UNIVERSITY OF AMSTERDAM

Computational Social Science Analysis

Course Catalogue Number
75250084FY

Credits
6 EC

Entry requirements
The course is open to students of the Research Master Social Sciences. PhD students from the Amsterdam Institute for Social Science Research (AISSR) can also apply for this course.

This is an advanced course which will involve programming in Python. While knowledge of programming is not a formal prerequisite to enter the course, the course will cover substantial ground, and you are therefore strongly recommended to prepare by for instance following a (free) online course. See for instance https://www.codecademy.com/learn/python.

Instruction language
English

Time Period(s)
2023-2024, semester 2, block 5

Location
Lectures: Mondays 11:00-13:00
Workshops: Wednesdays 13:00-15:00
See for locations https://rooster.uva.nl.

Video recording Lectures – optional
The lecture will not be recorded.

Lecturer(s)
Dr. Petter Törnberg p.tornberg@uva.nl (course coordinator and lectures)
Luka Jansen l.j.jansen2@uva.nl (student assistant helping with any technical or practical queries.)

Learning Outcomes
After this course, you will be able to:
1. Articulate the foundational principles and significance of Computational Social Science (CSS) within the broader context of social science disciplines;
2. Demonstrate ability to use the Python programming language for basic computational tasks, including writing simple scripts and functions;
3. Extract clean data from real-world digital systems for computational analysis, using methods such as web scraping, APIs, and data cleaning;
4. Employ key analytical techniques such as Natural Language Processing (NLP), machine learning, and Social Network Analysis (SNA) effectively as part of a social scientific research project;
5. Evaluate the ethical considerations and challenges of computational research, focusing on data collection, analysis, and interpretation;
6. Plan a research project proposal that integrates well-formulated research questions, appropriate data sources, and outlines appropriate methods of analysis;
7. Write a coherent and clear research paper presenting the project findings that adheres to academic standards of writing and citation.

These learning outcomes relate to the following exit qualifications of the RMSS:

1. The graduate has acquired knowledge and understanding:
a) Of the theories and relevant research methods and techniques within the candidate's chosen methodological specialization;

2. The acquired cognitive and/or professional abilities enable the graduate to apply:
a) Theoretical, epistemological and methodological knowledge and insight to the formulation and resolution of scientifically and socially relevant research problems in a disciplinary, multidisciplinary and/or interdisciplinary context;
c) In-depth knowledge of and experience with advanced research methods and techniques relevant to a specific research problem;
g) Skills to think and work in a scholarly fashion at a level of achievement in accordance with an internationally recognized research MSc standard;

4. The graduate should be able to use the following communicative skills:
b) Independently present social science research findings both orally and in writing in English to the required scholarly standard, making use of theoretical insights relevant to the particular research problem under study;

5. The graduate has acquired the following learning skills:
b) A critical attitude and the analytical and research skills needed to qualify for a PhD study after graduation or to function on a professional level in research and policy departments of governmental and non-governmental organizations.

Course Content
Computational Social Science (CSS) is a burgeoning field that merges computational techniques and digital data with social science theories and methodologies to analyze and understand social phenomena. CSS offers students a multidisciplinary approach to studying human behavior through the lens of data and algorithms.

The RMSS course "Computational Social Science analysis" covers a variety of methods including social network analysis, natural language processing, Large Language Models, machine learning, and social simulation. By employing these computational tools, students learn to extract, process, and analyze large datasets derived from social media, digital archives, and other online platforms, enabling them to uncover patterns, trends, and insights about social dynamics in a way that traditional social science methodologies alone cannot achieve. This interdisciplinary approach not only broadens students' analytical capabilities but also prepares them for careers in academia, industry, and government, where the ability to analyze complex social data is increasingly in demand.

The course is focused on teaching you how to practically make use these methods, and offers a crash-course in how to write a social scientific research paper using CSS methods. The course mimics the academic process:
1. You will first write a proposal where you develop your project idea and research question.
2. You will then independently carry out a research project and write an academic paper.
3. Finally, you will peer-review two other papers, and your paper will receive two peer-reviews from your classmates.
4. After this, your will revise and submit your paper for final grading.

