Faculty	**Faculty of Environmental and Urban Change**	
Course	**GEOG 2340: Introduction to Geomatics**	
Credits	3.00	
Term	Winter 2024	
Course Director	**Instructor**	Dr. Tarmo K. Remmel
	Office	HNE 212
	Email	remmelt@yorku.ca
	Voicemail	416-736-2100 x22496
	Phone/Text	647-794-4033
	Twitter	@TKRspatial
	Web	http://www.yorku.ca/remmelt
	Moodle	http://moodle.yorku.ca
	Office Hour	Tuesday 1300-1400h

Zoom

Currently, this **course is scheduled to be in-person**. Should the situation change, and this course be forced to pivot to a virtual format, lectures will be provided as pre-recorded videos (accessible via eClass) with additional weekly discussions and office hours with the TA and me via Zoom. Details on how to connect will be distributed only if this scenario were to happen.

eClass

This course will be actively managed through eClass. As a student enrolled in this course, you will be guided through this course on a weekly basis. Pre-recorded lectures and labs, assessments, calendars, discussion forms, and all necessary interactivity will be coordinated through this platform. You are encouraged to log in regularly and to keep on top of requirements.

Course: https://eclass.yorku.ca/course/view.php?id=74480

Calendar Description

This course covers fundamental concepts and approaches of geographical information systems, remote sensing and global positioning systems. Students also acquire knowledge and skills in descriptive statistics, map design and interpretation, and basic computer cartography. **Prerequisite:** AP/GEOG 1000 6.00 or AP/GEOG 1400 6.00 or AP/GEOG 1410 6.00 or written permission of the Instructor. **Course credit exclusions:** AP/GEOG 2350 3.00 (prior to Fall 2013), SC/GEOG 2350 3.00 (prior to Fall 2013), LE/EATS 2610 2.00 (prior to Summer 2013), LE/ENG 2110 2.00 (prior to Summer 2013). **PRIOR TO SUMMER 2013: Prerequisite:** AP/GEOG 1000 6.00 or AP/GEOG 1400 6.00 or AP/GEOG 1410 6.00 or written permission of the Instructor. **Course credit exclusions:** AP/GEOG 2350 3.00 (prior to Fall 2013), SC/GEOG 2350 3.00 (prior to Fall 2013), SC/EATS 2610 2.00, SC/ENG 2110 2.00.

Expanded Description

Geoinformatics integrates computer science, geosciences, certain branches of engineering, and cartography such that the geographical context of any phenomena can be measured, quantified, presented, and analyzed. In essence, geographic position forms a critical component in a new information infrastructure. This course will introduce and explore the historical context to geoinformatics by tracing some of the more important historical developments before examining many of the sub-domains of this discipline. We will explore and provide experience with cartography, global positioning systems (GPS), vector and raster geographic information systems (GIS), surveying, photogrammetry, remote sensing, visualization, and other related topics. This course is suitable for geographers and education students majoring in geography, or those genuinely curious about technologies related to geographical analysis, this course will provide a foundation to

geoinformatics and basic computer cartography. Computers will be used in the lab sessions and basic computer skills are a prerequisite. Some fieldwork may be required.

Textbook

Shellito, B.A. 2020. Introduction to geospatial technologies (5th ed.). NY: Freeman. 570 p. +

Meetings

Lectures (Remmel)

Lectures are held in-person on Thursdays 1030-1230h in Ross S205. **You are expected to complete the readings prior to the weekly lecture. Come prepared to discuss, ask, and contribute – your engagement is critical for success in this class.**

Labs (TAs)

Labs are held in-person on Thursdays 1230-1430h (Lab 01) OR 1430-1630h (Lab 02) in HNE 258 or Ross N302 respectively (undergraduate teaching computer labs). **You are expected to complete weekly readings and any additional requirements prior to the weekly lab session. Come prepared to discuss, ask, and contribute – your engagement is critical for success in this class.**

Lab 01 TA: Tejumade Ojo (teju2022@yorku.ca)
Office Hours: TBD xxxx-xxxxh
Lab 02 TA: Nadia Keshmiri (nadiakm@yorku.ca)
Office Hours: TBD xxxx-xxxxh

Learning Objectives

Students will…

1. **describe** key components and methods required by the sub-areas of geoinformatics by **using** core terminology.
2. **collect** and **organize** spatial data in preparation for geoinformatics analysis.
3. **demonstrate** techniques from across the sub-areas of geoinformatics.
4. **apply** appropriate methods, logic, or calculations to **solve** fundamental geoinformatics problems.
5. **communicate** geoinformatics knowledge through informed contributions during class discussions.

