university of groningen

Center for Information Technology
Faculty of Behavioural and Social Sciences
Campus Fryslân

Data Wise:
Data Science in Society

Course Guide 2019 - 2020

Course code: MIDW
Academic Year 2019-2020
September – February
Credits: 30 EC

Content

Practical Information

Introduction

Datafication, the growing production and use of digital data, plays an increasingly prominent role in society. Scientists, journalists, politicians, policy makers, and governmental institutions all make use of 'big data' and 'data-driven approaches' to understand our society and to shape our daily lives. From sports to healthcare, from business to biology data and data infrastructures are overwhelmingly present in all these spheres.

The minor Data Wise focuses on knowledge about data and on skills to critically evaluate, shape and work with data. Specifically, it will improve the students' employability since data science skills are increasingly listed as requirement or preferred skills in vacancies for university graduates. Furthermore, nearly all professionals need to have affinity with data and related processes in the course of their work.

Data Wise is a university minor meaning that it is open to all students from this university (as well as to exchange students). Many disciplines and institutions contribute to this minor, including the department of Sociology, the Center for Information Technology, Campus Fryslân, the Faculty of Arts, and the UMCG.

Learning outcomes / Course objectives

Students who complete the minor will

- understand how data practices influence our lives, positively and negatively, and shape society
- acquire the conceptual and practical skills to collect, analyze, and report on this potentially enormous source of information and to do their work responsibly
- critically evaluate and participate in "big data"/data-driven projects
- be able to pursue their careers in settings where data and data infrastructures intersect with their domain expertise and activities

Didactic approach

Interdisciplinary, project-based learning

Because interdisciplinarity, interaction and awareness of real-world contexts are key to the kinds of learning needed, the core of the minor is a group project on which students work for a period of four months. These real-world projects come from a diversity of stakeholders from research, business, government or civil society. By the end of the minor, students will have a highly desirable profile: team players who are able to collaborate with data scientists, making real contributions to responsible and innovative use of data.

Admission requirements

For information about following a minor at the University of Groningen, please see https://www.rug.nl/education/courses/minor/ .

Data Wise is a university minor meaning that it is open to all students from this university (as well as to exchange students). For this minor in particular, the following further holds: the elective courses are also open to students who will not do the entire Data Wise curriculum. Individual lecturers may

determine the maximum number of students per course. In case that the number of registrations exceeds this maximum number, students who follow the entire curriculum of the minor will be given preference over those who do not.

Participation

Students are expected to participate actively in class. This includes active preparation and reflection through close reading on all literature, critical and in-depth engagement with these materials in class, and active participation, active listening and giving constructive commentary and feedback on ideas of others. Use only the media you need to follow the class and practice active listening and active participation, including not distracting yourself and others through (social) media use.

Assessment and successful completion of minor

To successfully complete this minor, you will need to have successfully completed all mandatory courses (Introduction to Data, Dynamics of multi-disciplinary teamwork, and Collaborative Data Project) and three of the six elective courses. Courses are assessed differently.

Nestor

All materials for the courses will be placed on Nestor, including the schedule and course manual. Nestor will be the primary mode of communication about the courses. If you have a question, there are many answers to be found in the documents on Nestor.

Attendance & Absence

Attendance requirements will be specified for each of the courses by the course coordinator. Absence should be communicated to the coordinator of the course. In the group project, attendance to scheduled group sessions and to sessions planned by the group itself is mandatory. Missing several mandatory sessions within a course or project may lead to exclusion.

Cheating and plagiarism

Cheating and plagiarism are academic offences, with severe consequences. They are acts or omissions by students to partly or wholly hinder accurate assessment. As per the Teaching and Examination Regulations, cases of cheating and plagiarism are reported to the Exam Board, which will decide upon the consequences. NB: all assignments may be automatically checked on plagiarism.

