



## GEO 542: Introduction to Remote Sensing – Fall 2025

**Course Instructor:** Dr. K. Wayne Forsythe  
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[www.geography.ryerson.ca/wayne/GEO542-F2025](http://www.geography.ryerson.ca/wayne/GEO542-F2025)

**Office Hour:** by appointment W 5:00pm-6:00pm, via Zoom

**Lectures/Labs/Tutorials:**  
W 6:10pm-9:00pm

**Pre-requisites:** none

**\*\*\*Faculty Course Surveys will be conducted online in November 2025\*\*\***

**Email Policy:** In accordance with [Policy 157](#) on Student E-mail Accounts, Toronto Metropolitan University requires that any electronic communication by students to faculty be sent from their official university email account. Responses to e-mails will ONLY occur if the course code (Geo542) is in the subject line and you utilize your university email account. *Normally*, you can expect a response within 24 hours on weekdays. Emails sent on a Friday will normally not be responded to until the following Monday.

**Technology Requirements:** The installation of Catalyst Professional on your home computer or laptop is an option that students may want to consider. Information will be provided on this at the beginning of the semester.  
D2L Brightspace information and other resources are available at:  
<https://www.torontomu.ca/courses/students/>.

**Course Description:** This course introduces the fundamental concepts of remote sensing. Emphasis will be placed on techniques and applications involving resource management, environmental impact assessment, and urban analysis with medium and high-resolution imagery. The lab portion of this course is substantial and involves using the image processing and GIS software packages. (Formerly GEO 624)

**Learning Outcomes:** By the end of the course, students should expect to have a basic understanding of how digital image acquisition and processing works, and especially how it is applied to geographic decision-making.

**Notes:** Dr. Forsythe holds the copyright in the works of all original materials used in this course and students registered in this course can use the materials for the purposes of this course but no other use is permitted, and there can be no sale or

transfer or use of the work for any other purpose without explicit permission of Dr. Forsythe.

**Class Zoom Links:** Information (if applicable) will be available on the course D2L page.

**Required Text:** There is no required textbook for this course. Students will be directed to appropriate reading resources (all will be available at no additional cost).

**Teaching Method:** Lecture/Lab

**Posting of Grades:** Grades will be available on D2L.

**Course Evaluation:**

Course Component	Weight	Due Date
<b>Lab 1</b> Utilizing Remotely Sensed (RS) Satellite Data, made available - Sept. 10.	<b>20%</b>	<b>Oct. 1</b> by 9:00pm (via D2L).
<b>Term Test 1</b> (via D2L) - format will be announced on Oct. 1 in class.	<b>20%</b>	<b>Oct. 8</b>
<b>Lab 2</b> Image Classification, made available - Oct. 22.	(20% for lab write-up, 10% for presentation) <b>=30%</b>	Lab write-up: <b>Nov. 19</b> by 9:00pm (via D2L). Each student is <u>required</u> to make a five (5) minute presentation during the lecture/lab period (worth 10% of the <u>total</u> course grade) on <b>Nov. 26</b> . A random draw will determine the presentation order.
<b>Term Test 2</b> (via D2L) - format will be announced on Nov. 12 in class.	<b>30%</b>	<b>Nov. 19</b>

**The first graded results (Lab 1) will be made available on October 22.**

**For all Term Tests, it is highly recommended that you utilize Toronto Metropolitan University internet resources. In the event of an internet connection problem, the issue can be verified and accommodations can be implemented. Off-campus internet problems will not be considered.**

## Course Schedule:

Week	Date	Topic	Readings and Resources
1	Sept. 3	Introduction to the course, Lab software setup and requirements	
2	Sept. 10	Getting started with remote sensing/image processing software, <b>Lab 1 made available</b>	
3	Sept. 17	Types of remotely sensed imagery	
4	Sept. 24	Drone remote sensing	
5	Oct. 1	Types of remotely sensed imagery (cont.); Image acquisition, format and interpretation <b>Lab 1 due</b>	
6	Oct. 8	<b>Term Test 1</b>	
7	Oct. 15	<b>No class due to Fall Reading Week</b>	
8	Oct. 22	Geometric and radiometric processing, Supervised and unsupervised classification techniques <b>Lab 2 made available</b>	<a href="#">USGS Classification System</a>
9	Oct. 29	Information extraction and image transformations – Normalized Difference Vegetation Index (NDVI)	
10	Nov. 5	Remote Sensing Case Studies	<a href="#">Forsythe and Wheate (2003)</a> , <a href="#">Forsythe et al. (2012)</a> , <a href="#">Chmarycz and Forsythe (2021)</a>
11	Nov. 12	Principal Component Analysis (PCA)	
12	Nov. 19	<b>Term Test 2, Lab 2 due</b>	
13	Nov. 26	Lab 2 Presentations and course wrap-up	

## Course Policies

**All lab assignments must be uploaded to D2L by the due date/time.**

**Your instructor will endeavour to return lab assignments within two weeks of their due date.**

**NOTE:** Unless otherwise indicated, all work must be done **individually**. Late penalty on all required course material: **50% per day** (not accepted if more than **one (1) school day late unless a medical certificate is submitted or other acceptable arrangements have been made and confirmed via email prior to the due date.**

### Electronics in Class

The use of computers is allowed.

### Department Late Policy

The Department of Geography and Environmental Studies has a late assignment policy which specifies a minimum penalty of 20% per calendar day, as outlined in the [Department of Geography and Environmental Studies Student Handbook](#). Handbook available from: <https://www.torontomu.ca/geography/current-students/studenthandbook/>.