Penalties

- Late submission of course work will be penalized 15% of the total assignment value per calendar day. The first 15% penalty is applied once the deadline has passed; subsequent penalties are then applied every 24 hours thereafter that the work is not submitted.
- Penalties accumulate until the work is submitted or a grade of zero is reached.
- Upon reasonable grounds and with individual consultation with the course instructor, extensions may be granted for course work.

Missed Assessments

You are encouraged to fully partake in all course activities. With course instructor approval, missed assessment weights *may* be distributed among other assessments if deemed appropriate.

Evaluation

Description	Weight (%)	Due	Submission Format
Assignment 1	10	24 January	eClass
Assignment 2	10	14 February	eClass
Assignment 3	15	13 March	eClass
Assignment 4	15	5 April	eClass
Discussion Forum	20	3 times during term	eClass
Engagement	5	Weekly	Various
Final Exam	25	Exam Period	eClass (take-home)

Schedule

Month	Date	Week	Lecture	Lecture: 1030-1230h Thursday		Lab (2h) as Scheduled	Assignments	Readings
January	11	1	1	Introduction	Coordinates	Google Earth	A1	Chapter 1
	18	2	2	Datums, Geoids, Projections		Topographic Maps	Forum	Chapters 2 and 3
	25	3	3	Maps, Scale, Accuracy	Surveying	Map Library Session?	A2	NYTimes Article Online
February	1	4	4	GPS Theory		Using GPS - Data Collection		Chapter 4
	8	5	5	GPS Applications	GIS (Vector)	ArcMap (GIS)		Chapter 5
	15	6	6	GIS (Raster)	GIS Applications	Simple GIS exercise	A3 Forum	Chapters 5 and 6
	22	**7**	**Reading Week**					
	29	8	7	Aerial Photography	Photogrammetry	Airphoto Elements and Photogrammetry		Chapter 9
March	7	9	8	Electromagnetic Spectrum	Remote Sensing (Optical)	Band Combinations and Colour		Chapter 10 and 11 (Extra Chaper 12)
	14	10	9	Boundaries	LiDAR	3D Visualization and Extrusion	A4	Chapter 13
	21	11	10	Computer Cartography	Visualization	Computer Cartography	Forum	Chapters 7, 13, and 14
	28	12	11	Data Loggers, Sensor Networks		Sensor Networks		
April	4	13	12	Ethics and Future Directions	Concluding Remarks	Augmented Reality, Virtual Reality, Indoor Navigation		Chapter 15

Notice

In the best interest of the course, the instructor reserves the right to modify the schedule.

Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty. The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards. http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senatepolicy-on/

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at: http://www.yorku.ca/academicintegrity/

Ethics Review Process

York students are subject to the York University Policy for the Ethics Review Process for Research Involving Human Participants. In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an Application for Ethical Approval of Research Involving Human Participants at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

Religious Observance

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or

	time for an examination scheduled in the formal examination periods (December and April/May), students must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online at: http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf
Access & Disability	York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University. Student's in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs. Additional information is available at the following websites: Counselling & Disability Services: https://counselling.students.yorku.ca/ Counselling & Disability Services at Glendon: https://www.glendon.yorku.ca/counselling/ York Accessibility Hub: http://accessibilityhub.info.yorku.ca/
Student Conduct in Academic Situations	Student Conduct in Academic Situations Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at: http://secretariat-policies.info.yorku.ca/policies/disruptiveandor-harassing-behaviour-in-academic-situations-senate-policy/
Important Dates and Links	Please refer to https://registrar.yorku.ca/enrol/dates/2023-2024/fall-winter for important dates pertaining to the academic term. The course drop date (without receiving a grade) corresponding to your course is BEFORE 11 March 2024. Also see Financial Deadlines. For details on grading schemes, assignment submissions, lateness Penalties, missed tests, group work, inclusivity in EUC, religious observance days, academic honesty, intellectual property notices, student conduct, student support and student accessibility services, see https://euc.yorku.ca/academic-policies-procedures-petitions/ and go to “Undergraduate Courses Common Instructions”.