

Geography 422
Fall 2016
Advanced Seminar in Remote Sensing
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Introduction:

This course is designed to provide you with the opportunity to integrate your strong background in geography or other earth/biological sciences with remote sensing. The course is intended to be a capstone focusing on your work and integration of your previous knowledge.

The focus of the course will be to work through a problem that can, at least in part, be addressed by remote sensing technology. The part of the exercise therefore will be to define a research question. This will be followed by an exploration of the methods that can be used to address this question. You will then be asked to isolate the remote sensing component of the solution to the question that you have asked. We will provide you with the data, if possible, that will allow you to complete this portion of the project.

We have a number of different datasets from different environments that could be made available to you to work on your project. Most of our current library is focused on airborne data from western Canada (Alberta and BC). If your interests lie elsewhere then we can see what we can accommodate.

Some examples of potential projects:

1. Addressing changing ice field extent in BC. - Multitemporal LANDSAT VNIR-SWIR-LWIR.
2. Ecological characterization along a mountain transect- NEON: 3 datasets from California, acquired 2013, Yellowstone National Park acquired in 2014
3. Wetlands mapping: relating vegetation structure to wetlands types - large number of examples from NE BC and northern Alberta (including Peace-Athabasca Delta) from 2009, 2012, 2013, 2014
4. Comparison of UAV MSS and high spatial resolution (~15 cm) hyperspectral data for vegetation health and vigour.

Course Design:

The course will be a project - based course with the expectation that you execute a research project of your choosing, related for the remote sensing of various environments. The course is seminar-based and so much of the interaction will be student lead. We will have a number of presentations to broaden your outlook on the application of remote sensing data to addressing a variety of issues. You will be given the opportunity to develop a project that suits your interests, 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 airborne multi sensor campaigns. Typically we will have LiDAR, hyperspectral data and orthophotography.

Times: **Lecture** Tuesdays and Wednesdays 1230 -1320; **Lab**: Thursday 0830-1130
Location: **Lectures**: Clearihue C113; **Lab**: Turpin A253

Evaluation:

Deliverables	Weighting	Date
Project definition	5% (O&W)	September 15
Annotated bibliography	10% (W)	September 15
Methodological overview	20% (O&W)	October 6
Progress update	5% (O&W)	October 20
Presentation of final project	25% (O)	November 24
Final report	35% (W)	December 2

O=oral; W=written

The grade breakdown follows the university convention:

F	D	C	C+	B-	B	B+	A-	A	A+
< 50%	50-59%	60-64%	65-69%	70-72%	73-76%	77-79%	80-84%	85-89%	90-100%

Tentative schedule (subject to change):

Week of September 5 Course Introduction

Week of September 12 Technological Evolution of Technologies related to Remote Sensing / Multisensor RS

Week of September 19 Class Presentations: Project Definitions

Week of September 26 No lecture (tentative)

Week of October 3 Class Presentations: Methodological overview

Week of October 10. Remote Sensing: Species Identification - Vegetation Health

Week of October 17 Remote sensing for Forest Assessment

Week of October 24 Class Presentations: Progress report/update

Week of October 31 Multisensor RS for Geoscience

Week of November 7 Reading Break

Week of November 14 Habitat mapping, wetlands mapping

Week of November 21 Project work

Week of November 28 Class Presentations – Projects

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 detailed information nearer the time but please be thinking about this important activity during the course.