

**GEOGRAPHY 422 - A01**

**UNIVERSITY OF VICTORIA**

**Spring TERM 2024**

**Dr. Randall (Randy) Scharien**

**We acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.**

**COURSE OUTLINE**

**Advanced Topics in Remote Sensing**

**Lecture: Clearihue Building A326 2:30 PM-4:20 PM Tuesdays**

**Lab: David Turpin Building A253 1:30 PM-4:20 PM Thursdays**

**Office Hours: Tuesdays 1:00 PM-2:30 PM or by appointment**

**Office Location:** **DTB B122**

**Contact: 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, for the most part, be addressed by remote sensing technology. You will develop a research project that suits your interests, within the limits of the prescribed data and 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 and use the data, where possible, to allow you to complete the project.

The course also contains lab exercises 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 also 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 that fits your collective interests, and takes advantage of your respective strengths, within the limits of prescribed data and scope. The progress of the projects will be monitored through a series of deliverables (see below). The data that you will have access to are of high scientific quality and are collected from Earth Observation platforms.
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 various topics, including:
	1. Next-generation Digital Earth: Cloud-based Geospatial Data Processing in the Big Data Era
	2. Remote Sensing for Climate Science: Remote Sensing of Essential Climate Variables
	3. Interferometric SAR for Surface Deformation

There is some flexibility in the choice of topics covered, depending on interest by the class.

1. 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).

**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://search.library.uvic.ca/permalink/01VIC_INST/1ohem39/cdi_askewsholts_vlebooks_9781119956402>

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**

|  |  |
| --- | --- |
| **Group Work – one submission per group** |  |
| Project Definition (Oral & Written) – One per group | 5% |
| Project Data and Methodology Overview – One per group  | 10% |
| Progress Update (Oral & Written) – One per group  | 5% |
| Project Final Presentation (Oral) – One per group  | 5% |
| Project Final Report (Written) – One per group  | 35% |
| **Quizzes – done individually, in class**  |  |
| Quiz #1 on Topic #1  | 5% |
| Quiz #2 on Topic #2 | 5% |
| **Labs – done individually, in lab**  |  |
| Lab Assignment #1  | 15% |
| Lab Assignment #2  | 15% |
|  |  |

There is no final exam in this course.

**GRADING SYSTEM**

**As per the Academic Calendar:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Grade** | **Grade point value** | **Grade scale** | **Description** |
| **A+AA-** | 987 | 90-100%85-89%80-84% | **Exceptional**, **outstanding** and **excellent** 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+BB-** | 654 | 77-79%73-76%70-72% | **Very good**, **good** and **solid** 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. |
| **C+****C** | 32 | 65-69%60-64% | **Satisfactory**, or **minimally satisfactory**. These grades indicate a satisfactory performance and knowledge of the subject matter. |
| **D** | 1 | 50-59% | **Marginal** Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter. |
| **F** | 0 | 0-49% | **Unsatisfactory** performance. Wrote final examination and completed course requirements; no supplemental. |
| **N** | 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/](https://www.uvic.ca/socialsciences/geography/)
* Geography Department Chair: geogchair@uvic.ca
* Geography Undergraduate Advising: 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.

**LABS**

Lab Instructor Bryn Forest: brynforrest@uvic.ca

There are 2 lab assignments, one early in the course, and one later on in the course. The rest of the lab time will be dedicated to work on the group-based, term-length, projects. Attendance is required. All labs will be held in the Geomatics Lab A253.

There is no lab website. The main Brightspace page for this course will be used for all communications.

**POLICY ON LATE ASSIGNMENTS**

Late lab 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**: [web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html](https://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 [uvic.ca/learningandteaching/cac/index.php](https://www.uvic.ca/learningandteaching/cac/index.php).

Please be advised that in this course you are not authorized to use any form of generative AI. In order to successfully complete course activities, generative AI is not required nor welcomed. Students should not make any use of generative AI tools such as ChatGPT, Grammarly, among others that use AI for content generation and editing. As the University of Victoria states on its Academic Integrity Policy “Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility.” Therefore, I expect you to comply with the course syllabus and I encourage you to enhance your academic experience in this course by refraining from use generative AI.

**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 ([uvic.ca/services/cal/](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.

