GIScience and Spatial Data (ERTH 3500): Spring 2024

Department of Earth and Environmental Sciences

Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.

Dalhousie University also acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.

Instructor: Caitlin Cunningham (she/her) (calling me Caitlin is fine!)
Instructor Contact: caitlin.cunningham@dal.ca
Teaching Assistant: Emma Taniguchi (she/her)

Lectures: Tuesdays and Thursdays, 10:05 a.m. to 11:25 a.m.., LSC 3111 (Bio& Earth Tower)
Lab: Tuesdays and Thursdays, 1:05 p.m. to 4:25 p.m., LSC 3111 (Bio& Earth Tower)
Student Hours*: Wednesdays, 1:00 p.m. to 3:00 p.m., Virtually on Teams, Appointments can be booked here. Appointments with the instructor outside of these hours can be scheduled by email.

*What are student hours? Why should you come to student hours?

Student hours, sometimes called office hours, are an opportunity for you to meet with your instructor one-on-one outside of class. While this might sound intimidating, they can be a great resource in helping you succeed. They are an opportunity for you to ask questions about what is being discussed in class or other related interests you have. They are time for you to get clarification on assignments or to get feedback on your coursework and are also a great time to discuss majors and programs of study or ask questions about various career or graduate school goals. Overall student hours are there to help you and support you in your learning both in and outside of this course!

Tips for Student Hours

1. Come early in the semester and make it a habit
2. Be honest about where you are in the course and in life
3. Have a specific question in mind to start the discussion
4. Ask as many clarification questions as necessary

Course Description

Geographic Information Systems (GISystems) provide a powerful platform to process and analyze data with locational information. This course introduces theoretical concepts in Geographic Information Science (GIScience) that provide the foundation for the creation, management, and visualization of geospatial data for a range of disciplines (e.g., Earth Sciences, Environmental Science, Biology, Planning). Topics include principles of spatial object types, spatial data models, concepts of error and uncertainty, overlay, and the integration of satellite derived data (GPS, Remote Sensing Imagery) in spatial projects. Laboratory exercises emphasize how these principles are put into practice in the use of Geographic Information Systems.

Course Pre-Requisites

Two years of university study or equivalent or instuctor's permission

Course Exclusions

Credit will only be given for one of ERTH 3500, GEOG 3500, ENVS 3500, SCIE 3600 or ERTH 5600

Learning Objectives

Through participation in this course and completion of the assignments, you will be able to:

- ✓ Recognize and describe how geographic information science governs (or should govern) the use of geographic information systems
- ✓ Recognize and describe the components (and component functions) or geographic information systems
- ✓ Explain and demonstrate how geographic data is generated, managed, modified and visualized
- ✓ Critique the quality of geovisualization from a range of courses (popular media, memes, peer-reviewed manuscripts)
- ✓ Conduct basic, non-inferential spatial analysis using GIS software
- ✓ Compare/contrast how geographic information systems can be used to aid decision making across several disciplines

Course Materials

The **recommended textbook** for this course is Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. (2015). *Geographic Information Science and Systems (4th ed.)*. Wiley Publishing. It is available as an e-book through the Killam Library **here**.

There are several times during the course where digital files are used across several weeks and deliverables. Because campus terminals are "frozen", students will need to **save their work to an external location** like their **Dalhousie OneDrive** or to an **external USB drive** (best practice is to save duplicates in multiple locations).

Access to **ArcGIS Pro™ 3.1** is required for this course. The software is installed on all Dalhousie campus machines, and may be available to you on your own computer through two alternative methods[1], both of which are overviewed in the first workshop:

1. Downloading ArcGIS Pro™ through the **Dalhousie Software Resources** to run on a Windows Operating System. If using this method, it is your responsibility to check the **hardware requirements** for the software, as video capacity (recommended minimum is a 4 GB GPU) tends to be a common limitation. Using a local install also requires the Dalhousie Virtual Private Network to be installed and active while running ArcGIS Pro™.

2. Access through a strong, stable broadband connection (ethernet strongly recommended) in a **virtual lab environment** or a **remote desktop connection**.