Contact information

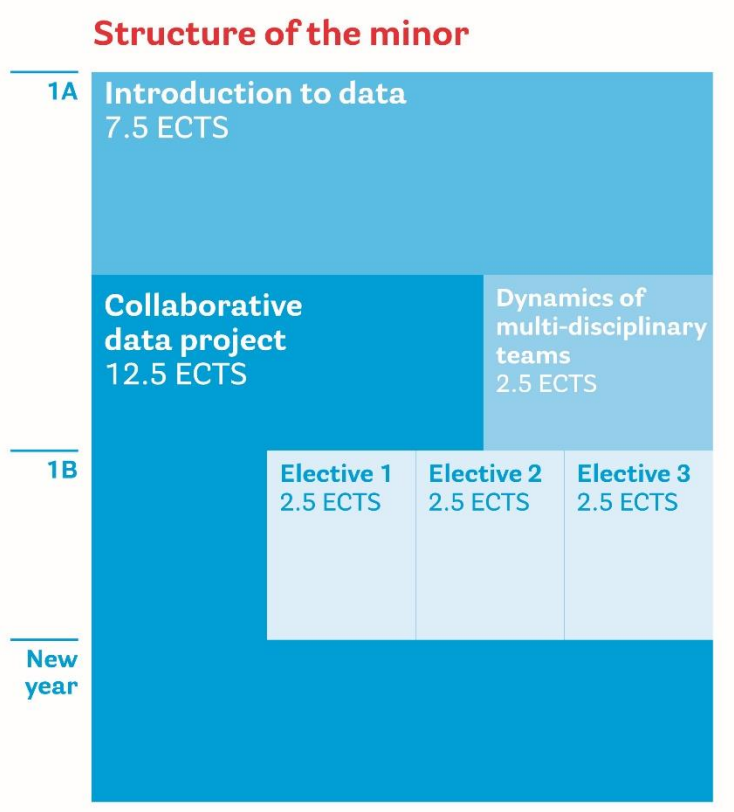
Coordinators	J.A. Beaulieu j.a.beaulieu@rug.nl	G. Stulp g.stulp@rug.nl
Secretariat	J. van Geffen j.van.geffen@rug.nl 050-3634766	

Overview of Courses

Brief overview program

At the core of the minor is a data project. In this project, students will learn how to tackle complex questions by working in an interdisciplinary team for four months. The projects come from a diversity of partner organisations, from research, business, government or civil society. The courses “Introduction to Data” and “Dynamics of Multi-disciplinary Teams” prepare students to delve into your data project and work in teams. Students can shape the minor to fit your own interests and to further develop your expertise by choosing three out of these six elective courses.

Course structure



Schedule

The schedule of the curriculum can be found on: https://rooster.rug.nl/#/nl/2019-2020/programme/SODW

List of Courses

Course	(Progress) code	ECTS	Mandatory / Elective	When
Collaborative Data Project	SOMIN02	12,5	Mandatory	Semester I
Introduction to Data	SOMIN01	7,5	Mandatory	Semester I a
Dynamics of multi-disciplinary teamwork	SOMIN03	2,5	Mandatory	Semester I a
Data as evidence	SOMIN04	2,5	Elective	Semester I b
Introduction to Programming	SOMIN05	2,5	Elective	Semester I b
Opinion dynamics on the Internet	SOMIN06	2,5	Elective	Semester I b
Fundamentals of Machine Learning: Theory and Practice	SOMIN07	2,5	Elective	Semester I b
Data in Practice. A journey through the whole data life cycle	SOMIN08	2,5	Elective	Semester I b
Data visualization	SOMIN09	2,5	Elective	Semester I b

Students have to choose three out of six elective courses.

