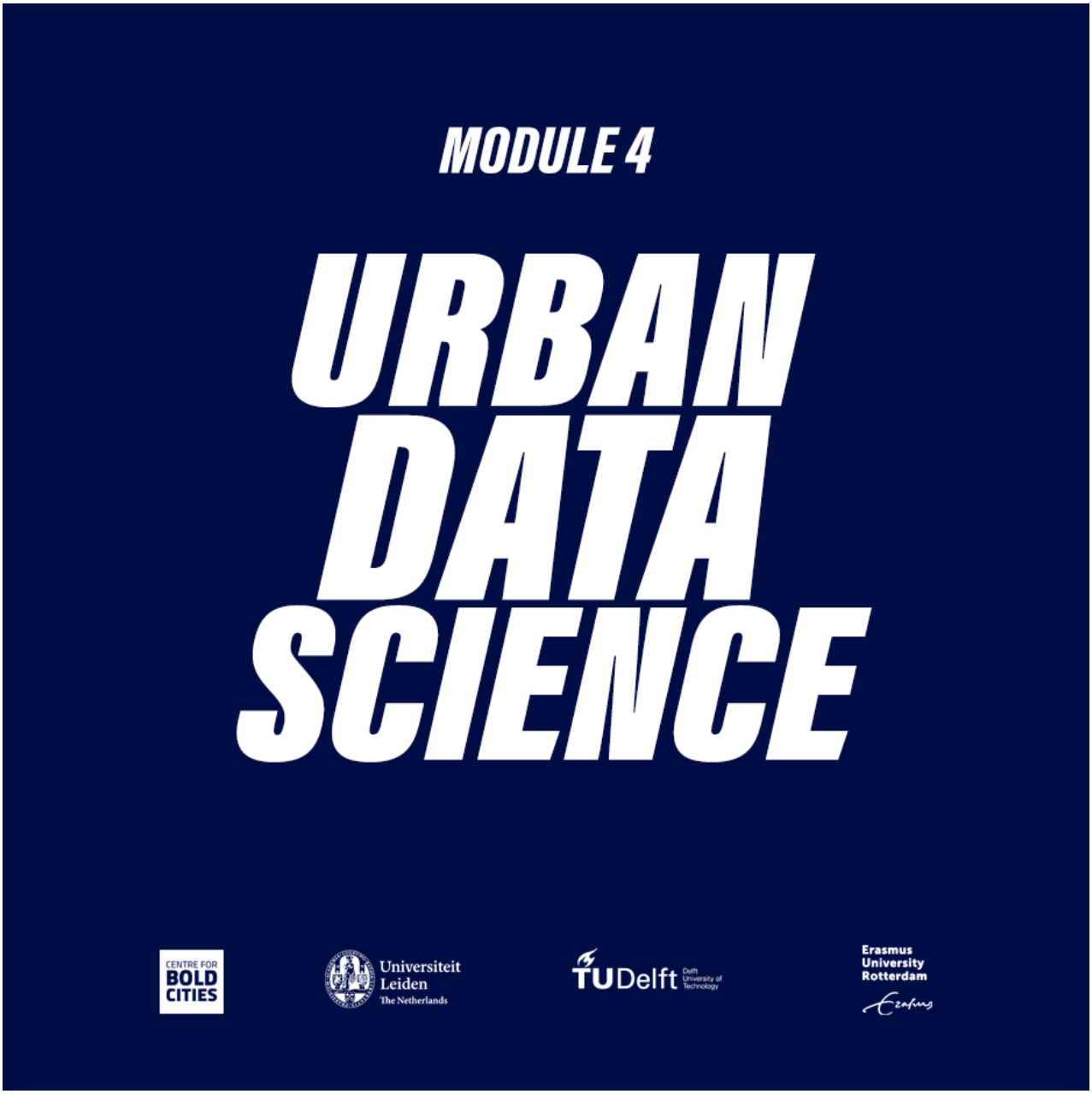

SYLLABUS

IO3819 – Urban Data Science (module 4) | 5ECs

Responsible Lecturer – Coordinator: Dr. Achilleas Psyllidis

Start Date: Nov 14, 2022 | **End Date:** Dec 23, 2022 | **Classes (at TU Delft campus):** Monday & Friday

