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DEPARTMENT OF
GEOGRAPHY AND PLANNING

GPHY 342 – Remote Sensing II: Digital Image Processing

Contact Time	One 2.0 hour lecture per week One 2.0 hour laboratory per week
Format	In-person delivery - lectures and labs
Class Assessment	50% Lab assignments 10% Participation 20% Mid-term exam 20% Final exam

COURSE OVERVIEW

The aim of the course is to examine contemporary image processing and information extraction techniques; and analyze remotely sensed data for environmental and geographical applications and research. This course represents an extension of GPHY 242/3.0, with an in-depth examination of data processing techniques from passive and active remote sensing sources with the purpose of information extraction. Topics include remote sensor technology, image enhancement, image classification, radiometric and geometric correction and sources, change detection, airborne laser scanning, and applications of remote sensing data.

Prerequisites: GPHY 242/3.0 and GPHY 247/3.0; or permission of the Department.

LEARNING OUTCOMES

- Explain the similarities and differences between passive and active remote sensing systems
- Assess the appropriate remote sensing data, scale and analysis for studying specific problems or phenomena
- Analyze data using sophisticated digital analysis techniques using industry standard software
- Examine how these data and data products can be integrated with other data for spatial data analyses

COURSE TOPICS

Image processing systems and image statistics; Image enhancement; Radiometric and Geometric Correction; Thematic information extraction – Pattern recognition; Active remote sensing – Information extraction; Digital change detection, Thematic map accuracy assessment.

This course is highly recommended for the Certificate in Geographic Information Science.

COURSE READINGS

Jensen, J.R. 2016. Introductory Digital Image Processing: A Remote Sensing Perspective, 4th Edition, Pearson Education Inc., Glenview, IL, 623 pp.

Supplementary readings posted on OnQ to support the lecture and lab material.