[1] If using either of these options, students are responsible for ensuring they have either an appropriate Windows capable machine at home and/or a stable broadband internet connection (ethernet strongly recommended) to use VMWare or Remote Desktop.

Course Structure

This course employs a **blended delivery model**, with both synchronous and asynchronous elements to the class. The synchronous elements of the class are designed for in person delivery with several deliverables requiring in-person attendance to complete (i.e., weekly exercises, three term tests).

This course employs the ESRI platform ArcGIS Pro™. As a U.S.-based Company ESRI observes embargoes placed on several countries by the U.S. government and do not permit the export / use of the software in those embargoed nations for non-government users. That From ESRI's Export Compliance material:

> "*In addition, ENC products are eligible for export to any nongovernment customer in all destinations except the embargoed countries: Cuba, Iran, North Korea, Syria, Russia, Belarus, and the Regions of Crimea, Donetsk People's Republic, and Luhansk People's Republic of Ukraine*."

Lectures

In person sessions are held from Tuesdays and Thursdays, 10:05 a.m. to 11:25 a.m. in Life Sciences Common Area C234.

There are no grades associated with attendance. However, there are assessments such as in-class exercises, and term tests delivered and submitted during the lecture sessions over the semester. Moreover, these sessions are also intended to provide a forum to ask clarification questions about lecture content, lab projects, and upcoming tests or exams. Material covered in the lectures may not be replicated in other media. Students are responsible for any information missed in lectures.

Laboratories

Two three and a half hour in-person lab sessions are held on Tuesdays and Thursdays from 1:05 p.m. to 4:25 p.m. in LSC 3111.

Important Student Resources

Student Hours for the Course Instructor are booked through the **MS-BOOKING page** for this course. Appointments are booked for 20-minute time slots.

While it is a teaching space, the **Elizabeth May Centre for Geocomputation** (LSC-2012) is open to students to work outside of scheduled class times. The lab is open 7:00 am to 10:00 pm except on university holidays. Additionally, the class schedule for the lab will be posted on the door to assist students with planning.

The **GIS Centre** (located on the 5th floor of the Killam Library) also supports this class by providing access to additional applied help during their normal business hours (Monday to Friday, 10:00 am to 4:00 pm). Appointments with a staff member for help on workshops or projects can be booked through their **MS-BOOKINGS page**. It is critical to note that the GIS Centre assists with the applied parts of the course only; staff do not assist in answering theory-related questions on class deliverables.

Learning Management System (LMS)

Important information is posted to the LMS several times a week. It is the responsibility of each student to check the LMS and their Dalhousie email on a regular basis to ensure they are not missing any important materials, updates, announcements, etc.

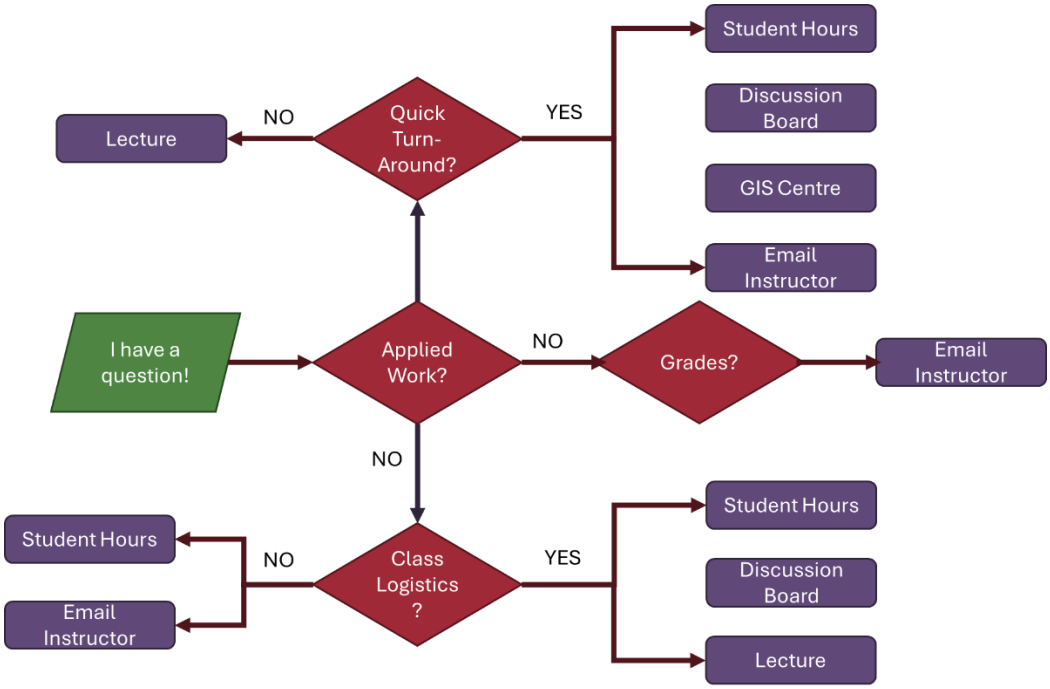
Materials posted to the LMS are for personal use and are not to be shared (see Copyright Disclaimer in the LMS Course Shell). Sharing class materials with other students (registered in the class, not in the class, or outside the institution) is not permitted. Posting class materials to course sharing websites is also not permitted and could be considered both a copyright issue as well as a breach of academic integrity.