Contents

1. General information

Responsible Lecturer – Coordinator

- Dr. Achilleas Psyllidis (a.psyllidis@tudelft.nl) — Delft University of Technology

LDE Minor Organization

- Merlina Slotboom (minorssc@essb.eur.nl) — LDE Center for BOLD Cities
- Sanne van Herwijnen (minorssc@essb.eur.nl) — LDE Center for BOLD Cities

Instructors

- Prof. dr. Alessandro Bozzon (a.bozzon@tudelft.nl) — Delft University of Technology
- Ir. Roos Teeuwen (r.f.l.teeuwen@tudelft.nl) — Delft University of Technology
- Ir. Vasileios Milias (v.milias@tudelft.nl) — Delft University of Technology

Invited Lecturers

- Prof. dr. Marjolijn Das (m.das@cbs.nl) — CBS & Erasmus University Rotterdam
- Edwin de Jonge (e.dejonge@cbs.nl) — Central Bureau of Statistics
- Jan van der Laan (dj.vanderlaan@cbs.nl) — Central Bureau of Statistics

Class schedule

- Course start date: Monday, November 14, 2022;
- Course end date: Friday, December 23, 2022;
- Classes (at TU Delft campus): every Monday & Friday at 09:30h
- Room: Mondays: **Hall U–Wim Crouwel (32.A-1-960)** | IDE Faculty
  Fridays: **Hall H (62.0.19)** | AE Faculty

Course resources

- Activities & assignments: https://canvas.eur.nl/courses/34800 (Canvas)
- Course Slack channel: io3819.slack.com

2. Course description

Urban Data Science (UDS) is the fourth of the five modules that, in total, comprise the "Smart & Shared Cities" minor program, offered by the Leiden-Delft-Erasmus university consortium. The aim of this minor is to introduce students to the different smart city concepts and the underlying complexity of modern cities through case-based education. The general learning goals concern

the connection of urban technologies and data science with citizen experience and multi-stakeholder governance.

Urban Data Science is a burgeoning interdisciplinary field that merges concepts, methods, and tools from computer science, spatial statistics, and urban planning for the analysis, planning, and management of cities. These methods and tools deal with accessing, collecting, processing, exploring, visualizing, and analyzing data about cities, in which the locational component plays a prominent role. The main learning goal of the UDS module is to introduce students to the variety of new forms of urban data sources (e.g., sensors, Internet of Things devices, social media, Web portals, mobile phones) used in city planning and governance, and to enable students to address urban challenges from a data-driven perspective. In the context of this module, students will become acquainted with and gain insight into the various urban data sources (conventional and novel). They will also familiarize themselves with the corresponding computational methods, analytical techniques, and tools that help make sense of the data.

The UDS module introduces students to the history of quantitative and computational approaches to cities and planning, and to a range of state-of-the-art computational methods and tools that are used in addressing and solving complex contemporary challenges relating to cities, from a data-driven/computational perspective. The module will also discuss various risks and limitations that derive from the use of novel urban data to help students design and develop fairer and more efficient urban strategies. Experts from organizations such as CBS (Central Bureau of Statistics) will also provide lectures.

Specific topics covered include a brief history of quantitative and computational approaches to cities and planning; types of novel and traditional urban data; urban statistics; social networks in cities; fundamental spatial analysis concepts and methods; crowd computing; and fundamentals of geographic information retrieval; along with practical tutorials on urban data collection and spatial analysis.

The module is designed to welcome and support students with different disciplinary backgrounds, without requiring any technical skills.

3. Learning Objectives

By the end of this course, you will be able to:

1. **Identify** new sources of spatiotemporal urban data, and ways to collect them;
2. **Compare** different types of urban data based on their characteristics;
3. **Select** appropriate sources of urban data to address problems of (smart) cities, relating to a range of application domains (e.g., public health, mobility, housing);
4. **Explain** and **discuss** applications of new forms of urban data in cities, as well as concepts and methods of spatial data collection and analysis;
5. **Explain** the risks, limitations, and ethical implications relating to the use of different (traditional and novel) urban data sources;
6. **Develop** a data-driven strategy for smart cities;
7. **Discuss** the opportunities, limitations, and ethical implications of the data-driven strategy for smart cities, as well as potential ways to resolve them.

4. Course outline*

WEEK 1 of 6 (Week 46)			
Date	**Time**	**Lecture | Activity**	**Lecturer**
Mon 14/11	09:30	Welcome & Introduction to Module 4: Urban Data Science	Achilleas Psyllidis
	10:15	From location theory to urban data science	Achilleas Psyllidis
	11:15	Introduction to the group and individual assignments	Achilleas Psyllidis
Fri 18/11	09:30	Open data and data portals	Achilleas Psyllidis
	10:45	New forms of urban data	Achilleas Psyllidis

WEEK 2 of 6 (Week 47)			
Date	**Time**	**Lecture | Activity**	**Lecturer**
Mon 21/11	09:30	Urban statistics	Marjolijn Das
	10:45	Social networks in cities	Edwin de Jonge Jan van der Laan
	11:45	Individual assignment (Part A): Q&A and feedback session	Achilleas Psyllidis
Fri 25/11	09:30	Fundamentals of Application Programming Interfaces Collecting OpenStreetMap data: Tutorial & use cases	Vasileios Milias Roos Teeuwen

WEEK 3 of 6 (Week 48)			
Date	**Time**	**Lecture | Activity**	**Lecturer**
Mon 28/11	09:30	Fundamentals of spatial analysis: Part I	Achilleas Psyllidis
	10:45	Individual assignment (Part B): Q&A and practice session	Achilleas Psyllidis Roos Teeuwen Vasileios Milias
Fri 02/12	09:30	Fundamentals of spatial analysis: Part II	Achilleas Psyllidis
	10:45	Practicing spatial analysis: GeoDa tutorial	Achilleas Psyllidis Vasileios Milias

WEEK 4 of 6 (Week 49)			
Date	**Time**	**Lecture | Activity**	**Lecturer**
Mon 05/12	09:30	**Group assignment: Mid-term presentation**	Achilleas Psyllidis
	12:30	Individual assignment (Part C): Q&A and feedback session	Achilleas Psyllidis
Fri 09/12	09:30	Crowd computing	Alessandro Bozzon

WEEK 5 of 6 (Week 50)			
Date	**Time**	**Lecture | Activity**	**Lecturer**
Mon 12/12	09:30	Geographic information retrieval	Achilleas Psyllidis
	10:45	Group assignment: Q&A and feedback session	Achilleas Psyllidis
Fri 16/12	09:30	Work on group & individual assignments (no lectures)	Online consultation

WEEK 6 of 6 (Week 51)			
Date	**Time**	**Lecture | Activity**	**Lecturer**
Mon 19/12	09:30	Work on group & individual assignments (no lectures)	Online consultation
Fri 23/12	09:30	**Group assignment: Final presentation**	Achilleas Psyllidis

* Regular breaks are accounted for, but are not listed in the outline. Session times are indicative and minor deviations may occur.

5. Group assignment

Developing a data-driven strategy for smart cities

5.1 Introduction

Together with your teammates, you form a team of city stakeholders working in a municipality (e.g., urban planners, policy makers, transport planners), where you want to develop a strategy regarding a specific societal problem (e.g., public health, mobility, sustainability, social cohesion), making use of the latest forms of urban data and technologies.

5.2 Learning objectives

This group assignment addresses the following learning objectives (LOs):

- **LO3: Select** appropriate sources of urban data to address problems of (smart) cities, relating to a range of application domains (e.g., public health, mobility, housing);
- **LO5: Explain** the risks, limitations, and ethical implications relating to the use of different (traditional and novel) urban data sources;
- **LO6: Develop** a data-driven strategy for smart cities;
- **LO7: Discuss** the opportunities, limitations, and ethical implications of the data-driven strategy for smart cities, as well as potential ways to resolve them.

5.3 Purpose

During this assignment, you will apply what you have learned in the course by solving a real-world problem for a smart city. The group assignment assesses several learning objectives and counts for **50%** of the final grade.

5.4 Resources

- General Slack channel, for asking questions and receiving feedback from the lecturers and/or peers;
- Slack channel for your group, where you can collaborate. The lecturers will also answer questions here.

5.5 Deliverables

To fulfill the requirements of the group assignment, your group is expected to deliver:

- **Part 1: Written report**
  - The report must describe the various aspects of the strategy (i.e., societal problem, selection of appropriate data sources, data-driven strategy, explanation of risks and limitations etc.);
  - Word limit between 4,000 and 5,000 words, including references.

- **Part 2: Two presentations (mid-term and final)**
  - For the mid-term presentation you will be given five (5) minutes to explain your strategy;
  - In the final presentation, you will be given ten (10) minutes in total.

5.6 Assessment criteria

You will be graded with the following rubric:

WRITTEN REPORT (90%)				
Levels (Points) / **Criteria**	**Excellent (9 – 10)**	**Very good (7 – 8)**	**Sufficient (5.5 – 6)**	**Insufficient (<5.4)**
Coverage of strategy aspects	• All strategy aspects given in the template are clearly covered; • The strategy is creative and innovative.	• All, or most, strategy aspects are covered with correct argumentation; • The strategy is somewhat creative and/or novel.	• The given strategy aspects are not covered in their entirety, or are covered with minor reasoning; • The strategy shows no or little creativity and novelty.	• None of the given strategy aspects are covered, or are insufficiently covered without proper reasoning.
Examples	• More than one example of risks, limitations, and ethical implications per data source is given; • Two (2) or more examples are provided in the reflection of the proposed strategy for each of the discussed aspects (i.e. opportunities, limitations, ethical implications). • The examples are clear and relevant.	• One example is provided per aspect and per data source; • Two (2) or at least one example(s) is provided for each of the aspects in the discussion/reflection. The examples are justified. • The examples are somewhat clear and relevant.	• The assessed aspects and data sources are not fully exemplified; • Not all requested examples are provided, or are not justified properly. They are barely clear and relevant.	• No or unclear or irrelevant examples are provided.
Data sources	• Three (3) or more data sources are discussed; • The selection is clearly justified.	• Three (3) or two (2) data sources are discussed; • The sources are somewhat suitable and the selection is justified.	• Less than three (3) data sources are discussed; • The sources and justification are barely suitable and clear.	• No data sources are selected or are unsuitable for the application domain; • No justification provided.
Discussion & reflection	• The opportunities and limitations of the proposed strategy are discussed and reflected upon in a clear, justified, and coherent fashion.	• All assessed aspects are discussed and reflected upon sufficiently, with somewhat coherent argumentation;	• Not all aspects are discussed properly or coherently, or the argumentation is borderline acceptable;	• Discussion of opportunities, limitations, and ethical implications is insufficient or not provided;
Referencing	• Ten (10) or more sources are cited, using the correct citation style	• Ten (10) references are provided with correct citation. A few might be somewhat relevant.	• Less than ten (10) sources are provided. A few might be irrelevant.	• No or irrelevant references are provided; • Incorrect citation style.

