

**Geog 319 – Remote Sensing of Environment
January 2020**

Instructor Maycira Costa (maycira@uvic.ca)

Office Hours Wednesday 4pm – 5pm
DTB B126

Lecture Hours Tuesday 11:30pm – 12:20pm
Wednesday 11:30am – 12:20pm

Lab coordinator Terri Evans (tevens@uvic.ca)

Course Objectives 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, soil, water, rock/minerals, and how to obtain and interpret imagery acquired by different satellites. We focus on the optical and thermal part of the spectra. This course builds on the fundamentals of remote sensing and imagery processing introduced in GEOG228.

KEY THEMES: satellite imagery, radiation, optical, thermal, earth observation

LEARNING OUTCOMES

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

**Late
Assignment
Policy**

Lab assignments are due at the beginning of the following week's lab. 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 examination. 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 attend class) or extreme personal crises. Only the course instructor can grant exceptions.

Course Evaluations

	Component A		Component B
Mid-term Exam	25%	Lab assignments	40%
Final Exam	35%		

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

GRADING SYSTEM

As per the Academic Calendar:

Grade	Grade point value	Grade scale	Description
A+	9	90-100%	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.
A	8	85-89%	
A-	7	80-84%	
B+	6	77-79%	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.
B	5	73-76%	
B-	4	70-72%	
C+	3	65-69%	Satisfactory, or minimally satisfactory. These grades indicate a satisfactory performance and knowledge of the subject matter.
C	2	60-64%	
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.

Course Text*(On reserve in the library)*

1. Jensen, J.R. (2013). *Remote Sensing of the Environment: Pearson New International Edition: An Earth Resource Perspective, 2013. Paperback 2nd edition.*

Lab Website:<http://labs.geog.uvic.ca/geog319/>

Username: geog319

Password: hyperspectral

Lab Computers

Username: your UVic Netlink-ID

Password: your Netlink-ID password

Lecture Summaries

Lecture presentations can be downloaded from UVic's CourseSpace

Username: your UVic Netlink-ID

Password: your UVic Netlink-ID password

These files are intended as a supplement to the lectures. They are not intended to replace the lectures, although most of the material covered in the lectures is contained in the notes. I plan to post the pdf before the class starts.

Lab Access

The Geomatics Teaching Laboratory (Social Sciences & Math A251/A253) is open daily from 8.30 am to 4.30 pm. Access to the Laboratory is restricted after 4.30 pm 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 card is \$10.00 and you can keep it in case you take another course that uses the lab facilities.

You are required to have a 32GB high speed USB3 drive for the lab portion of this course. There will be some available for purchase for \$20.00.

Printing

You are permitted to print a maximum of 40 pages using the Laboratory's printer.

Academic Standards

Plagiarism will be dealt with in accordance with university policy. Please review calendar for details. Be sure to reference all material you use. If you have any questions, please contact me.

Students with a Disability

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability/health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL) as soon as possible. The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations <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.

Please Note: You are under no obligation to disclose your disability.

Notes

1. I reserve the right to make changes to the schedule.
2. The best way to reach me is to come see me during office hours.
- 3. If you have ANY concerns related to lectures, labs, and/or exams, please come see me as soon as possible.**

Cell phones

Must be off or in silent mode during lectures. Computers must be used to facilitate learning only. Recording of lectures is strictly prohibited

Tentative Course Schedule

WEEK	DATE	Topic
1	Jan 7, 8	Goals and structure of the course. Remote sensing of the environment; Electromagnetic radiation - principles
2	Jan 14,15	Image properties; Sensors/satellites characteristics
3	Jan 21, 22	Atmospheric attenuation/Atmospheric correction
4	Jan 28, 29	Vegetation
5	Feb 4,5	Vegetation
6	Feb 11,12	Vegetation - hyperspectral
7	Feb 18, 19	<i>Reading break – no classes</i>
8	Feb 25, 26	Water/ <u>MIDTERM</u>
9	March 3, 4	Water
10	March 10, 11	Talk – kelp detection/Water - hyperspectral
11	March 17, 18	Thermal
12	March 24, 25	Soils, Minerals
13	March 31, 1	Talk/Review

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