Communications

Students are required to use discussion boards in the Learning Management System for many communication types, especially if related to course management and assessments that have applicability to the entire class cohort. If the Instructor or Teaching Assistant receive an email and feel the question should go to the discussion boards, they will ask the student to replicate their question there for a full response or to ask the question in the next scheduled lecture.

Discussion boards will be set up to allow anonymous posting to increase the comfort level of students posting publicly. Please note that even with anonymous posting the moderator (i.e., the teaching staff) can, know the identity of the user posting. Please endeavor to be courteous in all communications, including discussion boards.

Due to the volume of emails received during the semester, I am unable to guarantee immediate responses to email enquiries. Typically, students should expect an average of one business day for turnaround of responses to emailed questions. A rough decision tree to assist students in what communications tools to employ has been provided below.



Ground Rules

Everyone in this class, regardless of sex, gender, race, ethnicity, class, physical ability, or any other identity category is a valued and equal member of this class. Everyone has the right to be addressed by their correct name and pronouns, and you have the right to adjust either of these at any point. We all bring different life experiences to the classroom, and all students are encouraged to share their own experiences that are relevant to the course, but no one is ever presumed to speak for anything or anyone more than their own experience or point of view. Parents are welcome to bring their children to class if needed.

Please remember you are a person first, and a student second. Your mental and physical health matters. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to talk with your instructor. An **anonymous form** has also been set up to allow you to contact the instructor at any time, for any reason, just note that this may result in an email to the entire class to address any issue brought up. There are also campus resources that are there to help you listed at the end of this syllabus.

For Students

You should arrive to our classroom on time, having gone through the asynchronous materials and prepared to engage with the course content as laid out in the course schedule below. You should be present, free from distraction and listening to whomever is speaking. Although you will not always agree with your classmates, you are expected to be respectful of those viewpoints that do not coincide with your own and to engage in respectful and responsible discussion.

Please be conscious of your immune-compromised classmates and **stay home** if you are sick or test positive for COVID-19. If you are unable to come to class, please let the instructor know so we can make alternative arrangements for missed course work.

For the Instructor

I view teaching as a collaborative process where all of us will increase our knowledge base and hone our research, analytical and writing skills within geographic information science. I commit to providing a classroom space that is instructive, engaging, and welcoming. My aim is to provide thought provoking materials and questions that will spark your curiosity. I will communicate expectations to you clearly and will respond to and integrate your feedback into the course and aim to respond to emails within 24 hours during the work week (Monday to Friday). I will provide grades that are transparent and consistent among all students.

Assessment

Applied

Structured Workshops (100 pts)

Standalone, structured exercises completed in a single lab session with a deliverable such as a single map or worksheet to be evaluated. These exercises introduce and develop fundamental GIS techniques and data management practices in preparation for the Independent Lab Projects. Workshop deliverables are due **+24 hours** from the end of the scheduled lab section where they were introduced.