FINAL PRESENTATION (10%)				
Levels (Points) / **Criteria**	**Excellent (9 – 10)**	**Very good (7 – 8)**	**Sufficient (5.5 – 6)**	**Insufficient (<5.4)**
Argumentation	• Clear, coherent, justified argumentation regarding the assessed aspects (i.e. strategy, risks, limitations etc.), with abundance of material and related examples; • The presentation is logically organized, and the slides are error-free.	• The argumentation was clear and justified, yet some of the examples/material are not supportive of the arguments; • The presentation is logically organized, yet the transition flow is somewhat difficult to follow. Slides are error-free.	• The argumentation is not clear or properly justified, and most the examples/materials provided are not supportive of the arguments; • The presentation and transition flow are not logical and the conclusions are not clearly stated. Slides contained a few errors.	• No presentation given or the argumentation and material provided were unclear, ambiguous, unjustified, and/or irrelevant.
Participation	• Group members participate in a highly balanced way. Time allocation is perfect. Enthusiasm and confidence are exuded.	• Group members participate in a somewhat balanced way. Time allocation is not perfect. Not much enthusiasm and/or confidence.	• Some group members slightly participate or not at all. The content is not fully covered in the allotted time. Barely any enthusiasm and/or confidence.	• No or insufficient participation during the presentation (if given). No enthusiasm and/or confidence.

5.7 Instructions

Preparation: Form groups consisting of 3 or 4 students

- The LDE Minor Coordinator will assign you to groups of 3 or 4 students, which can be found on Canvas;
- Communicate any potential changes to the main lecturer by the end of Week 1 of this module (i.e., November 18, 2022);
- Allocate tasks and roles;
- Plan time for working together (include some milestones, and agree on what will happen if any of the group members do not keep to their deadlines).

Part 1: Written report

Include the following sections in your report:

- Define a societal problem and communicate this to the lecturer;
- Select appropriate data sources for your proposed strategy;
- Develop the various steps of your strategy;
- Explain and discuss the risks, limitations, and ethical implications of your proposed strategy.
- Include a Reference list with at least ten (10) sources;
- Use the American Psychological Association (APA) 7th citation style[1] for referencing.

[1] https://www.mendeley.com/guides/apa-citation-guide

Part 2: Presentations
Your presentations should address the following points:

- What problem do you want to address, and which domain (e.g., public health, mobility, sustainability) does it belong to?
- Which data sources did you choose and why?
- How is the proposed strategy relevant to the module?
- How is your strategy placed with respect to the state of the art (i.e., other related examples)?
- What are the risks, limitations, and ethical implications of your strategy?

Your presentations will be assessed by the lecturer and your fellow students. The role of the mid-term presentation, specifically, is to receive feedback and suggestions about your strategy to help you improve your proposal towards the final report/presentation. Use the feedback and suggestions to make improvements before the final presentation.

Only the final presentation will be graded, and it will amount for 10% out of the 50% of the entire group assignment.

5.8 Submission instructions

Submission deadlines:

- **Mid-term presentation**: on **December 5, 2022** (Week 49);
- **Written report**: on **December 23, 2022** (Week 51);
- **Final presentation**: on **December 23, 2022** (Week 51).

Submit all documents on Canvas in the **Group Assignment** section:

- The report must be in A4 PDF format, using the template provided in the section.
- You are allowed to submit the presentation either in PowerPoint (PPT) or PDF format.

6. Individual assignment

6.1 Introduction

The individual assignment comprises three parts (Parts A, B, and C) and has the form of an individual brief written report. Each of the parts focuses on a topic discussed during the course and gives you the possibility to familiarize yourself with it in further detail.

6.2 Learning objectives

The individual assignment addresses the following learning objective (LO):

- **LO4: Explain** and **discuss** applications of new forms of urban data in cities, as well as concepts and methods of spatial data collection and analysis.

6.3 Purpose

The goal of the individual assignment is to offer you the opportunity to deepen your knowledge of a select number of topics that you have been introduced to during the course. More specifically, the topics that each part focuses on are:

- **Part A:** Applications of new forms of urban data in cities;
- **Part B:** Spatial data collection with OpenStreetMap;
- **Part C:** Concepts and/or methods of spatial data analysis, with practical implementation.

