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**COURSE OUTLINE**

**Advanced Topics in Remote Sensing**

**Lecture: Elliott Building 161 2:30pm-4:20pm Tuesdays**

**Lab: David Turpin Building A253 2:30pm-5:20pm Thursdays**

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**Office Hours: Tuesdays 13:00-14:30 or by appointment**

**Office Location: DTB B122**

**Contact: [randy@uvic.ca](mailto:randy@uvic.ca)**

**COURSE DESCRIPTION**

This course is designed to be a capstone, to provide you with the opportunity to integrate your strong background in Geography or other Earth/Biological Sciences with Remote Sensing. The focus of the course will be to work through a project that can, at least in part, be addressed by remote sensing technology. You will develop a research project that suits your interests, within the limits of available data and reasonable scope. The progress of the project will be monitored through a series of deliverables (see below). You will define a research question, explore data and methods that can be used to address this question, and produce an output project and presentation. Your instructors will help you source the data, where possible, to allow you to complete the project.

The course also contains a lab exercise intended to facilitate broadening of your remote sensing skills, as well as student-lead, seminar-based, discussions and presentations. There will also be instructor-led and guest presentations to broaden your outlook on the application of remote sensing data to addressing a variety of issues. There are two quizzes based on assigned readings related to course topics.

The course has three main components:

- 1) Group Project. The expectation is that you form a group of 3-4 participants and execute a research project of your choosing. You will be given the opportunity to develop a project that suits your collective interests, and takes advantage of your respective strengths, within the limits of available data. The progress of the projects will be monitored through a series of deliverables (see below). The data that you will have access to are, for the most part, new (that is you will be the first to work on them) and are collected from satellite and airborne sensors.
- 2) Lecture/Demonstration. We will have a number of presentations and demonstrations to broaden your outlook on the application of remote sensing data to addressing a variety of issues. We will cover two main topics:
  - a. Next-generation Digital Earth: Cloud-based Geospatial Data Processing in the Big Data Era
  - b. Remote Sensing for Climate Science: Essential Climate Variables
- 3) Seminars/Presentations. These will be based on project related work, and much of the interaction will be student lead.

Lab time will be dedicated to group project work, and to the execution of a lab exercise done individually (not as groups).

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## REQUIRED TEXT(S)

None. For project and seminar-based work you will be expected to make additional use of remote sensing texts, journal articles, other material in the university libraries, & web-based information to support your work. Readings will also be provided by your instructor.

It is always useful to have a desk-reference on remote sensing handy, and several broad and specific remote sensing texts are available through the library, for example: <https://go.exlibris.link/QBsBNjBR>

Recommended journals include: *Canadian Journal of Remote Sensing*, *Remote Sensing of the Environment*, *Journal of Geophysical Research*, *Frontiers in Remote Sensing*, and *IEEE Transactions on Geoscience and Remote Sensing*.

## EVALUATION

Project Definition (Oral & Written) – One per group	5%
Project Data and Methodology Overview – One per group	10%
Progress Update (Oral & Written) – One per group	10%
Project Final Presentation (Oral) – One per group	10%
Project Final Report (Written) – One per group	35%
Quiz #1 on Topic #1	10%
Quiz #2 on Topic #2	10%
Lab Assignment: Earth Engine	10%

There is no final exam in this course.

## GRADING SYSTEM

As per the Academic Calendar:

Grade	Grade point value	Grade scale	Description
<b>A+</b> <b>A</b> <b>A-</b>	9 8 7	90-100% 85-89% 80-84%	<b>Exceptional, outstanding and excellent</b> performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectation and has an insightful grasp of the subject matter.
<b>B+</b> <b>B</b> <b>B-</b>	6 5 4	77-79% 73-76% 70-72%	<b>Very good, good and solid</b> performance. Normally achieved by the largest number of students. These grades indicate a good grasp of the subject matter or excellent grasp in one area balanced with satisfactory grasp in the other area.
<b>C+</b> <b>C</b>	3 2	65-69% 60-64%	<b>Satisfactory, or minimally satisfactory.</b> These grades indicate a satisfactory performance and knowledge of the subject matter.
<b>D</b>	1	50-59%	<b>Marginal</b> Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter.
<b>F</b>	0	0-49%	<b>Unsatisfactory</b> performance. Wrote final examination and completed course requirements; no supplemental.
<b>N</b>	0	0-49%	Did not write examination or complete course requirements by the end of term or session; no supplemental.

## GEOGRAPHY DEPARTMENT INFO

- Geography Department website: [uvic.ca/socialsciences/geography](http://uvic.ca/socialsciences/geography)
- Undergraduate Advising: [geogadvising@uvic.ca](mailto:geogadvising@uvic.ca)

## **BRIGHTSPACE**

Lectures materials, assigned readings, and general course communications will be via Brightspace. You are required to come prepared for each lecture. This means you should have read and considered the assigned readings.

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## **POLICY ON LATE ASSIGNMENTS**

Late assignments are subject to significant penalties: 20% per day following the due date and time. Exceptions are not permitted except for circumstances involving medical or compassionate reasons. Written verification as proof may be requested at the discretion of the instructor.

## **ACADEMIC INTEGRITY**

It is every student's responsibility to be aware of the university's policies on academic integrity, including policies on **cheating, plagiarism, unauthorized use of an editor, multiple submission, and aiding others to cheat. Policy on Academic Integrity:**

<http://web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html>

If you have any questions or doubts, talk to me, your course instructor. For more information, see <http://www.uvic.ca/learningandteaching/students/resources/expectations/>. The instructor reserves the right to use plagiarism detection software programs to detect plagiarism in written assignments.

## **ACCESSIBILITY**

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability or health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL as soon as possible <https://www.uvic.ca/services/cal/>). The CAL staff is available by appointment to assess specific needs, provide referrals, and arrange appropriate accommodations. The sooner you let us know your needs, the quicker we can assist you in achieving your learning goals in this course.

## **POSITIVITY AND SAFETY**

The University of Victoria is committed to promoting, providing and protecting a positive and safe learning and working environment for all its members.

## **COURSE EXPERIENCE SURVEY (CES)**

I value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete an anonymous survey regarding your learning experience (CES). The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. The survey is accessed via MyPage and can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more information nearer the time but please be thinking about this important activity during the course.

### WEEKLY CALENDAR

WEEK	DATE	
1	T 11 Jan	Course Introduction
2	T 18 Jan	Topic 1: Next-generation Digital Earth; Project Scoping
3	T 25 Jan	Topic 1 (cont.); Project Scoping
4	T 01 Feb	Project Definition Presentations – One per Group; Project Work
5	T 08 Feb	Quiz #1 on Topic 1; Project Work
6	T 15 Feb	Project Work
7	T 22 Feb	READING BREAK, NO CLASS
8	T 01 Mar	Project Data and Methodology Overview Presentations – One per Group
9	T 08 Mar	Topic 2: Climate Science; Project Work
10	T 15 Mar	Topic 2 (cont.); Project Progress Update Presentations – One per group
11	T 22 Mar	Quiz #2; Project Work
12	T 29 Mar	Project Work
13	T 05 Apr	Project Final Presentations – One per group

### DISCLAIMER

The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances.