

Instructor: Dr. Peter Johnson, Department of Geography and Environmental Management,

Meeting Time: Wednesday 8:30am - 10:20pm, EV3 1408

Lab Times: Lab 101 – Monday 9:30am-11:20am EV2 1002A.

Lab 102 – Monday 3:30pm – 5:20pm EV2 1002A.

Lab 103 – Friday 4:30pm – 6:20pm EV2 1002A.

Lab 104 – Tuesday 4:30pm – 6:20pm EV2 1002A.

Office Hours: Monday 1pm to 2:30pm, EV1-236

If you need to schedule an appointment outside of these hours, please contact me.

E-mail: peter.johnson@uwaterloo.ca

From Monday to Friday, I make every effort to answer emails within 24hrs. Email sent on the weekend will normally be answered on the following Monday. Please note that I only discuss grading issues during office hours.

Teaching Assistants TBA

Course Description:

A specialized introduction to fundamental concepts and emerging trends in geomatics and geospatial data science. Overview of the geospatial industry, including application in government, research, and private sector. Students are introduced to cross-discipline tools and techniques for accessing, visualizing, and analyzing geospatial data.

Restriction: Honours Geomatics program only

Student Learning Outcomes:

- 1) *To be introduced to the breadth and diversity of geospatial data types, applications, and industry.*
- 2) *To gain familiarity with main characteristics of geospatial data, including how it is collected, stored, shared, displayed, and analysed.*
- 3) *Become proficient in accessing existing sources of geospatial data and use these to create meaningful data visualization and analysis output with a variety of technologies.*
- 4) *Apply the output of geospatial data analysis to support decision-making around a real-world issues.*
- 5) *Critically assess the appropriate use of geospatial data science approaches and tools, considering ethics and data as applied to answering a geospatial problem.*

Student Evaluation:

4 Assignments	35%
Project	
- 3 checkpoints 5% each	15%
- Final project	30%
Final Test (Nov 20)	20%
Total	100%

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Course Information

Deadlines: Assignments are due on the date specified at the top of the assignment handout.

Unclaimed assignments: Unclaimed assignments will be retained for one term after the course is finished. After that time, they will be destroyed in compliance with UW's confidential shredding/deleting procedures.

Religious Observances: Student needs to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

LEARN: Users can login to LEARN via: <http://learn.uwaterloo.ca/> use your WatIAM/Quest username and password. LEARN is an essential component of this course, so please be sure to login for course updates and information.

Textbook: As a support for the term project, we will be referring to *Dear Data: A Friendship in 52 weeks of postcards*, by Giorgia Lupi and Stefanie Posavec (2016, Princeton Architectural Press). It is not required to purchase this book. You can view its contents online at the book author website: <http://www.dear-data.com/by-week>.

Lecture and Lab Schedule (This is just a draft, subject to changes)

Week#, Class date	Lecture Topic(s)	Lab Activities
1 – Sept 4	Welcome to Geomatics at Waterloo	No labs week #1
2 – Sept 11	The Data Science Process	Assignment #1
3 – Sept 18	Sources of Geospatial Data	Assignment #2 Assignment #1 due in your lab
4 – Sept 25	Data Quality	Checkpoint #1
5 – Oct 2	The User Experience	Assignment #2 Due in your lab Assignment #3
6- Oct 9	Visualizing Data	Checkpoint #2
7 – Oct 16	Reading Week – no class or labs	
8 – Oct 23	Analyzing Data	Assignment #3 Due in your lab Assignment #4

9 – Oct 30	Sharing Data and Interoperability between services	Checkpoint #3
10 – Nov 6	Critical Data Studies	Assignment #4 Due in your lab
11 – Nov 13	The Geospatial Industry – characteristics and players.	
12 – Nov 20	Final in-class test (20%)	
13 - Nov 27	Final Project Presentations and Feedback	Final Project Due to Dropbox Dec 3 rd (last day of classes)

EXTREMELY IMPORTANT INFORMATIONPLEASE READ THIS***

Accommodations and Access: I want this class to be open and accessible to everyone, and to be a safe, welcoming, and collegial environment. So, please feel free to sit where you like, eat snacks, use a laptop, and come and go from the classroom when you need to, so long as none of these activities disturb the learning experience of other students. I recognize that classroom learning can be challenging, and I will try and reduce barriers to access in general and also work to meet any specific accommodation needs you may have. You can approach me directly, after class, in my office hours, or via email to discuss any accommodation. Some specific accommodations, such as note taking, extended test writing times, learning technology support, and other can be arranged at the AccessAbility office (located in Needles Hall, Room 1401, (<https://uwaterloo.ca/disability-services/>)). Please register with this office at the beginning of each academic term.

Mental Health: Pretty much every student has or will face some type of mental health challenge in their time at university. There are many types of physical and emotional challenges that can make it difficult to do your best work and enjoy your studies. **You are not alone, and help is available from many different places.** If you need help, go immediately to the place you feel most comfortable; your residence don, your friends, your professors (including me!), or to Counselling Services <http://www.uwaterloo.ca/counselling-services>, located on the 2nd floor of the new Needles Hall expansion. Counselling Services is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more. Above all, seek help – these are challenges that you do not need to face alone.

Kids in Class: For those of you with children, I recognize that sometimes your little one is sick, can't attend school, or that your childcare options fall through for whatever reason. Rather than have you miss class, you are welcome to bring your child to class with you. I trust you to make sure that they do not disrupt class for other students.

Territorial acknowledgement: The University of Waterloo acknowledges that we live and work on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes ten kilometres on each side of the Grand River.

Academic Integrity Policies

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check www.uwaterloo.ca/academicintegrity/.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4,

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www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity [check www.uwaterloo.ca/academicintegrity/] to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties check Guidelines for the Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm.

Within ENV, those committing academic offences (e.g. cheating, plagiarism) will be placed on disciplinary probation and will be subject to penalties which may include a grade of 0 on affected course elements, 0 on the course, suspension, and expulsion.

Appeals: A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

What does a grade mean? Students come to the University of Waterloo from a variety of backgrounds, where numeric grades may not be used, or have very different meanings. The following table gives a general definition for what type of work constitutes a particular grade. Please note that very good quality work typically merits a grade of between 70-79, with grades of over 80 being reserved for truly exceptional work.

Assigned Grades	Description
80-100	Grades in this category signal a sign of excellence and are not something that should be expected for work that simply meets the requirements of the assignment. In this category, a student has demonstrated a full understanding of the subject matter, has capacity to analyze, has demonstrated critical thinking, shows evidence of creative thinking, familiarity with literature and previous work in area, highly developed communication and presentation skills. The work is of outstanding quality according to the criteria established for evaluation.
70-79	Student has shown good comprehension of subject matter, evidence of critical and creative thought, familiarity with literature and previous work in subject area, competence in communication and presentation skills, but none of the above to the degree found in A category. The work is of very good quality according to evaluation criteria
60-69	Student has demonstrated some understanding of subject matter, can assimilate and communicate basic aspects of the subject matter. The work is of satisfactory or adequate quality according to evaluation criteria
50-59	Student has demonstrated minimal understanding of the subject matter, poorly developed communication skills, inability to apply subject matter understanding in other contexts, little evidence of critical or creative thinking. The work is of unsatisfactory but passable quality according to evaluation criteria.
0-49	Inadequate understanding of subject matter, failed to complete course requirements, no demonstration of critical thought, communication skills very poor. The work is clearly of unacceptable quality according to the evaluation criteria.