Course descriptions

INTRODUCTION TO DATA	**Mandatory**
Year	2019/20
Credits	7.5
Short Course title	Introduction to Data
Extended course title	Introduction to Data
Learning outcomes	The first course of the minor Data Wise is focused on understanding and on the knowledge required to be able to do the projects, work in interdisciplinary teams, and participate in electives that follow later in the minor. More specifically, the learning outcomes are: 1) Understanding data cycles 2) Understanding dimensions of data 3) Evaluate data 4) Understanding scope and nature of skills for data projects 5) Understanding the value and importance of programming and what it entails 6) Applying knowledge by interacting with data-specialists 7) Understand the work needed for sharing, using and transforming data 8) Identify innovative potential of data 9) Being aware of the value of data and of potential opportunities 10) Recognize how frameworks (guidelines, codes, regulations) apply to different data processes 11) Understand and identify ethical issues

Overview (description)	The main aim of this course is to get students from diverse backgrounds “on the same page” and to have similar levels of knowledge by introducing them to fundamental concepts surrounding data. At the end of the course, the students will be ready to start their projects and to interact with students from different disciplines in terms of data. In the first four weeks, students will have daily meetings on diverse topics covered in different blocks (several days dedicated to one topic). Block 1: a mini-conference on the diverse research into data, data science, and big data that is done at this university across different disciplines. Block 2: Dynamics of data in a digital society, in which students learn about the prominent role data plays in society, datafication, and data cycles. It also addresses the sociology of technology use. Block 3: Data science techniques, in which students get acquainted with the different forms of data that exist and standard tools of data science (programming, visualization, machine learning). Block 4: Legal & ethics, in which students get acquainted with rules and regulations surrounding data use and the ethical questions that surround it. Block 5: Data management, in which students learn how to store data in such a way that it confirms to legal requirements, prevents person identification, but is also findable and usable for others. Block 6: Infrastructure, in which students learn what resources (e.g., people, software, hardware) are required to safely and efficiently store and use data. The course ends with two weeks of study time.
Hours per week	5 x 2h lectures per week
Teaching method	Presentations, excursions, discussion
Teaching material (dataset, textbook, etc)	Coordinators of each block will have their required teaching materials
Assessment	Students will create a portfolio, in which assignments are collected and combined from all blocks. Basic understanding and critical reflection that is required to start the projects of the minor and that is needed to make strategic choices in terms of the electives will be assessed. The grading will be pass / fail.
Course Type	Bachelor
Coordinator	Gert Stulp
Lecturers	Within each block multiple lecturers will be involved.
Pre-requisites	None

DYNAMICS OF MULTI-DISCIPLINARY TEAMWORK	**Mandatory**
Year	2019/20
Credits	2.5
Short Course title	Dynamics of multi-disciplinary teamwork
Extended course title	Dynamics of multi-disciplinary teamwork
Learning outcomes	1) Understand scope and nature of skills needed for data projects 2) Be able to interact effectively with experts with other backgrounds and in other fields 3) Manage collaboration with team members across disciplines and fields
Overview (description)	Working in multi-disciplinary teams is a crucial part of the Collaborative Data Project that is at the core of the minor. This course provides you with conceptual frameworks and skills that will also be applicable in your future career. Teamwork that is more effective will result in improved quality of your data project and future endeavours. In the course, we will learn about multi-disciplinarity and related concepts (inter/cross/mono-disciplinarity). We will also learn about what multi-disciplinary

	collaboration entails and how to pursue it successfully. We will address different types of collaboration and of expertise and skills needed in pursuing a data project. We will reflect on how these relate to your team and specific project in the minor. In terms of skills, you will learn to identify and solve common issues around • Building and maintaining support • Assigning team roles • Creating accountability, trust and inclusion in the team • Managing accountability to and interaction with stakeholders, clients and users • Setting up communication and decision-making in a team • Applying project management techniques
Hours per week	2 hours (lectures, workshops and team meetings)
Teaching method	Lectures, workshops and group work
Teaching material (dataset, textbook, etc)	Articles and material from the web
Assessment	Reflection on personal competencies and team competencies Report on team work, including a reflection of team expertise, roles, collaboration and communication
Course Type	Bachelor
Coordinator	Anne Beaulieu
Lecturers	Anne Beaulieu, Salome Scholtens
Pre-requisites	None