Structured Workshop Due Dates (4:30p.m.)
Workshop 1 (Making a Map): May 31st
Workshop 2 (Georeferencing): June 5th
Workshop 3 (RMSE & Advanced Map Making): June 7th
Workshop 4 (Joins): June 21st
Workshop 5 (Fractional Coverage): June 26th
Workshop 6 (Raster Overlay): June 28th
Workshop 7 (Web Mapping Application): July 3rd

Independent Lab Projects (400 pts)

Multiple lab session projects, each worth 200 pts, requiring students to select and apply techniques learned in the previous standalone, structured exercise for an assigned area and topic. These projects are intended to develop the ability to integrate and contextualize analytical outputs in a professional product (e.g., Technical Report, Story Map).

Independent Lab Project Due Dates (5:00 p.m.)
Lab Project 1 (Creating Historical Digital Data): June 19th
Lab Project 2 (Constructing Raster Land Cover): July 12th

Theory

In-Class Exercises (50 pts)

Weekly pen and paper exercises completed and discussed in the lecture component of the class. These exercises are pass/fail and are intended to reinforce specific lecture topics and/or to demonstrate how the software executes an operation on one or more inputs.

Knowledge Tests (450 pts)

Students will complete three written tests; each worth 150 pts. Tests will be largely structured as short/long answer format. Tests are held during the scheduled in person lecture sessions and have a 90-minute time limit.

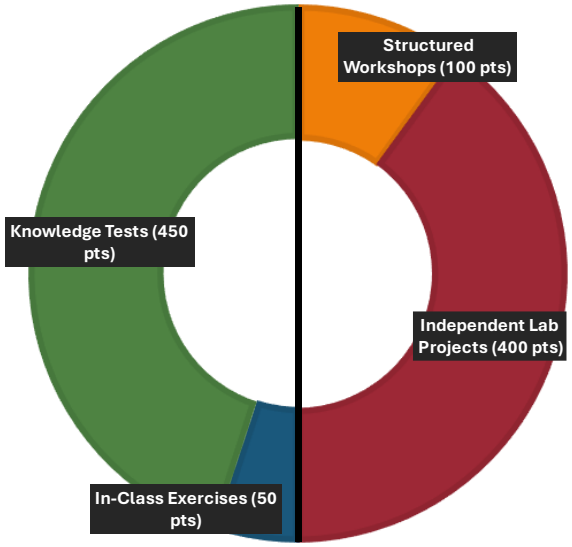
Note that the content on Tests 2 and 3 are not fully "cumulative" but do rely on several scaffolded topics from previous tests that carry through the entire term and underpin later concepts covered in the course.

Knowledge Test Dates
Test 1 (Modules 1 &2): June 11th
Test 2 (Modules 3 & 4): June 25th
Test 3 (Modules 5&6): July 9th

Important

Students **must** earn 250 total points in **both the theory and applied** portions of the class. Students that do not achieve this threshold in both the theory and applied portions of the course will be assigned an F regardless of the total number of points earned.

Theory (500 pts)
Students must earn at least 250 pts to pass the course



Applied (500 pts)
Students must earn at least 250 pts to pass the course

Dalhousie University Undergraduate Grade Scale

Grade	Range	Definition & Expectations
A+	90-100	**Excellent:** Considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; evidence of extensive knowledge base
A	85-89	
A-	80-84	
B+	77-79	**Good:** Evidence of grasp of subject matter; some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; evidence of familiarity with the literature
B	73-76	
B-	70-72	
C+	67-69	**Satisfactory:** Evidence of some understanding of the subject matter; ability to develop solutions to simple problems; benefiting from their university experience
C	63-66	
C-	60-62	
D	50-59	**Marginal Pass:** Evidence of minimally acceptable familiarity with subject matter, critical and analytical skills
F	0-49	**Inadequate:** Insufficient evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature

Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all the work you do. The University provides **policies and procedures** that every member of the university community is required to follow to ensure academic integrity.