The individual assignment counts for **50%** of the final grade.

6.4 Resources

- General Slack channel, for asking questions and receiving feedback from the lecturers and/or peers;
- Literature resources on Canvas.

6.5 Deliverables

To fulfill the requirements of the individual assignment, you are expected to deliver:

- A **written report** discussing the three parts listed in 6.3;
- You will briefly (A) discuss a real-world application of new forms of urban data in cities, (B) practice spatial data collection using OpenStreetMap, and (C) discuss a concept and/or method of spatial data analysis of your choice, supported by an example of practical implementation;
- Each of the three parts has a word limit between 800 and 1,000 words, excluding references. The entire report (combining the three parts) will, thus, be between 2,400 and 3,000 words, excluding references.

6.6 Assessment criteria

You will be graded with the following rubric:

INDIVIDUAL REPORT (Parts A, B, and C)				
Levels (Points) / **Criteria**	**Excellent (9 – 10)**	**Very good (7 – 8)**	**Sufficient (5.5 – 6)**	**Insufficient (5.4 or less)**
Coverage of topics	• A (real-world) use case, where at least one novel source of urban data is clearly described (Part A); • Data collection queries and resulting visualizations are clearly documented and reflected upon (Part B); • A concept or method of spatial data analysis is clearly described, and an example of practical implementation is illustrated (Part C); • All aspects of the given template are	• A (real-world) use case, where one novel source of urban data is clearly described (Part A); • Data collection queries and resulting visualizations are well-documented and some reflection is provided (Part B); • A concept or method of spatial data analysis is clearly described, and an indicative example of practical implementation is provided (Part C); • All aspects of the given template are	• A (real-world) use case, where one novel source of urban data is described in an incomplete fashion (Part A); • Data collection queries and resulting visualizations are incompletely documented and reflected upon (Part B); • A concept or method of spatial data analysis is described in an incomplete fashion, and the same applies to an example of practical	• The reported use case is irrelevant or does not make use of novel urban data sources (Part A); • Data collection queries and resulting visualizations are improperly documented and no reflection is provided (Part B); • A concept or method of spatial data analysis is either not clearly described or is irrelevant, and no or insufficient practical implementation is carried out (Part C);

Levels (Points) / Criteria	Excellent (9 – 10)	Very good (7 – 8)	Sufficient (5.5 – 6)	Insufficient (5.4 or less)
Coverage of topics	covered and well justified (All Parts); • Opportunities and limitations are clearly discussed, justified with examples, and compared to other sources/concepts /methods (All Parts);	covered and somewhat justified (All Parts); • Opportunities and limitations are discussed, but the used examples and potential comparisons with other related sources/concepts/ methods do not justify completely the reasoning (All Parts).	implementation (Part C); • Most aspects of the given template are somewhat covered and justified (All Parts); • Opportunities and limitations are somewhat discussed, yet the examples and potential comparisons with other related sources/concepts/ methods are borderline sufficient (All Parts).	• Discussion on opportunities and limitations is insufficient, unjustified and/or not compared to other relevant concepts/methods (All Parts).
Referencing	• At least two (2) references are provided in each part (All Parts); • The correct citation style is used.	• Two (2) references are provided in each part (All Parts); • The correct citation style is used.	• Less than two (2) references are provided in each part, or one or more parts lack sufficient number of references (All Parts); • The correct citation style is used.	• No references are provided in all or some parts (All Parts).

6.7 Instructions

First, you should communicate in advance the specific topic you will be delving into, relating to the themes addressed by each of the three parts, with the responsible lecturer through Slack. Indicative topics per theme will be provided by the responsible lecturer during classes. Also, relevant literature relating to each of the themes will be available on Canvas, as well as at an individual level, depending on the specific topic under study.