Teaching methods/learning formats
This course is project-based, and your grading will primarily be based on your independent research project. Your initial research paper idea will also be graded. In the final week, you will peer-review two other student projects, and your review will also be graded. Each week consists of one lecture, and one lab session. During the lab sessions, you work on practical examples and can discuss problems with the instructor.

Student Feedback & Adjustments of the Course
Since this course is being offered for the first time this year, we look forward to hearing your suggestions, and invite your feedback and input throughout the course.

Manner & Form of Assessment and Assessment Criteria (Participation/Attendance/Effort Requirements)
The assessment consists of the following elements (please look closely at the <u>instructions and assessment details</u> at the end of this document):

- 20% Peer-review
- 80% Research paper

The grade furthermore involves a mandatory pass/fail Research Proposal hand-in (see below).

The passing grade is a 5.5. The Rules and Guidelines for the Master's programme apply. Re-sits and re-writes are only possible for students who have taken part in the original examination or have submitted a paper at the original deadline. In case of extenuating circumstances, the student can request the Examinations Board for an exception. In event of a fail, the maximum grade in the resit is 7.

Research paper proposal
For the initial project proposal task, students are expected to draft a concise **one-page document** (A4, 11pt) outlining their proposed research project within the realm of Computational Social Science. It should include an introduction, research question, preliminary hypothesis or set of hypotheses, an outline of the computational techniques and data sources, and references to preliminary literature. The grading will be **pass/fail**. If the student fails, they will the chance to revise their document based on feedback from the instructor.

Peer review
After having finished the draft of their paper, every student will carry out peer reviews of two other student research paper. Your peer review should be **around 1 page in length** (A4, Times New Roman, 11pt). The grading will be 0-10 points.

Final research paper
Your project will have to be translated into a short research paper, written in the style of a scholarly journal article. This paper should **be 3000 ± 200 words in length** (including abstract and references) and clearly present the research gap, research question, the methodologies used, ethical considerations, and the findings you have drawn, and discussions of their implications. The grading will be 0-10 points.

You will hand in your assignments through Canvas.

Overview assignment deadlines

	Deadline date
Research paper proposal	2024-04-15 (before class begins; 10:59)
Research paper draft (to reviewers)	2024-05-21 (before noon; 11:59)
Peer-reviews	2024-05-24 (before midnight; 23:59)
Final research paper submission	2024-05-31 (before midnight; 23:59)
[Paper Resit/Repair]	2024-06-30 (before midnight; 23:59)

Attendance requirements

The RMSS has a strict attendance requirement. This means that students can miss 2 out of 12 meetings. Only in case of extenuating circumstances students can miss more classes. Be on time, the classroom door will remain shut after the class begins.

Students who are unable to attend a meeting need to inform the lecturer beforehand. Students who do not meet this requirement and are absent without a valid reason can be expelled from further participation.

If you are absent for reasons outside your control, please inform the lecturer.

Inspection/Perusal of exams/assignments, feedback

Grades will be released within 15 days after the deadlines. The research paper proposal will receive individual (oral and/or written) feedback. The research paper draft will receive peer feedback from two other students. Your peer feedback will in turn receive feedback in written form. Feedback on the final research paper will be provided in written form along with the grade.

Rules regarding Fraud and Plagiarism

Plagiarism of any kind will not be tolerated. Plagiarism not only involves the direct and intentional copying of existing texts without attribution, but is often the result of sloppy citation and referencing, or via self-plagiarism. Self-plagiarism is when students submit the same work for the fulfilment of multiple degree requirements. Electronic detection software will be used to detect plagiarism. In submitting a text, the student implicitly consents to the text being entered into the database of the detection programme concerned. More information about plagiarism and its consequences can be found in the UvA regulatory guidelines: https://student.uva.nl/en/topics/plagiarism-and-fraud

Use of AI-based writing tools

The recent year has seen the rise of AI-based writing and programming tools, such as ChatGPT. Making use of AI-based writing and programming tools to support your work is a more and more important professional skill; studies show that 92% of programmers today use AI tools in their work.