All written work may be subject to evaluation using a plagiarism detection service. All students are responsible for ensuring the product they submit to the LMS is the one they intended to submit. There has been an emerging trend of "I submitted the wrong draft" as a justification for high similarity in originality detection, or as an effort to buy time to avoid late penalties from submitting after the scheduled due date. If a resubmission is permitted, that submission will be subject to a grade penalty unless there is timely notification from the student to the instructor that the wrong draft was submitted.

Unless otherwise noted by the instructor, independent work is required for each student. General discussion and peer tutoring are acceptable and encouraged; however, assessments with highly similar structure and flow of ideas are not acceptable and could be submitted to the faculty academic integrity officer for review. Similarly, if not indicated in individual assessment instructions, then the products of Large Language Models / Generative AI (e.g., text generated by ChatGPT, Mobile ChatBot extensions, browser extensions) will not be considered as independent student work and is explicitly not permitted for use in assessment submissions.

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the **Student Accessibility Centre** for all courses offered by Dalhousie on the Halifax campuses.

Late & Missed Assessments

Late penalties for written work without accommodation from the instructor are **-20%** per calendar day. Late penalties begin to accrue after the assigned submission time has been reached. For example, if an assignment is due on June 1st at 12:00 pm, submissions past that time (plus a brief "grace period") are subject to the first application of a -20% late penalty.

Student Absence Declaration

This course has opted into the student declaration of absence in lieu of sick notes. This mechanism is meant to substitute for sick notes from a doctor related to short absences (less than three days) and does not provide an automatic exemption from any missed assessments. Accommodating the absence whether by exemption or makeup assessment is at the discretion of the course instructor. The SDA process can only be used twice in the course. It is important to remember that the SDA policy indicates you must contact the instructor before the assessment deadline has passed regarding your intention to submit an SDA as a part of the SDA process.

Discretionary Extensions (The "Saving Throw")

In addition to accommodations provided by the SDA policy and long-term absence policy, each student begins the semester with five (5) discretionary extensions they may use on any applied assessment (workshop or lab project). Students may choose to use a discretionary extension to apply a +24-hour extension on that assessment for any reason not covered by standard accommodation policies, with no questions asked. Up to a maximum of three (3) of these discretionary extensions or "Saving Throws" can be applied to the same assessment for a maximum total of +72-hr extension.

Please note, the **instructor must be informed prior to the deadline via. email** for the extension to apply. You can use a saving throw after the deadline, however half the late penalty (or "half damage" for any D&D peeps out there) will be applied for that saving throw. Additional saving throws for the same assessment requested prior to the deadline are treated independently.

These discretionary extensions are meant to supplement applicable policies such as the SDA (i.e., they are in addition to existing policies), and not meant to act as a replacement for these existing policies. If you are sick, have accommodations that include extensions, are in bereavement, then the policies that normally govern those conditions apply (SDA, Accessibility, etc.).

Missed Small Deliverables (In Class Exercises and Structured Workshops)

For both the in-class exercises and the structured workshops, the lowest individual item for each will be dropped from the total score. If a student does not submit an item, that item is assigned a 0 and will count as the lowest score item.

Missed Tests

If a student misses a term test for valid reasons, they can write a make-up test to be scheduled at the end of the term. Students that miss more than one term test must consult with the instructor for options on a case-by-case basis.

Course Schedule

Module 1

This introductory module will provide you with a foundation for the rest of the course. Topics covered include the differences between geographic, spatial and geospatial, the basics of cartography and map design, scale, and data types. In lab you will be introduced to the software you will be using throughout the course, ArcGIS Pro™ and you will make your first map!