Your individual written report should address the following issues:

- Part A: Explain and discuss an application of new forms of urban data in cities
  - Select a (real-world) use case, where one – or more – novel sources of urban data have been used to address an issue relating to cities;
  - Read related literature on this use case and the data-driven approaches used in addressing it;
  - Explain and discuss the reason(s) behind using this particular source(s) of urban data within the context at hand – drawing from the reasoning of the authors in the corresponding literature – in addition to the main problem(s) addressed, the opportunities, and limitations, ideally compared to the use of other (novel or traditional) urban data sources within the same context. Use the given template on Canvas to organize your reasoning;

- Include a reference list citing at least two (2) references;
- Use the American Psychological Association (APA) 7th citation style for referencing.

- **Part B: Spatial data collection with OpenStreetMap**
  - Create a number of queries to collect spatial data from OpenStreetMap about a task provided by the lecturer;
  - Visualize part of the data you collected using Kepler;
  - Reflect on the data you collected. E.g., What does the data show? What more information do you need?
  - Document the data collection and visualization processes using indicative screenshots, accompanied by brief descriptions.

- **Part C: Explain and discuss a concept and/or method of spatial data analysis, and give an example of practical implementation**
  - Select a concept or method of spatial data analysis you would like to focus on;
  - Read related literature on this concept or method;
  - Explain the main characteristics of this concept or method, while also discussing its opportunities and limitations, potentially compared to other concepts or methods. Use the given template on Canvas to organize your reasoning;
  - Provide an indicative example of practical implementation of (a part of) the chosen concept or method (using GeoDa);
  - Include a reference list citing at least two (2) references;
  - Use the American Psychological Association (APA) 7th citation style for referencing.

6.8 Submission instructions

Submission deadlines:

- **Part A:** on Friday, November 25, 2022 (Week 47);
- **Part B:** on Friday, December 2, 2022 (Week 48);
- **Part C:** on Friday, December 9, 2022 (Week 49);

- **Individual written report:** the deadline for the final submission of the overall report, comprising Parts A, B, and C, in which you will also incorporate the feedback received on the individual parts, is on **Monday, December 19, 2022** (Week 51).

Submit your individual report on Canvas in the **Individual Assignment** section:

- The report must be in A4 PDF format, using the template provided in the section.

7. Course policies

7.1 General

- The course will be carried out at the **TU Delft campus**. On **Mondays**, course sessions will take place at the **Faculty of Industrial Design Engineering**, **Hall U – Wim Crouwel (32.A–1–960)**.

On **Fridays**, course sessions will take place at the **Faculty of Aerospace Engineering**, **Hall H (62.0.19)**;
- All communications with the responsible Lecturer and the Instructors should be addressed through the dedicated Slack channel: **io3819.slack.com**;
- Each student group will also have a dedicated sub-channel. The Lecturers will also provide feedback there, regarding the group assignment.
- Given the assignment-centric nature of the course, there will be **no re-sit** opportunity.

7.2 Grades
- The final passing grade will be in the range between **6.0** and **10**;
- No final marks are given between 5.0 and 6.0 and the following rounding rules are used: a 5.5 or higher is rounded to 6.0, and a 5.4 or lower is rounded to 5.0;
- Outside the 5.0 - 6.0 range, final marks are expressed as a number with one decimal;
- The final grade will be calculated as the **weighted average** of the grades achieved in the group and individual assignments;
- The group assignment counts for **50%** of your final grade. The grade of the group assignment will be calculated as the weighted average of the grade achieved in the written report (90%) and the final presentation (10%). You will be graded according to the rubric in Sect. 5.6 of the Syllabus;
- The individual assignment counts for **50%** of your final grade. You will be graded according to the rubric in Sect. 6.6 of the Syllabus;
- Penalties will apply for late submissions, as described in Sect. 7.3.

