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**COURSE OUTLINE**

**Remote Sensing of the Environment – Passive Sensors**

**Lecture: CLE A320**

**Tuesdays 18:30-21:20**

**Labs: DTB A251/A253**

**Fridays 08:30-10:20 and 11:30-13:20**

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**Office Hours:** by appointment

**Office Location:** DTB B208

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

**COURSE DESCRIPTION**

This course introduces the basic physical principles of modern remote sensing. Emphasis is placed on the principles of interaction of energy with the atmosphere and Earth materials such as vegetation, water, soil, rock/minerals, and how to obtain and interpret imagery acquired by different satellites. We focus on the optical and thermal part of the spectrum. This course builds on the fundamentals of remote sensing and imagery processing introduced in GEOG 228.

**LEARNING OUTCOMES:**

- To obtain an understanding on how remote sensing can be used to extract information about the Earth's surface
- To be able to explain how optical radiation interacts with the Earth's surface
- To be able to find and download imagery acquired by different satellites
- To learn modern remote sensing technology
- To be able to explain how satellite imagery can be used for time-series analysis
- To be able to explain how satellite imagery can be used to derive biogeophysical variables

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**RECOMMENDED TEXT(S)**

Jensen, J.R. (2007) *Remote Sensing of the Environment: An Earth Resources Perspective, 2<sup>nd</sup> Ed.* Pearson Prentice-Hall. 656 p.

**The textbook can be purchased at the UVic Bookstore. Copies are available at the UVic Library.**

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**EVALUATION**

	<b>Component A</b>		<b>Component B</b>
Mid-term Exam	<b>25%</b>	Lab Assignments	<b>40%</b>
Final Exam	<b>35%</b>		

**To obtain a passing grade in the course (at least a “D”), students are required to pass both components of the course.**

**Mid-term Exam:** The Mid-term Exam will cover all material up until and including October 18<sup>th</sup> (see course schedule below).

**Final Exam:** The Final Exam will cover all the material of the course and will be held according to the UVic calendar.

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## 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 Exam and completed course requirements; no supplemental.
<b>N</b>	0	0-49%	Did not write Final Exam or complete course requirements by the end of term or session; no supplemental.

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## BRIGHTSPACE

Lecture slides, announcements, and lab assignments can be accessed through Brightspace at [bright.uvic.ca](http://bright.uvic.ca).

## LAB ACCESS

The Geomatics Teaching Laboratory (DTB A251/A253) is open daily from 08:30 to 16:30. Access to the Laboratory is restricted after 16:30 for security purposes. You are encouraged to purchase a key fob, which will enable you to gain access to that facility after hours. The cost of a key fob is \$10.00 and you can keep it in case you take another course that uses the lab facilities. Contact Terri Evans at [tevans@uvic.ca](mailto:tevans@uvic.ca).

## GEOGRAPHY DEPARTMENT INFO

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

## TENTATIVE COURSE SCHEDULE

WEEK	DATE	Topic
1	Sep 13	Introduction; Electromagnetic Radiation Review
2	Sep 20	Image properties; Sensors/satellites Review
3	Sep 27	Atmospheric Attenuation/Atmospheric Correction
4	Oct 04	No class
5	Oct 11	Remote Sensing of Vegetation
6	Oct 18	Remote Sensing of Vegetation
7	Oct 25	<b>Mid-term Exam</b>
8	Nov 01	Remote Sensing of Water
9	Nov 08	Remote Sensing of Water
10	Nov 15	Thermal Remote Sensing
11	Nov 22	Thermal Remote Sensing
12	Nov 29	Remote Sensing of Soils and Minerals
13	Dec 06	Course Review

Additional UVic important dates can be found here: [uvic.ca/calendar/dates](http://uvic.ca/calendar/dates).

## DISCLAIMER

The above schedule, policies, procedures, and assignments in this course are subject to change without prior notice.

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## POLICY ON LATE ASSIGNMENTS

Lab assignments are due at the beginning of the following week's lab. The penalty for assignments handed in late is 20% per day every day after. All lab assignments must be submitted to be allowed to sit the Final Exam. Failure to submit a lab assignment will result in a failing grade of incomplete (N). Exceptions will only be granted for medical reasons (requiring a written report from a medical practitioner stating your inability to hand the lab assignment) or extreme personal crises. Only the course instructor can grant exceptions.

## 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](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 [uvic.ca/learningandteaching/cac/index.php](http://uvic.ca/learningandteaching/cac/index.php).

Students are expected to complete assignments independently unless otherwise instructed.

## **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/](http://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 environments for all its members.

## **SEXUALIZED VIOLENCE PREVENTION AND RESPONSE AT UVIC**

UVic takes sexualized violence seriously and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting [uvic.ca/svp](http://uvic.ca/svp). If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

Where: Sexualized violence resource office in EQHR; Sedgewick C119

Phone: 250.721.8021

Email: [svpcoordinator@uvic.ca](mailto:svpcoordinator@uvic.ca)

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

## **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.

## **NOTE:**

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/](http://uvic.ca/services/counselling/)

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://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/](http://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](http://uvic.ca/services/indigenous/students/programming/elders/index.php)