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**COURSE OUTLINE**  
**Remote Sensing of Environment**

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**Class Schedule:** TW 11:30 – 12:20am

**Class location:** CLE A302

**Office Hours:** Wednesday 1.00pm – 2.00pm

**Office Location:** David Turpin B126

**Course Instructor:** Maycira Costa

**Lab coordinator:** Terri Evans

**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, 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

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**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

**EVALUATION**

Exam 1: 25%

Exam 2: 35%

Lab 1: 15%

Lab 2: 10%

Lab 3: 10%

Lab 4: 5%

## GRADING SYSTEM

As per the Academic Calendar:

| Grade                              | Grade point value | Grade scale                 | Description  |
|------------------------------------|-------------------|-----------------------------|--|
| <b>A+</b><br><b>A</b><br><b>A-</b> | 9<br>8<br>7       | 90-100%<br>85-89%<br>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><br><b>B</b><br><b>B-</b> | 6<br>5<br>4       | 77-79%<br>73-76%<br>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><br><b>C</b>              | 3<br>2            | 65-69%<br>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.  |

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## GEOGRAPHY DEPARTMENT INFO

- Geography Department website: <http://geog.uvic.ca>
- Undergraduate Advisor: Dr. Phil Wakefield – [geogadvisor@uvic.ca](mailto:geogadvisor@uvic.ca)

## LECTURES 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.

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## **POLICY ON LATE ASSIGNMENTS**

The penalty for assignments handed in late is **20% per day**, every 24 hour period. **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.

## **PLAGIARISM**

Please see: <http://www.uvic.ca/learningandteaching/students/resources/expectations/>  
Policy on Academic Integrity: <http://web.uvic.ca/calendar2015-01/FACS/UnIn/UARe/PoAcl.html>

## **ACCESSIBILITY**

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.

## **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. I will provide more detailed information nearer the time, but please think about this important activity during the course.

## **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 8, 9     | Goals and structure of the course. Remote sensing of the environment; Electromagnetic radiation - principles |
| 2    | Jan 15,16    | Image properties; Sensors/satellites characteristics   |
| 3    | Jan 22, 23   | Satellites   |
| 4    | Jan 29, 30   | Atmospheric attenuation, Atmospheric correction  |
| 5    | Feb 5,6      | Vegetation   |
| 6    | Feb 12,13    | Vegetation   |
| 7    | Feb 19, 20   | Reading break – no classes   |
| 8    | Feb 26, 27   | Water/ <i><u>MIDTERM</u></i>   |
| 9    | March 5, 6   | Water  |
| 10   | March 12, 13 | Water/Thermal  |
| 11   | March 19, 20 | Thermal  |
| 12   | March 26, 27 | Soils, Minerals  |
| 13   | April 2, 3   | Invited talk/Review  |

### Recommended Text book: (On reserve in the library)

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

### Notes

1. I reserve the right to make changes to the schedule.
2. The best way to reach me is during office hours. Do not expect immediate e-mail replies, so **plan ahead**.
3. If you have ANY concerns related to lectures and labs, please come see me as soon as possible.