It is therefore important that you practice and learn to use these methods, and you are therefore allowed to use whatever tools you need to carry out your project. The use of AI tools is hence explicitly permitted in this course, both for writing code and to support your writing of the paper.

If you use AI tools in your work, we ask you to include a brief mention of this in the "Acknowledgement" section at the end of the paper, before the reference list. Specify which tool you used and how you used it.

However, while using AI tools is allowed, we advise you to be careful in being overly reliant on AI-based tools such as ChatGPT: unless carefully prompted and skillfully employed, ChatGPT will not generate material of sufficient quality to constitute a passing grade. You will still need to create and shape your paper and your code. Your writing must furthermore be in a consistent style. Mindlessly copy-pasting ChatGPT text is not a good strategy for passing this course. Instead, try to use these tools to support your own learning.

Please read the most updated UvA guidelines and make sure that you are compliant: https://student.uva.nl/en/topics/ai-tools-and-your-studies

Literature/materials

We will not follow a particular coursebook, but each lecture will come with recommended reading. The recommended readings for the lectures are optional but are important starting points for your project. The readings for each lecture will be available on Canvas.

As part of working on your individual project, it is your responsibility to identify and do the additional readings that you need.

Date Final Grade
The final grades will be available to students 15 working days after the submission of the final research paper at the latest. The final grades also need to be available at least 10 working days before a resit.

Programme

Week	Lecture	Workshop	Project work
1	What is Computational Social Science? + How to write a research paper	Introduction to Python programming	Programming homework and proposal writing
2	Acquiring Big Data: Scraping and APIs + Ethics & Law	Web Scraping and APIs in practice	Programming and proposal writing *continued*
3	Natural Language Processing and Text-as-data	Natural Language Processing in practice	Individual project work
4	Natural Language Processing 2: Large Language Models and Social Network Analysis	Large Language Models for text analysis and Social Network Analysis in practice	Individual project work
5	Machine Learning in the social sciences	Machine Learning in practice	Individual project work
6	Agent-Based Modeling and Online Experiments	Agent-Based Modeling in practice, and Project Support	Individual project work

WEEK 1 [1-5 April]

Lecture: What is Computational Social Science? + How to write a research paper (April 3)
This lecture will provide a feeling for what Computational Social Science is and situate it within other social scientific disciplines. We will discuss "Big Data" and how it is different from traditional qualitative and quantitative social science data. You will also get an overview of the methods that exists within CSS, what they can do, and get some first inspiration on what your course project can be. The lecture will also discuss the research project that you will carry out in this course, and provide practical guidance on how to write a research paper. How to find a research question? How to identify and read relevant research? How do you tell a story through a research paper? How to write your research proposal? How do you structure your work?

Workshop: Introduction to Python programming (April 5)
This workshop provides a first introduction to Python programming. During the first two weeks, you will be working on a Python notebook for basic Python programming.

Project work: Programming homework and proposal writing
During the first two weeks, you will be working intensely on your research proposal, while also working through a Python programming course. You will receive individual support from the instructor in relation to the workshop.

Recommended readings:

1. Lazer, D. M., Pentland, A., Watts, D. J., Aral, S., Athey, S., Contractor, N., ... & Wagner, C. (2020). Computational social science: Obstacles and opportunities. *Science, 369(6507), 1060-1062*. https://www.science.org/doi/full/10.1126/science.aaz8170

2. Törnberg, P., & Uitermark, J. (2021). For a heterodox computational social science. *Big Data & Society, 8(2)*. https://doi.org/10.1177/2053951721104772

3. Schimel, J. (2012). *Writing science: how to write papers that get cited and proposals that get funded*. OUP USA.

WEEK 2 [8-12 April]

Lecture: Acquiring Big Data: Scraping and APIs + Ethics & Law (April 8)
This first half of this lecture gives an introduction to the process of acquiring digital data for social science research from various online sources. We focus on existing data sources, explore APIs, and webscraping. We will also discuss data cleaning and preparation.

The second half of the lecture focuses on ethical considerations and legal frameworks that govern the collection, analysis, and dissemination of digital data. The lecture focuses on practical skills, such as applying for an IRB review, discuss ethics in a research paper, and complying with GDPR.