7.3 Assignment submission policy
Group and individual assignments must be handed in by **17:00h CET on the corresponding due dates** (see Sect. 5.8 and 6.8 for the group and individual assignments, respectively). No exceptions without medical certificate will be made. The following penalties will apply for late submissions:
- Late by 1 hour after the corresponding deadline: **10%** deduction from the grade;
- Late by 5 hours after the corresponding deadline: **30%** deduction from the grade;
- Late by 1 day after the corresponding deadline: **50%** deduction from the grade;
- Late by 5 days after the corresponding deadline: **70%** deduction from the grade;
- Late more than 5 days after the deadline: **zero** grade.

7.4 Attendance
- Attendance at all sessions (physically or online) is mandatory;
- Attendance at the group presentations sessions (mid-term and final) is also mandatory;
- Any absence, unless properly motivated, will result in a 0.5-point deduction from the individual final grade.

7.5 Academic honesty policy summary
To ensure fairness, you are advised to pay attention to the following rules and follow them strictly.

Introduction

In addition to skills and knowledge, TU Delft aims to teach students appropriate Ethical and Professional Standards of Conduct. The **TU Delft Code of Conduct**[2] and the **IDE Regulations**[3] exist to inform students and Faculty of their obligations in upholding the highest standards of professional and ethical integrity. All student work is subject to such code and regulations. Professional and Academic practice provides guidance about how to properly cite, reference, and attribute the intellectual property of others. Any attempt to deceive a faculty member or to help another student to do so will be considered a violation of this standard.

- Instructor's intended purpose
  The student's work must match the instructor's intended purpose for an assignment. While the instructor will establish the intent of an assignment, each student must clarify outstanding questions of that intent for a given assignment.

- Unauthorized / excessive assistance
  The student may not give or get any unauthorized or excessive assistance in the preparation of any work.

- Authorship
  The student must clearly establish authorship of a work. Referenced work must be clearly documented, cited, and attributed, regardless of media or distribution. Even in the case of work licensed as public domain or Copyleft (see: http://creativecommons.org/), the student must provide attribution of that work in order to uphold the standards of intent and authorship.

- Declaration
  Online submission of, or placing one's name on an exam, assignment, or any course document is a statement of academic honor that the student has not received or given inappropriate assistance in completing it and that the student has complied with the **TU Delft Code of Conduct** and the **IDE Regulations** in that work.

- Consequences
  An instructor may impose a sanction on the student that varies depending upon the instructor's evaluation of the nature and gravity of the offence. Possible sanctions include, but are not limited to, the following: (1) Assign a grade of zero to the assignment; (2) Assign a final insufficient grade to the course. A student may appeal these decisions according to the existing procedures. Multiple violations of this policy will possibly result in additional sanctions.

7.6 Inclusive education

To accommodate students with additional needs (e.g., various disabilities), you are required to register any disabilities you might have in advance. A message relating to this matter is also posted

[2] https://www.tudelft.nl/en/about-tu-delft/strategy/integrity-policy/tu-delft-code-of-conduct/
[3] https://www.tudelft.nl/en/student/ide/practical-affairs/education-rules-and-regulations

on Canvas. Students with any disabilities are further asked to inform the responsible Lecturer on time about their situation, so that he can explore possibilities for additional support. Examples of such provisions could be the use of alternative text or description in images (for students with impaired vision), the use of larger fonts in the handouts, or the provision of extra time for completing exams and assignments.

To help accomplish a learning environment that supports a diversity of thoughts, perspectives, and experiences and honors your identities (including race, gender, class, sexuality, religion, ability, etc.), please contact the responsible Lecturer:

- If you would like to be addressed with a set of pronouns and/or a name that differ from those that appear in the official records,
- If you feel like your performance in the class is being impacted by your experiences outside of the class,
- If you feel like your identity is not respected or that your thoughts and perspectives are judged based on your identity.

Mutual respect for each other's worldviews, thoughts, and identities is a prerequisite for the successful implementation of this course.