	Asynchronous Lectures	Readings
	1-1: Geographic? Spatial? Geospatial?	Longley et al. Chapter 1 p.1-9
	1-2: GIScience vs. GISystems	Longley et al. Chapter 1 p.3-32
	1-3: A Primer on Map Making	Longley et al. Chapter 11 p.237-265
	1-4: Geographic Views and Spatial Objects	Longley et al. Chapter 3 p.55-66
	1-5: Data Models Representing Spatial Objects	Longley et al. Chapter 3 p.66-69
	1-6: Binary and Levels of Measurement	None
Date	**Lecture**	**Lab**
Tues. May 28	Introduction to Course	SWS-0: Using ArcGIS Pro Off Campus (No Deliverable)
Thurs. May 30	In-Class Exercise (ICE): Good Map-Bad Map; Vector vs. Raster Representations	SWS-1: Making a Map

Module 2

This module is focused on how to translate the 3D, highly complex world into 2D, simplified spatial data. Topics covered include projections, georeferencing, uncertainty in spatial data and topological errors. In addition to learning these concepts in theory, you will learn how georeference an arial photo and calculate the error associated with the process.

	Asynchronous Lectures	Readings
	2-1: Assigning Location to Measurements	Longley et al. Chapter 4 p. 77-86
	2-2: From Measurement to Map	Longley et al. Chapter 4 p. 86-98
	2-3: Adding Location Reference to Unreferenced Data	None
	2-4: Governing Concepts in Understanding Geography Phenomena	Longley et al. Chapter 5 p.99-111
	2-5: Uncertainty & Error: Conception of Phenomena	Longley et al. Chapter 5 p. 111-117
	2-6: Uncertainty & Error: Conception of Phenomena II	Longley et al. Chapter 5 p. 117-126
Date	**Lecture**	**Lab**
Tues. June 4	ICE: Binary to Integer Representation	SWS-2: Georeferencing
Thurs. June 6	Test 1 Review	SWS-3: RMSE & Advanced Map Making

Module 3

This module will continue with the theme of uncertainty in spatial data and geospatial analysis more broadly. You will also delve into the mapping of spatial data and will learn about different ways that data can be classified and displayed. Topics covered include the modifiable areal unit problem (MAUP), choropleth mapping, spatially intensive vs. extensive measures, and cartograms. In lab you will build on the skills learned in the first three structured workshops and will work on the first independent lab project where you will digitize a historical map of Halifax and discuss the uncertainties in your process.

	Asynchronous Lectures	Readings
	3-1: Uncertainty & Error: Analysis	Longley et al. Chapter 2 p. 33-54
	3-2: Classification and Choropleth Mapping	Longley et al. Chapter 11 p. 248-253
	3-3: More on Counts and Zones in Choropleth Mapping	Buckley (2013)
	3-4: Geovisualization: Other Ways to Consider Spatial Data	Longley et al. Chapter 12 p. 266-280
Date	**Lecture**	**Lab**
Tues. June 11	Knowledge Test 1 (on Modules 1 & 2)	Working Session: Lab Project 1: Creating Historical Digital Data
Thurs. June 13	ICE: Choropleth Maps; Intensive Measures	Working Session: Lab Project 1: Creating Historical Digital Data

Module 4

This module will shift gears a bit and focus on databases. Topics covered include the use, management, querying, and indexing of databases, as well as Boolean operators and spatial relationships. You will also learn about how keys can be used to join datasets together, something you will also practice in lab.

	Asynchronous Lectures	Readings
	4-1: Databases: An Overview of Types and Terms	Longley et al. Chapter 9 p. 194-200
	4-2: Databases: Normalization vs. Table Join	None
	4-3: Databases: SQL, Boolean Terms, Select by Attributes	Longley et al. Chapter 9 p. 202-202
	4-4: Databases: Adding Geographic Functions	Longley et al. Chapter 9 p. 202-206
	4-5: Databases: Structuring Geographic Data	Longley et al. Chapter 9 p. 206-212
Date	**Lecture**	**Lab**
Tues. June 18	ICE: Boolean Logic and Spatial Relationships	Working Session: Lab Project 1: Creating Historical Digital Data
Thurs. June 20	Test 2 Review	SWS-4: Joins

Module 5

This module gets at the core of GIScience and GISystems: Spatial Analysis. Topics covered include overlays and the various processes based on different types of input data and spatial relationships, proximity analysis, and raster operations. In lab you will put this theory into practice by calculating the portion of a study area covered by tree canopy and determining the best place to site a new landfill, working in both vector and raster data formats, respectively.