Workshop: Web Scraping and APIs in practice (April 10)
In this workshop, we will learn to scrape data. We will first go through coding examples for web scraping. You will be provided with code that you can adapt to your individual project.

Project work: Programming and proposal writing *continued*

Recommended readings:

1. Salganik, M. J. (2018). *Bit by bit: Social research in the digital age*. Princeton University Press. [Chapter 6: Ethics.] https://www.bitbybitbook.com/en/1st-ed/ethics/

2. "GDPR and Research – An Overview for Researchers". UKRI. - https://www.ukri.org/wp-content/uploads/2020/10/UKRI-020920-GDPR-FAQs.pdf

3. New York Times. "The Secretive Company That Might End Privacy as We Know It". 2020. https://www.nytimes.com/2020/01/18/technology/clearview-privacy-facial-recognition.html

WEEK 3 [15-19 April]

Deadline 1: [2024-04-15] Hand in research project plan.

Lecture: Natural Language Processing (April 15)
The lecture will give an overview of Natural Language Processing: from text preprocessing, vectorization, to a wide array of NLP techniques, ranging from sentiment analysis to named entity recognition, topic modeling, and machine learning approaches. The focus is on how the methods can be practically employed and be used to answer social scientific research questions.

Workshop: Natural Language Processing in practice (April 17)
We will go through a series of important NLP methods and use them to analyze an example dataset.

Individual feedback meeting (optional): Students can this week schedule an individual feedback meeting to discuss their project plan.

Project work: Students will work on their individual projects.

Recommended readings:

1. Norman Fairclough. (1984) *Language and Power* (Introduction: critical language study)

2. Hobson Lane, Cole Howard, Hannes Hapke (2023) *Natural Language Processing in Action: Understanding, analyzing, and generating text with Python*. Manning

3. Daniel Jurafsky and James H. Martin. 2024. *Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition.* https://web.stanford.edu/~jurafsky/slp3/ed3bookfeb3_2024.pdf

WEEK 4 [22-26 April]

Lecture: Natural Language Processing 2: Large Language Models and Social Network Analysis (April 22)

This first half of this lecture will continue the previous week's focus on NLP, by going into the recent use of Large Language Models for versatile and powerful text analysis. The project will introduce the method and outline best practices for their application. The second half of the lecture will focus on Social Network Analysis: a methodological approach that examines the patterns of relationships and interactions among social entities. This session is designed to introduce students to the fundamental concepts and tools of SNA, including network theory, metrics for analyzing network structures (such as centrality, density, and clustering coefficients), and the visualization of complex social networks.

Workshop: Large Language Models and Social Network Analysis in practice (April 24)

In this workshop, we will go through code on how to use LLMs for text analysis. We will also learn how to use Gephi and networkx for social network analysis.

Project work: Students will continue work on their individual projects.

Recommended readings:

1. Petter Törnberg. 2023. How to use LLMs for Text Analysis. *Arxiv.* https://arxiv.org/abs/2307.13106

2. Petter Törnberg. 2024. Best Practices for Text Annotation with Large Language Models. *Arxiv* https://arxiv.org/abs/2402.05129

3. John Scott. 2011. Social Network Analysis: Development, Advances, and Prospects. *Social Network Analysis and Mining.* https://link.springer.com/article/10.1007/s13278-010-0012-6

4. Mustafa Emirbayer. 1997. Manifesto for a Relational Sociology. *American Journal of Sociology.* https://doi.org/10.1086/231209

5. Johan Ugander, Brian Karrer, Lars Backstrom, Cameron Marlow. 2011. "The Anatomy of the Facebook Social Graph". arXiv. https://arxiv.org/abs/1111.4503

6. Soroush Vosoughi, Deb Roy, Sinan Aral. 2018. "The spread of true and false news online". Science. http://doi.org/10.1126/science.aap9559

7. John Scott. 2012. *What is Social Network Analysis?* https://library.oapen.org/bitstream/handle/20.500.12657/58730/1/9781849668200.pdf [For those interested in going deeper.]