COLLABORATIVE DATA PROJECT	**Mandatory**
Year	2019/20
Credits	12.5
Short Course title	Collaborative Data Project
Extended course title	Collaborative Data Project
Learning outcomes	1) Understanding data cycles 2) Understanding dimensions of data 3) Evaluate data 4) Understanding scope and nature of skills for data projects 5) Apply programming skills 6) Interaction with data-specialists 7) Assess and formulate work needed for sharing, using and transforming data 8) Identify innovative potential of data 9) Awareness of value of data and of potential opportunities 10) Recognize how frameworks (guidelines, codes, regulations) apply to different data processes 11) Identify ethical issues and how to address them
Overview (description)	The Collaborative Data Project is central to the minor Data Wise. The projects are “real” projects proposed by external parties. For instance, a data science project proposed by researchers, a governmental organization, or a company. One company that has already committed to pursuing a project with students from the minor is “Trust the Source”; a company that tries to develop a program for journalists in which they can check the likelihood of particular information to be “fake news”. Many more options for projects will be presented in the first weeks of the Minor. In each project, students work with data provided by the external partner in order to answer a complex question or solve a practical problem.

	Multidisciplinary teams of around 5 students will work on this project for 16 weeks. Students collaborate intensively, regularly reporting to the project supervisor and to the external partner. Students will use the knowledge obtained in the general course "Introduction to Data" to address the role of data in society, techniques of data science and data infrastructure, legal and ethical issues, and principles of responsible data management in the practical context of their project. The intensive teamwork in this project will be supported by the course Dynamics of Multi-disciplinary Teams. Additional skills that students/groups need to fulfill the project can be gained through the elective courses.
Hours per week	Compulsory weekly meeting with team supervisor (1 hour) Over the course of 16 weeks, students should expect to each spend 310-350 hours on the project
Teaching method	Project-based learning
Teaching material (dataset, textbook, etc)	Each project will have its unique set of resources.
Assessment	Presentation at end of project (30%) Progress report (40%) Final report (30%)
Course Type	Bachelor
Coordinator	Dieko Bakker
Lecturers	Students will work with project supervisors who will be appointed from among the Minor teaching staff. G. Stulp (GMW) D.M. Bakker (UC) J.A. Beaulieu (CF) M. Babai (CIT) A. Tsyganov (CIT) A. Flache (GMW) M. Nissim (LET) S. Scholtens (UMCG)
Pre-requisites	None

MACHINE LEARNING	**Elective**
Year	2019/20
Credits	2.5
Short Course title	Machine Learning
Extended course title	Fundamentals of Machine Learning: Theory and Practice
Learning outcomes	Students will be able to 1) understand the principles of machine learning and know the main approaches and their differences; 2) plan a machine learning experiment with appropriate settings; 3) approach existing ML Python resources with sufficient knowledge to pick and modify the needed libraries; 4) understand what data is necessary to run a machine learning experiment towards a given research question, and (pre)process it appropriately; 5) evaluate and analyse the results of a machine learning experiment; 6) describe scientifically the settings and the results of a machine learning experiment.
Overview (description)	This course will provide the theoretical and practical basis for running machine learning experiments in a variety of fields and tasks, where one requires data

	manipulation towards making predictions. The students will be exposed to both theory and tools, and will experiment with actual datasets. This will make them acquainted with the settings of machine learning experiments, with data manipulation, with experimental choices and most importantly with evaluation and analysis of results.
Hours per week	2-4 hours
Teaching method	Lectures and practicals
Teaching material (dataset, textbook, etc)	Theory-wise we will mainly rely on slides and references to specific chapters in books/manuals. We will also use a few scientific articles as well as material available online in the form of blogposts (for example Sebastian Ruder's materials http://ruder.io/), videos (lectures at all levels by Andrew Ng and Stanford NLP, e.g. http://videolectures.net/andrew_ng/), datasets, and of course python libraries (such as NLTK and scikit-learn) and respective manuals.
Assessment	Final project (individual or in groups, depending on size of class). This will most likely consist of a small working system plus a report in the form of a scientific paper.
Course Type	Bachelor
Coordinator	Malvina Nissim
Lecturers	Malvina Nissim and teaching assistant
Pre-requisites	Knowledge of Python is an advantage