### **Course Management Policy**

Please note that as per the new Course Management Policy (Policy 166) effective Fall 2019, all University Senate policy information will be available to students through the online learning management system (D2L). Going forward, policy information will be maintained by the Senate Office and is available from: <https://www.torontomu.ca/senate/course-outline-policies/course-management-policy-166/>.

### **Missed Classes and/or Evaluations**

Students are required to inform their instructors of any situation which arises during the semester which may have an adverse effect upon their academic performance, and must request any considerations and accommodations according to the relevant policies and well in advance. Failure to do so will jeopardize any academic appeals.

**Teaching will be delivered in variable formats that may include the following: synchronous and pre-recorded lectures, break-out discussion groups, Q & A sessions, online discussions and chats, shared slides and course notes, and more. Students are responsible for checking D2L and the course website frequently, keeping up with assigned readings and supplied lecture material/notes, and submitting assignments on designated dates.**

### **Missed Classes and/or Evaluations**

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Undergraduate students **must** submit their requests for **academic consideration online**.

A link to the online request form and instructions for submission are available here:

<https://prod.apps.ccs.torontomu.ca/senateapps/acadconsform>.

You **must** submit the online request within three (3) days of the missed work (e.g., test, assignment deadline, lab, etc.) When circumstances do not permit this, you must submit the request as soon as reasonably possible. Your instructor(s) will be notified automatically, and you will have an electronic record to verify when your requests were submitted and approved. The entire system is linked to MyServiceHub, which makes it faster and less prone to error.

### **Important Resources Available at Toronto Metropolitan University**

- [The University Libraries](#) provide research [workshops](#) and individual consultation appointments. There is a drop-in Research Help desk on the second floor of the library, and students can use the [Library's virtual research help service](#) to speak with a librarian, or [book an appointment](#) to meet in person or online.
- [Student Life and Learning Support](#) offers group-based and individual help with writing, math, study skills, and transition support, as well as [resources and checklists to support students as online learners](#).
- You can submit an [Academic Consideration Request](#) when an extenuating circumstance has occurred that has significantly impacted your ability to fulfill an academic requirement. You may

always visit the [Senate website](#) and select the blue radio button on the top right-hand side entitled: Academic Consideration Request (ACR) to submit this request.

For Extenuating Circumstances, [Policy 167: Academic Consideration](#) allows for a once per semester ACR request without supporting documentation if the absence is less than 3 days in duration and is not for a final exam/final assessment. Absences more than 3 days in duration and those that involve a final exam/final assessment, always require documentation. Students must notify their faculty/contract lecturer once a request for academic consideration is submitted. See Senate [Policy 167: Academic Consideration](#).

Longer absences are not addressed through Policy 167 and should be discussed with your Chair/Director/Program to be advised on next steps.

### **Student Well Being**

All students should be aware of the supports the university provides, and communicate early if you are facing challenges. The program directors, program assistants, and department chair are available to support students. See <https://www.torontomu.ca/student-wellbeing/> for further information.

### **Originality Detection, Academic Integrity and Plagiarism**

Academic Integrity (AI) is a fundamental component of any university course. The use of Artificial Intelligence (AI) for the completion of any graded component of this course is not permitted. University Policy 60 (the *Student Code of Academic Conduct*) applies to all students at the University. The policy and its procedures are triggered in the event that there is a suspicion that a student has engaged in a form of academic misconduct.

Use of Generative AI (eg. ChatGPT, Grammarly, Perplexity, DeepL Translator) to develop or assist with any ideas or material submitted for coursework is expressly prohibited in this course. Use of Generative AI in this manner will be considered a breach of Policy 60.

Forms of academic misconduct include plagiarism, cheating, supplying false information to the University, and other acts. The most common form of academic misconduct is plagiarism. Plagiarism is a serious academic offence and penalties can be severe. In any academic exercise, plagiarism occurs when one offers as one's own work the words, data, ideas, arguments, calculations, designs or productions of another without appropriate attribution or when one allows one's work to be copied.

All academic work must be submitted using the citation style approved by the instructor.

**It is assumed that all examinations and work submitted for evaluation and course credit will be the product of individual effort, except in the case of group projects arranged for and approved by the course instructor. Submitting the same work to more than one course, without instructor approval, is also considered a form of plagiarism.**

Students are advised that suspicions of academic misconduct may be referred to the Academic Integrity Office (AIO). Students who are charged with academic misconduct will have a Disciplinary Notation (DN) placed on their academic record (not on their transcript) and will be assigned one or more of the following penalties:

- A grade reduction for the plagiarized work

- A zero for the plagiarized work
- An F in the course
- More serious penalties up to and including expulsion from the University

For more detailed information on these issues, please refer to the full online text for the *Student Code of Academic Conduct* at <https://www.torontomu.ca/senate/course-outline-policies/academic-integrity-policy-60/> and the Academic Integrity Website at <https://www.torontomu.ca/academicintegrity/>.

#### **Academic Integrity and Plagiarism Detection Service**

Turnitin will not be used.

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#### **Class Participation and Attendance**

Students are expected to attend class, there are no grades for attendance or class participation.

#### **Student Code of Non-Academic Conduct**

It is the student's responsibility to be familiar with the [Student Code of Non-Academic Conduct](#) and conduct themselves in a manner consistent with generally accepted standards of behaviour, University regulations and policies.

#### **Course Outline Related Policies can be found at:**

<https://www.torontomu.ca/senate/course-outline-policies/>

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