WEEK 5 [6-10 May]

Lecture: Machine Learning in the social sciences (May 6)

This lecture focuses on machine learning and the many ways in which it can be employed in the social sciences. The discussion begins with a foundational overview of machine learning — from supervised and unsupervised learning to state-of-the-art deep learning — and proceeds to illuminate how these algorithms can be employed to identify patterns, predict outcomes, and provide insights in vast datasets that were previously unmanageable for human researchers.

Workshop: Machine Learning in practice (May 8)

In this workshop, we will go through code that shows how machine learning can be used in practice in the social sciences.

Project work: Students will continue work on their individual projects.

Recommended readings:

1. Molina, M., & Garip, F. (2019). Machine learning for sociology. *Annual Review of Sociology*, *45*, 27-45. https://www.annualreviews.org/doi/abs/10.1146/annurev-soc-073117-041106

2. Grimmer, J., Roberts, M. E., & Stewart, B. M. (2021). Machine learning for social science: An agnostic approach. *Annual Review of Political Science*, *24*, 395-419. https://www.annualreviews.org/doi/abs/10.1146/annurev-polisci-053119-015921

3. James, G., Witten, D., Hastie, T., Tibshirani, R., & Taylor, J. (2023). *An introduction to statistical learning: With applications in python*. Springer Nature.

WEEK 6 [13-17 May]

Lecture: Agent-Based Modeling + Online Experiments (May 13)
The first half of this lecture will focus on Agent-Based Modeling: a way of simulating social systems to identify the link between individual behavior and macro-level outcomes.
    The second half the lecture will focus on online experiments, in which we build platforms to examine how specific interventions shape behavior.

Workshop: Agent-Based Modeling in practice, and project support (May 15)
This session will focus on implementing a simple Agent-Based model – the Schelling segregation model – and analyze its dynamics and implications.

Project work: Students will continue work on their individual projects.

Recommended readings:

1. Schelling, T. C. (1971). Dynamic models of segregation. *Journal of mathematical sociology*, *1*(2), 143-186. https://www.tandfonline.com/doi/abs/10.1080/0022250X.1971.9989794
2. Conte, R., & Paolucci, M. (2014). On agent-based modeling and computational social science. *Frontiers in psychology*, 5, 668.
3. Petter Törnberg, Diliara Valeeva, Justus Uitermark, Christopher Bail. (2023) Simulating Social Media Using Large Language Models to Evaluate Alternative News Feed Algorithm. *Arxiv*. https://arxiv.org/abs/2310.05984
4. Salganik, M. J. (2018). *Bit by bit: Social research in the digital age*. Princeton University Press. [Chapter 4: Running experiments.] https://www.bitbybitbook.com/en/1st-ed/running-experiments/
5. Salganik, M. J., Dodds, P. S., & Watts, D. J. (2006). Experimental study of inequality and unpredictability in an artificial cultural market. *Science*, 311(5762), 854-856. DOI: http://doi.org/10.1126/science.1121066

Deadline 2: [2024-05-21; before noon; 11:59] Project draft deadline.

Deadline 3: [2024-05-24; before midnight; 23:59] Peer review feedback deadline

Deadline 4: [2024-05-31; before midnight; 23:59] Final project hand-in deadline.

Instructions and assessment details

1. Instructions for Research Paper Proposal

Before you embark on your research project, it is essential to make a plan. Your first task in the course is therefore to write a project proposal that outlines your research idea.

The primarily goal of this exercise is to make sure that you have an appropriate, feasible, and interesting project idea.

For the initial project proposal task, students are expected to draft a concise one-page document outlining the framework of their proposed research project within the realm of Computational Social Science. This document should begin with a clear and engaging introduction to the chosen topic, highlighting its relevance and potential contribution to the field. Following this, students must articulate a well-defined research question that guides the inquiry of their project. This question should be both specific and feasible, reflecting an understanding of the topic's scope and the computational methods and data available for exploration. Additionally, the proposal may include a preliminary hypothesis or set of hypotheses, offering initial predictions or expected outcomes based on current knowledge and theoretical considerations. The proposal must also outline the computational techniques and data sources the students plan to utilize, demonstrating how these methods align with the objectives of the research question.