**SEXUALIZED VIOLENCE RESOURCE OFFICE (SVRO)**

If you have been directly or indirectly impacted by sexualized violence, reach out to the SVRO for information, advice, resolution options (restorative and disciplinary) as well as support options and referrals. The SVRO is both survivor-centred and trauma-informed in their approach.

eqhr01@uvic.ca

Sedgewick C Wing

[www.uvic.ca/svp](http://www.uvic.ca/svp)

**EQUITY AND HUMAN RIGHTS (EQHR)**

UVic Equity and Human Rights is a resource for students, staff and faculty who have experienced discrimination and harassment and are looking for informal and formal resolution options as well as advice, coaching and/or education. We are available for confidential consultations so that you can ask questions and learn your options.

eqhr01@uvic.ca

Sedgewick C Wing

[www.uvic.ca/equity](http://www.uvic.ca/equity)

**RESOURCES FOR INTERNATIONAL STUDENTS**

The University of Victoria offers a number of resources to support international students as they pursue their studies. UVic’s [International Centre for Students](https://can01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uvic.ca%2Finternational-experiences%2Findex.php&data=05%7C01%7Csoscasdn%40uvic.ca%7C24d4241453f24a9781fa08db8a379fdb%7C9c61d3779894427cb13b1d6a51662b4e%7C0%7C0%7C638255743726045764%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=shQtSBjZ0pyEtGVRHmcwrMX7Wc%2BKjryQ80crJP0NmMc%3D&reserved=0) is the primary office supporting international students on campus at the university-wide level and provides various supportive program through the [UVic Global Community Initiative](https://www.uvic.ca/international-experiences/get-involved/uvic-global-community/index.php), including a Mentorship Program and Conversation Partner Program. For academic advising-related questions, students in the Geography Department are also encouraged to meet with the Geography Undergraduate Advisor (geogadvising@uvic.ca) as well as an academic advisor in the [Academic Advising Centre](https://can01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uvic.ca%2Fservices%2Fadvising%2Findex.php&data=05%7C01%7Csoscasdn%40uvic.ca%7C24d4241453f24a9781fa08db8a379fdb%7C9c61d3779894427cb13b1d6a51662b4e%7C0%7C0%7C638255743726045764%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=OGPDqik90Pm6BPynFK8IuLX6xdx7kSq5RE3yICUQj%2B4%3D&reserved=0) early in their studies to help map out a plan to declare a major and complete university program requirements. Other resources include the [Centre for Academic Communication](https://www.uvic.ca/learningandteaching/cac/index.php) and the [Math and Stats Assistance Centre](https://www.uvic.ca/science/math-statistics/current-students/undergraduate/msac/). International students are also encouraged to contact the International Student Liaison in Geography (Prof. CindyAnn Rose-Redwood, cindyann@uvic.ca), who can assist in making connections with other international and domestic students in the Geography Department and share opportunities for getting involved in departmental activities more broadly.

**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 online and can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course.

**WEEKLY CALENDAR**

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| --- | --- | --- |
| **WEEK** | **DATE** |  |
| **1** | **T 07 Jan**  | **Course Introduction; Topic 1 Next-generation Digital Earth**  |
| **2** | **T 14 Jan**  | **Topic 1; Project Scoping**  |
| **3** | **T 21 Jan**  | **Quiz #1 on Topic 1 (5%); Project Scoping**  |
| **4** | **T 28 Jan**  | **Project Definition Presentations (5%); Topic 2 Climate Science; Project Work**  |
| **5** | **T 04 Feb**  | **Topic 2; Project Work**  |
| **6** | **T 11 Feb**  | **Quiz #2 on Topic 2 (5%); Project Work**  |
| **7** | **T 18 Feb**  | **READING BREAK, NO CLASS** |
| **8** | **T 25 Feb**  | **Project Data and Methodology Presentations (10%); Project Work**  |
| **9** | **T 04 Mar**  | **Topic 3 TBD; Project Work**  |
| **10** | **T 11 Mar**  | **Topic 3 TBD; Project Work**  |
| **11** | **T 18 Mar**  | **Project Progress Update Presentations (5%); Project Work**  |
| **12** | **T 25 Mar**  | **Project Work**  |
| **13** | **T 01 Apr**  | **Project Final Presentations (5%)**  |

**DISCLAIMER**

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

**NOTE:**

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

Counselling Services - *Counselling Services can help you make the most of your university experience.* *They offer free professional, confidential, inclusive support to currently registered UVic students.*  [uvic.ca/services/counselling/](https://www.uvic.ca/services/counselling/%20)

Health Services - *University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives.* [uvic.ca/services/health/](http://www.uvic.ca/services/health/)

Centre for Accessible Learning - *The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations* [uvic.ca/services/cal/](https://www.uvic.ca/services/cal/)*. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.*

Elders' Voices - *The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being.* [*uvic.ca/services/indigenous/students/programming/elders/index.php*](https://www.uvic.ca/services/indigenous/students/programming/elders/index.php)