

GEOM 4001 – Special Topics in Geomatics
Course outline – Fall 2019
Department of Geography and Environmental Studies
Carleton University

Instructor: Mehdi Hosseini, A209 Loeb Building
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Office Hours: Monday 5-6 PM

Course calendar: Three-hour theory and lab, Monday 6-9 PM

A take-home exam will be administered at the end of the course.

Course web site: I will use CULearn

Course objectives:

In this course, the students will learn from basic to advance topics in Synthetic Aperture Radar (SAR). They will learn the theory of the SAR remote sensing and will be equipped with hands-on experience processing and analysis of SAR data. Therefore, the course interweaves lectures with hands-on labs. The following are some of the topics that will be covered in this course:

- Basics of SAR
- SAR data preprocessing
- Matrix Algebra for Geographers
- SAR Polarimetry
- SAR Sensors and SAR System Characteristics
- Effects of Targets on Microwave Signals
- Agricultural Applications of SAR
- Interferometric SAR

Prerequisites:

Marking: Project: 50% (It includes 30% for research, 10% for writing report and 10% for presentation)
In-class tests: 20% (Two tests will be conducted each 10%)
Final exam: 30%

"Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean."

Requirements:

In this class, you become familiar with SNAP software. We will use the lab in Loeb A237, where installed software includes SNAP, ArcGIS, QGIS, Google Earth Pro, etc., on a Windows platform. Use of other software may be possible.

Major topics covered in class will be accompanied by a quiz designed to make sure you grasped the main concepts in that topic. Scheduling details will be worked out in the first weeks of class.

Late assignments will receive a penalty of ten percent for up to 2 days late, and after that they will not be accepted without appropriate reasons and verifiable documentation. All assignments must be word processed and submitted digitally through cuLearn.

Instructional & Conduct Offences:

Instructional offences include, among other activities, cheating, contravening examination regulations, plagiarism, submitting similar work in 2 or more courses without prior permission, and disrupting classes. Conduct offences apply in areas of discrimination and sexual harassment. Further information about University regulations which define and regulate these offences is presented in the Undergraduate Calendar: <http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/> Plagiarism is a serious offence and will not be tolerated. Plagiarism is the submission of someone else's writing/ideas/work as your own. All ideas presented which are not your own must be properly referenced. All plagiarism offences result in mandatory reporting to the Dean's office. You will often be working collaboratively to prepare for an assignment and possibly to collect data, but unless you receive specific written instructions to do otherwise, ALWAYS write your assignments and tests individually. Never include others' writing or other materials into your work without proper attribution.

Readings:

Journal, conference and textbook readings will be assigned. Students will prepare and present summaries of readings and their associated concepts in class.

Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www.carleton.ca/equity/>. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable) at

<http://carleton.ca/pmc/students/dates-and-deadlines/>