In structuring the project proposal, students should ensure clarity and coherence in their writing, presenting their ideas logically and persuasively. The proposal is not just a formality but a foundational step in the research process, serving as a roadmap for the project's development. It should succinctly convey the significance of the project, the approach to tackling the research question, and the anticipated findings. To support their proposals, students are encouraged to reference preliminary literature that frames their research within existing scholarship. This task is an opportunity for students to lay the groundwork for a successful project.

Length: max 1 page (A4, 11pt)

Grading: The grading will be pass/fail. If you fail, you will get the opportunity to revise your plan based on feedback from the instructor.

In week 3, we will meet individually for feedback on your project proposal, and to guide your continued work.

2. Instructions for Computational Social Science Research Paper

In this course, you are tasked with carrying out a research project using Computational Social Science (CSS) methods. The culmination of your project will be a short research paper, written in the style of a scholarly journal article. This paper should **be 3000 ± 200 words in length** (including abstract and reference list, but NOT including the response to the peer-reviews; see below) and clearly present the research you conducted, the methodologies used, and the findings you have drawn. This project is an opportunity for you to delve into an area of interest within computational social science and demonstrate your ability to conduct and communicate research effectively.

The paper represents 80% of the final course grade.

The project is designed to mimic the academic process as closely as possible.

Other than the word length guidelines, write your paper aimed for the journal "Journal of Computational Social Science":

Journal submission guidelines: https://link.springer.com/journal/42001/submission-guidelines

Journal aims and scope: https://link.springer.com/journal/42001/aims-and-scope

You are allowed to draw on any approach in your article: your paper does not need to be "typical" CSS paper but can be qualitative or quantitative. However, as outlined in the aims and scope, the journal only accepts papers that use some CSS-style methods or data, so there needs to some central element of use of the methods that we have discussed during this course. For instance, you can carry out a sentiment analysis on YouTube comment data, and then either feed the result into a statistical model or use it for a qualitative-style interpretive analysis. Be creative! However, your approach needs to be clearly specified in your paper, and your paper needs to be written in an appropriate manner.

Tip: look at similar research papers published in academic journals and see how they are structured and how they make their argument. Be conscious of your audience and communicate your approach so as to situate your paper in a research field.

Sections of the Paper:

You do not need to use the headers below, but the paper should follow the following general structure.

1. **Title and Abstract**
   - **Title:** Concise and descriptive.
   - **Abstract:** 150-250 words summarizing the research question, methodology, results, and significance.
2. **Introduction**
   - Present the research question and its importance.
   - Briefly review relevant literature.
   - State the objectives of your research.
3. **Methodology**
   - Describe the CSS methods used, including data sources, analytical tools, and processes.
   - Justify your choice of methodology.
   - One or two paragraph discussing and motivating the **ethics** of your approach.
4. **Results**
   - Present your findings in a clear, logical order.
   - Use appropriate visuals (graphs, tables) where necessary.
   - Interpret the results in a concise manner.
5. **Discussion**
   - Interpret your findings in the context of the research question and literature review.
   - Discuss limitations and potential biases in your study.
   - Suggest areas for future research.

6. **Conclusion**
   - Summarize key findings and their implications.
   - Relate back to the objectives stated in the introduction.
7. **References**
   - Include all sources cited, following a standard academic format (e.g., APA, MLA).
8. **Appendices (optional)**
   - Include supplementary material that is relevant but not integral to the main text.
9. **Response to peer-reviews**
   - The final section should include a half-page section in which you respond to the comments from the peer-reviewers.

Response to Peer-Reviews

As part of your final paper submission, it's essential to include a detailed response to the peer-review comments you received on your initial draft. This response should not only acknowledge each comment but also explain how you addressed it in your final revision. For comments you chose not to incorporate, provide a brief explanation for your decision. Structure your response clearly by describing each reviewer's comment followed by your reply. This process demonstrates your engagement with the feedback and your commitment to improving your work based on peer insights. This thoughtful reflection and revision based on peer feedback are crucial elements of the scholarly writing process and contribute significantly to the quality of your final paper. It's crucial to respond to the reviewers in a respectful and considerate way that acknowledges their perspectives and the significant work that they invested in helping you improve your paper.

