

GEOGRAPHY AND PLANNING

GPHY 242 - Remote Sensing I: Remote Sensing of the Environment



Contact Time	2x 1.5-hour lectures per week 1x 3-hour laboratory per week	
Format	Lectures and Labs	
Class Assessment	Lab Assignments (4)	50%
	Quizzes (4)	20%
	Final Exam	30%

COURSE OVERVIEW

This course represents an introduction to the methods by which remote sensing data are collected, processed and analyzed. Upon completion, students will be able to advise on the various types of remote sensing data available for environmental applications and on the various processing procedures for extracting information from remote sensing data. The relationships between the technologies of remote sensing and GIS are also emphasized, particularly with respect to how remote sensing data can generate information layers for spatial modeling within a GIS.

The course is divided into a series of units, each composed of lectures, laboratories, readings, and demonstrations. Topics covered in the lectures include the principles of electromagnetic radiation, airborne and satellite remote sensing systems, digital image data and digital image processing, thermal, radar, and lidar remote sensing systems, and applications of remote sensing for environmental analysis. Laboratory sessions involve the interpretation of remote sensing data and the application of digital image processing techniques to extract information from remote sensing data.

COURSE TOPICS

Since the course is organized around the electromagnetic spectrum, topics will include applications specific to the visible, near, middle, and far infrared, as well as microwave remote sensing. The physical principles of electromagnetic radiation will be covered, as well as the design of remote sensing systems for capturing remote sensing data across a range of spatial and temporal scales. Image processing techniques will be introduced. The students will gain a suitable understanding of electromagnetic radiation and image processing, enabling them to take Remote Sensing II – Digital Image Processing.

This course is a core course for the Certificate in Geographic Information Science.

COURSE READINGS

No textbook required. Any recommended readings will be provided through Queen's eReserves and onQ.