

GEOGRAPHY 9418A
Remote Sensing Digital Image Analysis
Fall 2017

Instructor: Dr. Jinfei Wang, Office: SSC. 2402
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Classes: Thursdays 4:30 -6:30 pm, SSC 2322E
Office hours: Wednesdays 3:00 – 5:00 pm, SSC 2402
Fall reading week: October 9-13
First class: September 14, 2017

Course description:

An in-depth study of current algorithms in remote sensing digital image processing and analysis. Topics may vary depending on students' interests, such as hyperspectral data analysis, textural analysis, object-oriented classification, polarimetry SAR radar data processing and analysis, change detection, structural pattern recognition and integration with GIS.

Course work:

In this course, each student is required to complete a literature review and a remote sensing research project. A journal paper format is followed. The objective is to be familiar with the current remote sensing research, and learn how to conduct literature review, collect and analyze remotely sensed data, be familiar with remote sensing image analysis software, and present research results.

Prerequisites:

Basic remote sensing knowledge is required. However, if you do not have enough remote sensing background, you may be required to attend the lectures/labs of undergraduate remote sensing courses. Please feel free to contact me.

Graduate Course Health and Wellness:

As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca/>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html

To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: http://www.health.uwo.ca/mental_health/module.html. This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.

Statement on Academic Offences

The statement: “Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

All required papers may be subject to submission for textual similarity review to the commercial plagiarism-detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Method of Evaluation:

Class participation, including discussions	10%
Abstract (Word format) and literature review presentation(ppt)	10%
Methodology and data analysis (ppt)	10%
Full paper (Word format)	50%
Oral presentation (ppt)	20%

Step 1: Selection of a topic and literature review

(Due date: Thursday, Oct. 5, 2017)

Submit an *abstract* or summary of the paper (around 500 words).

Presentation of literature review. Submit your ppt file, including a list of references.

In class discussion of research topics.

The abstract should include the following:

Abstracts are limited to 500 words and must include:

- Paper Title
- Author Name(s)
- Institutional affiliation(s)
- Complete mailing Address
- Phone, Fax, and E-mail for all authors and presenters
- Describe the research question(s), main objectives, study area, methods to be used and anticipated results.
- 3 - 5 key words.

The literature review should provide background and current development in the proposed research area: What has been done? What needs to be done? Has someone done the exact same as you proposed? What is new and innovative with your proposed research? It should be a critical review, not just to describe who did what.

Step 2: Data collection

(Date: October 26, 2017)

Data collection for your project involves two tasks: Collection of remotely sensed data and ground truth data.

In class discussion (show and tell) of collected data.

Step 3: Methodology and Data Analysis Presentation

(Date: November 16, 2017)

Presentation of methodology, data analysis and image processing of your project.

Submit your ppt presentation for the data analysis.

Step 4: Full paper

(Due date: December 7, 2017)

For the full paper, you may follow the format from one of the international remote sensing journals

For example:

<http://www.mdpi.com/journal/remotesensing/instructions>

Step 5: Oral presentation

(Date: December 7, 2017)

Oral presentation (20 minutes):

- Submit your powerpoint file