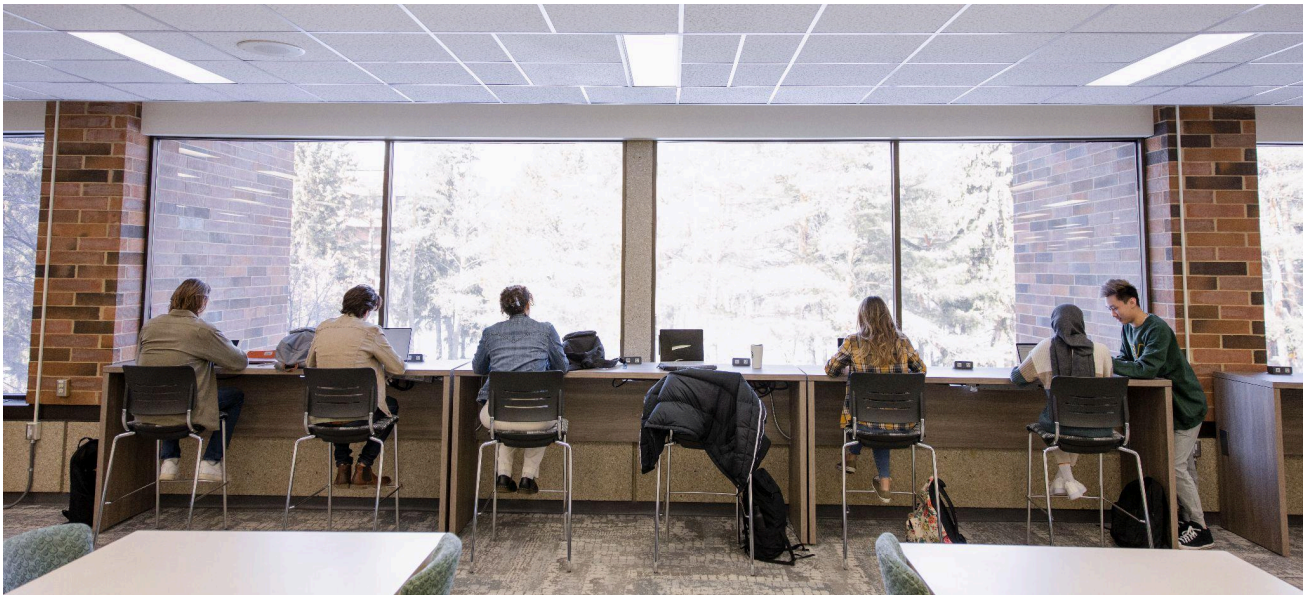
The OSDHR advises confidentially on sensitive issues you may not feel comfortable solving on your own. Contact the OSDHR if you want to get help or to make a report while keeping your privacy. Visit uab.ca/OSDHR to learn more.

HIAR (Helping Individuals at Risk)

If you're worried about someone, contact HIAR, who can help assess risk and connect individuals to support. Learn more at uab.ca/HIAR.

Immediate External Supports

Health Link Alberta: 811
Suicide Crisis Helpline: 988



Academic support

Academic Success Centre
Access to a variety of services to maximize your academic success. Learn more at uab.ca/ASC.

Accessibility Resources
Connects students with disabilities to accommodations. Learn more at uab.ca/Access under accommodations + accessibility.

Decima Robinson Support Centre
Academic support for 100- or 200-level introductory calculus, linear algebra and statistics courses. Visit uab.ca/DSC to learn more.

Engineering Student Success Centre
The Faculty of Engineering provides drop-in tutoring for first-year courses. Visit uab.ca/ESSC to learn more.

Office of the Student Ombuds
Call for complex problems and conflict mediation. Learn more at uab.ca/ombuds.

Financial support

Student Service Centre

For awards and other funding support. Learn more at uab.ca/ask.

Campus Food Bank

The Campus Food Bank Society is an independent charity supporting University of Alberta students, faculty, staff, and alumni for up to five years. For additional information visit their website at campusfoodbank.com.