DATA AS EVIDENCE	**Elective**
Year	2019/20
Credits	2.5
Short Course title	Data as Evidence
Extended course title	Data as Evidence
Learning outcomes	1) Understanding data production and data cycles 2) Understanding technical, functional and epistemic dimensions of data 3) Evaluate data as evidence in relation to knowledge needs
Overview (description)	In this course, we will focus on the recent changes in how we use data as evidence. We will analyze the recent growth of types and amount of data (datafication) and the different ways data can be used as evidence. By the end of the course, you will master the following concepts: causation, correlation, description, features, probability, sampling, model, population. You will also learn to analyze data cycles and to map out knowledge production systems. A number of current issues will also be examined from the perspective of data: fake news, bubbles, algorithmic discrimination. Through the combination of conceptual tools and practical work, you will be well equipped to assess data sets and to address what you can and cannot do with them.
Hours per week	4 hours
Teaching method	Lectures and practical exercises
Teaching material (dataset, textbook, etc)	Articles and websites; Selections from O'Neill and Schutt, Doing Data Science O'Neill, Weapons of Math Destruction
Assessment	Two in-class quizzes Two exercise reports 1) Evaluation of a data set 2) Analysis of a data production cycle
Course Type	Bachelor
Coordinator	Anne Beaulieu
Lecturers	Anne Beaulieu
Pre-requisites	None

DATA IN PRACTICE	Elective
Year	2019/20
Credits	2.5
Short Course title	Data in Practice
Extended course title	Data in Practice. A journey through the whole data life cycle
Learning outcomes	Upon completion of the course students will be able to understand the concept of data management, the data life cycle, FAIR data and Open data and understand the main impact of these concepts on data handling of data from different domains; Independently write a data management plan; Critically reflect on data findability, data accessibility, data quality, data interoperability, data reusability and the ethical and infrastructural requirements for data.
Overview (description)	In this course, you will learn about data management, FAIR data and Open data and the implications of these concepts on data handling practices, data infrastructure requirements and data governance issues. You will get the opportunity to experiences issues and challenges of data handling yourself by hands-on group assignments around the FAIR principles. The course follows the Data Life Cycle and the FAIR principles, so that you experience data handling, from collection to archiving, including sharing and reuse. Each week expert presentations with examples from different domains will help you link the concepts to real life implementations. This will also be the opportunity to interact with data experts. The course focuses on knowledge and skills for which demand is rapidly emerging inside and outside academia, while training is still scarce. It will therefore give students a unique asset.
Hours per week	3 contact hours per week (18 in total) 7 hours group work per week (42 in total) 1 hour individual work per week (6 in total)
Teaching method	Lectures, group work, assignment and individual logbook/portfolio
Teaching material (dataset, textbook, etc)	https://www.nwo.nl/beleid/open+science/datamanagement Jisc. FAIR in practice. Jisc report on the Findable Accessible Interoperable and Reuseable Data Principles. 2018 (https://zenodo.org/record/1245568#.XHgtIIlKjIU) Metcalf, J., Crawford, K., Where are human subjects in Big Data research? The emerging ethics divide, *Big Data & Society*, 1-14, 2016. (http://journals.sagepub.com/doi/pdf/10.1177/2053951716650211)
Assessment	Individual portfolio (handed in at the end of the course; graded FOT/OT/NOT) Group assignment (data management plan, handed in at the end of the course; graded) Presentation of group assignment
Course Type	Bachelor
Coordinator	Salome Scholtens
Pre-requisites	None

OPINION DYNAMICS ON THE INTERNET	Elective
Year	2019/20
Credits	2.5
Short Course title	ODIN
Extended course title	Opinion dynamics on the Internet
Learning outcomes	1) Students understand and are able to critically evaluate the main approaches for modeling opinion dynamics in networks.

