



DTB B122

The objective of this course will be to introduce you to the idea of collecting, processing and using passive microwave, active microwave (RADAR), and LiDAR remotely sensed data as standalone and complementary remote sensing data sources to optical data. The course builds on GEOG228 by focusing on the unique aspects of the microwave region of the electromagnetic spectrum. Microwaves have wavelengths around 1 cm to 1 m, approximately 100,000 times longer than optical wavelengths, so that interactions with the earth's surface, and approaches for landscape information extraction, require unique treatments.

We will also explore LiDAR data for the evaluation of natural environments. The lectures will introduce to the potential of these data and a specific processing and analysis philosophy, while the lab assignment will let you process and analyze LiDAR data. There will be four laboratory assignments that will explore innovative approaches for using microwave and LiDAR remotely sensed data. Emphasis will be placed on innovative applications made possible by recent advances in these technologies, though several analytical approaches learned in this course are transferable to other remote sensing domains such as optical.

microwave remote sensing, RADAR, altimetry, LiDAR, object-based image analysis

None. For laboratory assignments 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.

1. Mather, P.M. (2011). Computer processing of remotely-sensed images. 4th ed. Wiley-Blackwell, Hoboken, NJ.

AN introductory text that provides both the basics of remote sensing of more advanced material on sensors and processing techniques. FREELY AVAILABLE:

<http://ezproxy.library.uvic.ca/login?url=http://onlinelibrary.wiley.com/book/10.1002/9780470666517>

2. Richards, J.A., (2009). Remote Sensing with Imaging Radar. Springer, Heidelberg, Germany.

A resource book which does an excellent job of providing a rigorous treatment of microwave imaging but in a manner suited to earth scientists rather than practitioners of theoretical electromagnetism. Focus is on radar but the book includes a chapter on passive microwave remote sensing.

3. Woodhouse, I.H. (2006). Introduction to Microwave Remote Sensing. Taylor and Francis, Boca Raton, Florida.

A very readable primer in active and passive microwave remote sensing. Contains overviews of several applications.

Theoretical: foundations of passive and active microwave remote sensing and LiDAR, information extraction, and policy issues. Technical: state-of-the-

: web.uvic.ca/calendar2019-09/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.

The instructor reserves the right to use plagiarism detection software programs to detect plagiarism in written assignments.

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 <https://www.uvic.ca/services/cal/>). The RCSD 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.

The University of Victoria is committed to promoting, providing and protecting a positive and safe learning and working environment for all its members.

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. 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
Web: uvic.ca/svp

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

--	--	--	--