Length: The peer-review response should be between **500-600 words long.**

Detailed Instructions:

- **Research Topic:** Ensure that your topic is feasible given the time frame and resources available.
- **Data and Analysis:** Your project should demonstrate the ability to collect, analyze, and interpret data using CSS methods. Emphasize data-driven insights.
- **Writing Style:** Use clear, concise academic prose. Avoid jargon unless necessary and provide explanations for specialized terms.
- **Format:** Follow the guidelines of a specific academic journal in your field in terms of style, citation, and formatting.
- **Originality:** Your work must be original. Plagiarism will result in a failing grade and reporting to the Academic Integrity Committee.
- **Collaboration:** While collaboration and discussion are encouraged in the research phase, the paper must be written individually.

Note: Write as accessibly as possible. In the real world, papers are often reviewed by researchers with limited time and focus. While your experience as a student may have been that writing using complex language produces better grades, this strategy will rarely work in the real world, and it will not work in this course. Research papers must be written **as clearly and simple as possible**. If the reviewer or grader struggles to understand some aspect of it, your paper will receive a poor grade. When you peer-review in this course, make sure that you actually understand what the author is trying to get across.

Grading Criteria:

- **Clarity and coherence (20%):** The paper should be well-organized, with a logical flow of ideas.
- **Research and analysis (20%):** Depth of research, appropriateness of CSS methods, and analysis of data.
- **Interpretation of results (20%):** How well you interpret and discuss your findings.
- **Writing quality (15%):** Grammar, clarity, and adherence to journal style.
- **Overall impact (10%):** Originality, contribution to the field, and the practical significance of your findings.
- **Response to reviewers (15%):** Convincing response to reviewers and appropriate revisions of the paper to address issues that they raise.

Submission:

Draft:

You will first submit a draft of your paper for peer-review from fellow students. This draft should be in a readable and complete state to enable useful peer-review.

- **Deadline:** 2024-05-21 (before noon; 11:59)
- **Format:** Submit via Canvas. The file format should be PDF or DOCX.
- **Late Submissions:** Late paper submission is not accepted, since it will not leave time for the peer review process. *Don't wait until last minute! Submit well on time!*

Final submission for grading:

- **Deadline:** 2024-05-31 (before midnight; 23:59)
- **Format:** Submit via Canvas. The file format should be PDF or DOCX.

When submitting your final version, you must also submit the code and data used in the project. This is standard when submitting research papers for publication. Please upload this on a code sharing page such as Github, and provide the URL in your paper.

3. Instructions and Advice for Student Peer-Reviewing

After having finished the draft of our paper, every student will carry out peer reviews of two other student research paper. You will have to submit your peer-review by **2024-05-24 (before midnight; 23:59).**

The peer review process is essential in academic research. It ensures the quality, validity, and significance of the research. As a peer reviewer, your role is to critically analyze and provide constructive feedback on the research paper, helping the author improve their work.

Your peer-review is anonymous.

Your peer reviews will be graded and will account for 20% of your total final grade. Your peer review should be **around 1 page in length** (A4, Times New Roman, 11pt).

Your chief goal of this peer review is to provide the author with feedback on how they can best improve their paper. Your peer review will be graded on the extent to which it helps improve the paper, based on the criteria and advice outlined below. The grading will be 0-10 points.

Review Process

1. **Look at the paper grading criteria and journal guidelines:** Your role is to evaluate the paper on the basis of the course's grading criteria. It's therefore important that you look at the specific grading criteria and try to put yourself in the shoes of the professor. To do so, make sure to re-read the course grading criteria.
2. **Initial Reading:** Skim the paper to get an overall sense of its structure, argument, and main points.
3. **Detailed Reading:** Read the paper thoroughly. Take notes on major points, strengths, and areas needing improvement.

Evaluation Criteria

Look at the evaluation criteria and instructions for the research paper and use this as starting point for your peer review. Try to put yourself in the role of the grader and use this lens to provide constructive and kind feedback that will help the author get as high grade as possible on their paper. The ability of putting yourself in the role of an evaluator is a key skill in almost any job and will help you become better at your future academic or professional role.