	2) Students can reflect on the application of these models to opinion dynamics on the Internet. 3) Students know and understand main approaches to gathering and analyzing digital trace data on opinion dynamics. 4) Students can identify the innovative potential as well as biases and ethical issues of studying digital trace data. 5) Students can relate models to digital trace data of opinion dynamics.
Overview (description)	The Internet has become an arena for public debate, providing users with unprecedented means of communicating their opinions via online fora, tweets, Facebook posts, and the like. Many fear that this new technology changes public debate in ways that endanger societal cohesion and democracy, pointing to phenomena like filter bubbles or fake news. This course covers state-of-the-art theories and empirical research on opinion dynamics on the Internet, focusing on computational models of opinion dynamics in networks and their application to online (social media) platforms. The course further addresses how social influence on the Internet can be studied empirically with experiments and the analysis of digital trace data. Attention will be given to the importance of theoretically well-informed models when analyzing digital trace data.
Hours per week	2 hours
Teaching method	Lectures and practicals
Teaching material (dataset, textbook, etc)	Journal articles available in electronic learning environment
Assessment	Assignments
Course Type	Bachelor
Coordinator	Andreas Flache and Michael Mäs
Lecturers	Andreas Flache, Dieko Bakker, Marijn Keijzer, Michael Mäs
Pre-requisites	None

DATA VISUALIZATION	**Elective**
Year	2019/20
Credits	2.5
Short Course title	Data visualization
Extended course title	Data visualization
Learning outcomes	At the end of the course, the student is able to: 1) Understand why visualization is such an important part of the scientific process when it involves data; 2) Interpret common types of visualization and know the advantages and limitations of these; 3) Understand why different types of data require different types of visualization; 4) Understand and evaluate a dataset and its variables; 5) Create (beautiful!) visualizations via the programming language R; 6) Apply programming skills to transform data into forms suitable for visualization; 7) Communicate findings that arise from your data.
Overview (description)	In this course, you'll learn how to effectively and beautifully visualize your data and communicate your results. Through lectures and practicals you learn about common types of visualization, their pros and cons, and how to create them yourself. The course starts with visualizing single variables and end with more complex visualizations like networks and maps. You'll also learn how to work with datasets and transform your data in such a way that you'll be able to make any visualization you'd like. You'll learn that visualizations are an ideal way to assess data quality. While making these visualizations, you'll be gently exposed to programming, and already after the first lecture you will be able to program your first graphs. At the end

	of the course, you will be able to make much better visualizations than is common in science currently.
Hours per week	4 (interactive lectures + practicals)
Teaching method	Lectures + practicals
Teaching material (dataset, textbook, etc)	Course syllabus and selected chapters from three freely available books: - https://r4ds.had.co.nz/ - https://socviz.co/ - https://serialmentor.com/dataviz/
Assessment	Weekly assignments (pass/fail) + graded final visualization project
Course Type	Bachelor
Coordinator	Gert Stulp
Lecturers	Gert Stulp
Pre-requisites	Although visualizations will be created through R, no programming experience is required.

INTRODUCTION TO PROGRAMMING	**Elective**
Year	2019/20
Credits	2.5
Short Course title	Introduction to programming
Extended course title	Introduction to programming
Learning outcomes	After successfully completing this course, students will be able to: 1) Understand basic concepts of programming; 2) Read and understand general program source code (or pseudo-code); 3) Design and implement an algorithmic solution for a given simple problem
Overview (description)	During this course, we discuss basic concepts of programming such as: conditional statements, repetition, data structures, input and output control, function design, computational analysis of simple problems and programming paradigms. The language Python is used during this course.
Hours per week	4-hours in total (2 hour lectures and 2 hour practical session).
Teaching method	The basic ideas and theory of programming are explained during the lectures. The application of the introduced concepts is explored during the hands-on lab sessions.
Teaching material (dataset, textbook, etc)	Lecture sheets, lab exercises and language manuals.
Assessment	Lab assignments and written exam.
Course Type	Bachelor
Coordinator	Arya Babai
Lecturers	Arya Babai, Andrey Tsyganov
Pre-requisites	Affinity with mathematics and moderate computer skills level (can use a terminal and text editor).

