

York University: Department of Geography

**GEOG 3440: Geoinformatics: Remote Sensing I**

<b>Contact</b>	<b>Instructor</b>	Dr. Tarmo K. Remmel
	<b>Office</b>	423 RN
	<b>Email</b>	remmelt@yorku.ca
	<b>Phone</b>	416-736-2100 x22496
	<b>Twitter</b>	@TKRspatial
	<b>Web</b>	http://www.yorku.ca/remmelt
	<b>Moodle</b>	http://moodle.yorku.ca
	<b>Office Hours</b>	Tuesday 0930-1030h



**Synopsis** Remote sensing is introduced as the process of examining, measuring, and studying our planet from a distance, without physical contact. As an extension of photography, remote sensing relies on an understanding and digital recording of energy interactions at or near the surface of the Earth and within the atmosphere. The science of these interactions will be presented as a foundation to understanding the theoretical utility and application of remote sensing techniques. This course will then explore the typical sequence of image acquisition, processing, analysis, and accuracy assessment as related to physical and human influenced environments.

<b>Meetings</b>	<b>Lectures</b>	Monday 0930-1130h, 1005 DB
	<b>Lab 01</b>	Monday 1230-1430h, 302 RN TA: TBA
	<b>Lab 02</b>	Monday 1430-1630h, 302 RN TA: TBA

**Prerequisites** AP/SC/GEOG2420 or ES/ENVS2010

**Exclusions** AS/GEOG3440

<b>Evaluation</b>	<b>Description</b>	<b>Weight (%)</b>	<b>Due</b>	<b>Submission Format</b>
	Assignment 1	5	21 September, 2355h	Moodle
	Assignment 2	7	28 September, 2355h	Moodle
	Assignment 3	12	26 October, 2355h	Moodle
	Mid-term Test	15	22 October	In Class
	Assignment 4	12	9 November, 2355h	Moodle
	Assignment 5	17	5 December, 2355h	Moodle
	Discussion/Participation	12	Regular Participation	Moodle
	Final Exam	20	Exam Period	Moodle

**Textbook** Chuvieco, E. 2016. Fundamentals of satellite remote sensing: and environmental approach (2<sup>nd</sup> edition). Boca Raton, FL: CRC Press. 468 p.

**Accessibility** If you have a disability or health consideration that may require accommodation, please approach me as early as possible: <http://www.yorku.ca/secretariat/policies/document.php?document=68>

**Missed Assessments** With no exceptions, my course policy is that there will be no rescheduled assessments. You are strongly encouraged to not miss classes or labs, but specifically the midterm test. With appropriate documentation and approval by the course instructor, the weight of the missed test can be added to your final exam.

**Expectations** **Knowledge:** This course is taught primarily as a physical science course and requires quantitative analysis and problem solving. Some background in physical geography, computing, basic mathematics, and statistics are expected. The course builds on basic geoinformatics principles with the goal of expanding the breadth of your knowledge in theoretical and applied aspects of remote sensing, allowing you to think critically and be able to perform complex technical tasks independently. If you are having trouble, come talk to your TA or instructor early to seek clarification, since everything in this course build cumulatively.

**Skills:** Strive to continually improve your skills (e.g., time management, reading, writing, comprehension, statistics, computing, analysis). You will learn a suite of fundamental remote sensing techniques, but competency takes time and practice; **you will require practice with the software outside of normally scheduled labs.**

**Attitude:** Be positive! Your active participation is expected, as is your willingness to explore new ideas and approaches to problem solving, while developing academic independence. An important part of this process is to interact with your TA and instructor; I am here to help you succeed, but it requires your desire to learn.

**Penalties** **Late Submission of Work**

- Late submission of course work will be docked 15% of the total assignment value per calendar day. The first 15% penalty is applied at the moment the deadline has passed; subsequent penalties are then applied every 24 hours thereafter that the work is not submitted.
- Penalties accumulate until the work is submitted or a grade of zero is reached.
- Upon dire documented medical or personal reasons and upon individual consultation with the course instructor, extensions may be granted for course work.

**Non-original Work: (<http://www.yorku.ca/academicintegrity>)**

- Submitted work must be entirely original, relevant, and completed by the registered student submitting the material.
- If any part of your submitted work is deficient in this respect, it will be investigated as a potential academic offence (this is a not pleasant experience for any party involved). I remind you that when copying someone else's work, **both** parties are equally at fault.

Schedule	Week	Topic
	10 Sep	Introduction and Electromagnetic Radiation (Ch. 1, 2)
	17 Sep	Spectral Characteristics of Targets (Ch. 2, 6: Specifically 6.1-6.4)
	24 Sep	Satellites, Sensors, and Orbits (Ch. 3, 4)
	01 Oct	Geometric Correction (Ch. 6: Specifically 6.6)
	08 Oct	-- No Lecture, Thanksgiving Day --
	15 Oct	Radiometric Enhancements and Colour Theory (Ch. 6: Specifically 6.5)
	22 Oct	Midterm
	29 Oct	Vegetation Indices (Ch. 7: Specifically 7.1.3; Supplementary)
	05 Nov	Image Classification (Ch. 7: Specifically 7.2)
	12 Nov	Environmental Applications I (Supplementary)
	19 Nov	Environmental Applications II (Supplementary)
	26 Nov	Accuracy Assessment (Ch. 8)
	03 Dec	Change Detection and Review (Ch. 7: Specifically 7.3.4)

**Notice** If necessary, in the best interest of the course, the instructor reserves the right to modify this schedule.