1. **Content and Originality:**
   - Is the research topic relevant and original?
   - Does the paper contribute new knowledge or insights to the field?
2. **Structure and Organization:**
   - Is the paper well-organized with a clear introduction, methodology, results, discussion, and conclusion?
   - Are the arguments logically structured and easy to follow?
3. **Methodology:**
   - Are the methods used appropriate and well-explained?
   - Is the data analysis rigorous and valid?
4. **Ethics:**
   - Are sufficient ethical considerations made? Are the ethical dimensions of the data and methods employed sufficiently discussed?
5. **Results and Discussion:**
   - Are the results presented clearly and supported by data?
   - Does the discussion provide an accurate interpretation of the results?
6. **Style and Writing Quality:**
   - Is the writing clear, concise, and free of grammatical errors?
   - Are technical terms and jargon used appropriately?
   - **Note:** If you struggle to understand anything in the paper, consider this an issue with the paper. As a reviewer, it is your task to point out if the paper is unclear or hard to read.

7. **References:**
   - Are sources cited appropriately and relevant to the research?

Providing Feedback

Your task is to articulate criticism and feedback in a way that is helpful, constructive, and empathetic – a valuable skill both inside and outside academia. Constructive feedback helps authors understand the strengths and weaknesses of their work more clearly. It goes beyond merely pointing out flaws, but seeks to provide specific, actionable suggestions that can guide authors to improve their research.

1. **Be Constructive:** Offer both positive feedback and constructive criticism. Suggest concrete ways to improve the paper.
2. **Be Specific:** Provide specific examples from the paper when giving feedback. Avoid vague comments. Be specific about what can be improved and how. Example: Instead of saying "The methodology section is weak," suggest "The methodology section could be strengthened by providing more details on data collection procedures."
3. **Be Objective:** Focus on the content and quality of the paper, not on the author.
4. **Balance the Positive and the Constructive:** Ensure your feedback is balanced. Too much criticism can be disheartening, while only positive feedback may not be helpful for improvement. Aim for a constructive tone that motivates the author to make improvements.
5. **Focus on the Content and Structure:** Address key aspects such as clarity of argument, coherence of the narrative, adequacy of the evidence, logical flow, and relevance of the conclusions. Suggest reorganizing sections if the flow of the paper is disrupted.
6. **Comment on the Writing and Presentation:** Provide feedback on the clarity of the writing. Suggest where simplifying jargon, rephrasing sentences, or correcting grammatical errors would be beneficial. Encourage adherence to academic standards and formatting guidelines.
7. **Refer to the Guidelines and Criteria:** Refer to specific guidelines or assessment criteria for the paper in your feedback. Point out where and how the paper could better meet these criteria.
8. **Be open and respectful to diverse perspectives and ways of thinking**: Research takes many forms, and there are many right ways of doing things. Be careful to not confuse your preferred way with the right way.

Writing the Review

1. **Summary:** Start with a brief summary of the paper and your overall impression.
2. **Major Issues:** Highlight any major issues that need addressing.
3. **Minor Issues:** Point out minor issues such as typos, formatting errors, or unclear sentences.
4. **Final Thoughts:** Conclude with your overall assessment.

Post-Review

- **Submission:** Submit your review within the agreed timeline.
- **Follow-Up:** Be prepared to discuss your review with the "editor" or provide further clarification if needed.

While peer-reviews in the real world decide whether the paper will get published or not (e.g., "reject", "major revisions", "accept"), all papers in this course will naturally be "revise & resubmit". You do not need to provide a grade on the paper or a recommendation for publication.

Remember, your role as a peer reviewer is to help the author improve their work. Your thorough, fair, empathetic, and constructive feedback is invaluable in maintaining the integrity and quality of academic research. The author should feel empowered and supported to improve their paper.

Note: The presence of any unkind, harsh, unrespectful, or unconstructive language is the fastest way to a failing grade on this task.

<u>Submission</u>

- **Deadline:** 2024-05-24 (before midnight; 23:59)
- **Format:** Submit via Canvas. The file format should be PDF or DOCX.