Project-Based Learning

Projects in the minor Data Wise

The Collaborative Data Project is central to the minor Data Wise. The projects are “real” projects proposed by external partners from civil society, business or research. One company that has already committed to pursuing a project with students from the minor is “Trust the Source”; a company that tries to develop a program for journalists in which they can check the likelihood of particular information to be “fake news”. Many more options for projects will be presented in the first weeks of the Minor.

In each project, students work with data provided by the external partner in order to answer a complex question or solve a practical problem.

Multidisciplinary teams of around 5 students will work on this project for 16 weeks. Students collaborate intensively, regularly reporting to the project supervisor and to the external partner. Students can indicate their three favourite projects, and will be assigned to one of those three. Diversity in backgrounds of the students will be taken into account in assigning groups, such that the students will both learn from the diversity in skills and perspectives and the external partner will benefit most.

Students will use the knowledge obtained in the general course "Introduction to Data" to address the role of data in society, techniques of data science and data infrastructure, legal and ethical issues, and principles of responsible data management in the practical context of their project.

The intensive teamwork in this project will be supported by the course Dynamics of Multi-disciplinary Teams.

Additional skills that students/groups need to fulfill the project can be gained through the elective courses.

Do’s and don’ts

Attendance

- Be on time for appointments with your group, your supervisor, the external partner or the course coordinator.
- Attendance at progress meetings with your supervisor, the external partner or the course coordinator is mandatory.
- You may be excused from attending if you notify your supervisor or the course coordinator in advance *and* provide a valid reason.
- Your supervisor or the course coordinator decides whether your reason is valid.

Deadlines

- Failing to meet a deadline will result in deductions from your grade.
- Deadlines have been set before the start of the project and can be found in this course manual.

Collaboration

- All members of a project group are jointly responsible for the group's work.
- This implies that you should read and provide feedback on each other's work, should accept and process feedback given by others, and should ensure that work handed in for assessment is presented as a coherent and unified whole.
- Problems with collaboration within your group should be discussed within the group and if necessary, with your supervisor, in a timely manner, *not* after the end of the project.

Active participation

- Adopt an active attitude during all contact hours, especially when given the opportunity to get feedback on your work.
- Be prepared for meetings. Bring relevant documents, prepare questions in advance, be ready to share your work.

Communication

- When communicating with your supervisor and the external partner, be polite and professional. Check your spelling and grammar and avoid being too informal, especially towards the external partner.
- When communicating via e-mail, use your University of Groningen email account. Your supervisor and the course coordinator will email you on this address. Check it regularly.

Formal requirements for submitted documents

- Documents submitted for assessment should have neat and consistent formatting, preferably:
    - Spacing 1.5 points
    - A font which is easy to read on screen (e.g. Calibri) or on paper (e.g. Times New Roman)
    - Sufficient spacing around the edges of the text and around figures and tables
    - Numbered pages
- On the first page of every document, state:
    - Names, student numbers and email addresses of all group members
    - A clear identification of your project (by title, topic, or external partner)
    - The name of your supervisor
    - The date on which you submitted the document
- Electronic submissions should be made in commonly used file formats (.docx or .pdf) and file names should clearly indicate the contents of the file (e.g. *[project title]_ProjectProposal.docx*)

Assessment of the project

There are three main assessments during the Collaborative Data project. In addition, the project starts by developing a Project Proposal which must be approved by your supervisor and by the external partner. Roughly halfway through the project a Progress Report must be handed in. In this Progress Report you will describe your progress so far and reflect on some aspects of the project which are not represented in the final report. The Final Report and the associated Presentation are focused on describing your answer to the question or solution to the problem you have investigated during the project. Grading rubrics for each assessment can be found in the syllabus of this course.