	Asynchronous Lectures	Readings
	5-1: Spatial Analysis: An Introduction to Spatial Analysis	Longley et al. Chapter 13 p. 290-294
	5-2: Spatial Analysis: Analysis by Location	Longley et al. Chapter 13 p. 295-303
	5-3: Spatial Analysis: Analysis by Distance	Longley et al. Chapter 13 p. 303-317
	5-4: Spatial Analysis: Vector Overlay	Jensen Chapter 6
	5-5: Spatial Analysis: Raster Overlay	Jensen Chapter 6
	5-6: Spatial Analysis: Raster Operations	Jensen Chapter 6
Date	**Lecture**	**Lab**
Tues. June 25	Knowledge Test 2 (on Modules 3 & 4)	SWS-5: Fractional Coverage
Thurs. June 27	ICE: Raster Operations	SWS-6: Raster Overlay

Module 6

This module will provide you with an introduction to remote sensing (something we offer an entire course in!). Topics covered include the electromagnetic spectrum, how different bands collected by satellites can be combined to create different composite images, GPS, and trilateration. In lab you will work on your second independent lab project where you will practice the skills you learned in modules 4 and 5 to create a land cover layer in raster format.

	Asynchronous Lectures	Readings
	6-1: Remote Sensing: Electromagnetic Radiation	None
	6-2: Remote Sensing: How Data is Stored	None
	6-3: Remote Sensing: Resolution(s)	None
	6-4: GNSS: The Three Segments	Shelito Chapter 4
	6-5: GNSS: Estimating Locations	Shelito Chapter 4
	6-6: GNSS: Sources of Positional Error	Shelito Chapter 4
Date	**Lecture**	**Lab**
Tues. July 2	ICE: Calculating NDVI	SWS-7: Web Mapping Applications
Thurs. July 4	Test 3 Review	Working Session: Lab Project 2: Constructing a Raster Land Cover

Module 7

The final module of this course is all about models. Topics covered include the key requirements of a spatial model, the types of models, and the validation of models. In the final workshop you will create a spatial model using some remotely sensed data and will produce a basic web mapping application.

	Asynchronous Lectures	Readings
	7-1: Models: Differentiating Data Models and Spatial Models	Longley et al. Chapter 15 p. 339-351
	7-2: Models: Accuracy and Validity in Spatial Models	Longley et al. Chapter 15 p. 354-356
Date	**Lecture**	**Lab**
Tues. July 9	Knowledge Test 3 (on Modules 5 & 6)	Working Session: Lab Project 2: Constructing a Raster Land Cover
Thurs. July 11	ICE: Simulating a Simple Spatial Model	Working Session: Lab Project 2: Constructing a Raster Land Cover

Learning and Support Resources

Service	Support Provided	Contact Information
Black Student Advising Center	The Black Student Advising Center provides support for any Black-identified student at Dalhousie. Resources and advocacy are available to help students navigate various aspects of campus life.	Website 1321 Edward Street Phone: 902-494-6648 bsac@dal.ca Hours: Monday – Friday: 9:00 – 4:00
Career Counselling	The Bissett Student Success Centre has information on how to navigate the world after Dalhousie, including information on career options, occupational profiles and graduate and professional schools.	Website 6136 University Avenue Phone: 902-494-3077 advising@dal.ca Appointments can be booked online Hours: Monday – Friday: 8:30 – 3:30
DalOUT	Dalhousie's LGBTQ2SIA+ student society within the Dalhousie Student Union that provides education, advocacy, social programming, monetary support and peer support to queer and trans students on campus.	Website 6136 University Avenue dalout@dal.ca
Dalhousie Libraries	Access Dalhousie's print and electronic resources and get reference and research assistance from librarians.	Website Live Online Help Hours: Monday – Friday: 10:00 – 4:00
General Academic Advising	The Bissett Student Success Centre can help you monitor your plan of study and explore your academic options.	Website 6136 University Avenue Phone: 902-494-3077 advising@dal.ca Hours: Monday – Friday: 8:30 – 3:30
GIS Center	Get help with GIS projects and finding geospatial data.	Website 5th floor, Killam Library gis@dal.ca Hours: Monday – Friday: 10:00 – 4:00

