GEOG*3420 REMOTE SENSING OF THE ENVIRONMENT
*The University of Guelph, Department of Geography*
Winter 2017, 0.5 Credits (DRAFT)

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Office: Hutt Rm. 346
Office Hours: Mondays 8:30AM to 11:30AM

**Course Description**
This course explores the nature and acquisition of remotely sensed imagery, and provides students with the technical expertise required to process and interpret this type of digital data. The application of digital image processing techniques to analyzing geographic problems is stressed, and its integration in a Geographic Information Systems (GIS) environmental is demonstrated.

This course is part of the geomatics sequence of courses offered by the Geography Department. The required prerequisite course (GEOG*1300) laid the foundations with an introduction to the processes necessary for an understanding of the physical basis for remote sensing (i.e. energy and the atmosphere). The second course (GEOG*2420) introduced basic concepts in earth imaging, focusing more on image interpretation, aerial photography, and photogrammetry. This course (GEOG*3420) provides a more detailed overview of remote sensing, focusing on the processing of satellite imagery and their applications and the integration of these spatial data with geographical information systems (GIS).

Topics include:
- Energy-Atmosphere-Earth Surface interactions
- Examination of Earth Resource Satellites (e.g., Landsat, SPOT, Radarsat)
- Characteristics of data from multi-spectral scanners, thermal and radar sensors
- Digital image processing techniques for manipulating and interpreting imagery
- Techniques for spatial and time-series analysis with remotely sensed data

By the end of this course, each of you should have a working knowledge of remote sensing data and related digital image processing techniques. The final course in the sequence is GEOG*4480 Applied Geomatic, which allows students to further refine their geomatics (GIS and remote sensing) skill through a student-led project.
**Course Schedule**
The course involves lectures and weekly hands-on computer exercises. The practical exercises provide an applied context to demonstrate the theory and concepts developed in lecture.

**Lectures**
Monday, Wednesday 01:30PM - 02:20PM THRN, Room 1307

**Lab offerings**
Tues 11:30AM - 02:20PM (Hutt 236)
Tues 02:30PM - 05:20PM (Hutt 236)
Thur 11:30AM - 02:20PM (Hutt 236)
Thur 02:30PM - 05:20PM (Hutt 236)

You may not change your lab period without the permission of the instructor.

**Recommended Text Book**

**Method of Evaluation**
Mid term examination 25%
Laboratory exercises 40% Final examination 35%

**Laboratory Exercises**
The labs are designed to facilitate the application of digital image processing techniques to practical real world problems. All labs take place in Room 236 Hutt. This lab is open daily from 8:30am–4:30pm and during evenings and weekends (see posted schedule for hours). All students will be assigned a user name and password that will allow access to the Department of Geography's GIS Lab. In addition, students will be allocated file storage space on the Department's file server for saving their exercises between sessions. It would be advisable to use a USB pen drive for additional storage, mobility, and back-up needs. The TAs will have access to students' directories for grading purposes. All labs require that students submit their own work, although students are encouraged to work with their colleagues to learn the software. There is a $10.00 lab fee associated with this course. This covers the cost of handouts, printer paper, and ink cartridges. Students must supply their media for file back-up. Labs begin in the second
week of the semester. Note: Material from all lab exercises will be covered on the final exam.

**Office Hours**
If you are having difficulties with the lab, please see one of the course TAs. TA office hours are to be scheduled and will be announced upon first meeting. For any other matters, please feel free to visit me during my office hours or e-mail me.

**Late Assignments**
Late assignments will be assessed a penalty of 10% per day (not including weekends). After the assignment has been handed back to the class no grade can be assigned on late work. Students whose assignments are late because of a valid medical reason or family emergency will not be penalized. Documentation from a physician or from Counselling Services (x53244) may be required. Please advise the course instructor (or the teaching assistant in the case of a lab assignment) in writing, with your name, id#, and e-mail contact. Where possible, this should be done in advance of the missed work or event, but otherwise, just as soon as possible after the due date, and certainly no longer than one week later.

**Copies of out-of-class assignments**
Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

**Note Taking**
Students are responsible for taking their own notes during lectures. Materials provided on the course blackboard page are incomplete and are not intended to replace student notes. I am not responsible for providing lecture material for missed lectures.

**E-mail Communication**
As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

**When You Cannot Meet a Course Requirement**
When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the
undergraduate calendar for information on regulations and procedures for Academic Consideration.

**Drop Date**
The last date to drop one-semester courses, without academic penalty, is Friday March 10. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar.

**Copies of out-of-class assignments**
Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

**Accessibility**
The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible.

For more information, contact CSD at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: http://www.uoguelph.ca/csd/

**Academic Misconduct**
The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not
excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar.

**Recording of Materials**
Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

**Resources**
The Academic Calendars are the source of information about the University of Guelph’s procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.