Health and Wellness	Access to registered nurses, doctors, social workers, psychiatrists, counselors and psychologists.	Website 1246 LeMarchant Street Appointments can be booked online Hours: Monday – Friday: 8:00 – 5:00 Saturday: 11:00 – 4:00
Human Rights and Equity Services	Provides trauma informed, survivor centered, confidential advising on human rights, discrimination, harassment, sexualized violence and equity and inclusion.	Website 6300 Coburg Road Phone: 902-494-6672 hres@dal.ca
Indigenous Student Center	Provides support and advocacy for all Indigenous students at Dalhousie, with resources on study skills, cultural activities and network opportunities.	Website 1321 Edward Street Phone: 902-494-8863 isc@dal.ca Advisors Hours: Monday – Friday: 9:00 – 4:00 Evening Hours: Monday – Wednesday: 4:00 – 8:00 Thursday: 4:00 – 6:00
International Student Center	Provides support for international students, with information on immigration, working, ESL, health services and life on campus and in Halifax.	Website 1246 LeMarchant Street Phone: 902-494-1566 International.centre@dal.ca Appointments can be booked online
Mental Health Supports	Student Health and Wellness provides access to counselling and social workers.	Website 1246 LeMarchant Street Phone: 902-494-2171 Hours: Monday – Friday: 8:00 – 5:00 Saturday: 11:00 – 4:00
Multifaith Services	Offers confidential guidance on spiritual issues, facilitates interfaith, ecumenical and multifaith dialogue on campus and conducts services of worship and memorial services.	Website 1246 LeMarchant Street 902-494-287 multifaith@dal.ca Hours: Monday – Thursday: 9:30 – 4:30 Friday: 9:30 – 1:30

Ombudsperson	Provides independent, impartial, and confidential support to students in to work towards the resolution of university related concerns, such as abuse of power, bullying or unfair treatment.	Website Student Union Building, Room 452 902-494-2665 ombuds@dal.ca
South House Sexual and Gender Resource Centre	South House is a gender inclusive safe space that offers a resource center, library and a free meeting space for women-positive and anti-oppression organizing and gathering.	Website 1443 Seymour Street 902-494-2432 info@southhousehalifax.ca Hours: Monday – Friday: 10:00 – 4:00
Studying for Success	Works to support students in all areas of study skills and tutoring to help all students reach their academic potential.	Website 6136 University Avenue 902-494-3077 sfs@dal.ca Appointments can be booked online
Writing Center	Offers writing support in all aspects of academic writing. Appointments are available to assist students in completing assignments, papers, reports, posters, presentations, or theses.	Website Killam Library, Room G40 writingc@dal.ca Drop-In Sessions: Monday – Friday 10:00 – 11:00; Join here or in person Appointments can be booked online

University Policies and Statements

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit or e-mail the Indigenous Student Centre at 1321 Edward St or elders@dal.ca. Additional information regarding the Indigenous Student Centre can be found at: https://www.dal.ca/campus_life/communities/indigenous.html

Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: https://www.dal.ca/about-dal/internationalization.html

Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. Additional academic integrity information can be found at: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the Student Accessibility Centre (https://www.dal.ca/campus_life/academic-support/accessibility.html) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (https://www.dal.ca/about-dal/agricultural-campus/student-success-centre.html)

Conduct in the Classroom – Culture of Respect

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels

welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). Additional diversity and inclusion information can be found at: http://www.dal.ca/cultureofrespect.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner - perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. The full Code of Student Conduct can be found at: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Fair Dealing Policy

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. Additional information regarding the Fair Dealing Policy can be found at: https://www.dal.ca/dept/university_secretariat/policies/academic/fair-dealing-policy-.html

Originality Checking Software

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the Student Submission of Assignments and Use of Originality Checking Software Policy. Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method. Additional information regarding Originality Checking Software can be found at: https://www.dal.ca/dept/university_secretariat/policies/academic/student-submission-of-assignments-and-use-of-originality-checking-software-policy-.html

Student Use of Course Materials

Course materials are designed for use as part of this course at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.