

CS-E5745 Mathematical Methods for Network Science

Practicalities

Course in brief:

- 6 lectures
- 5 ex. sheets with pen-and-paper problems
- 1 project
- Weekly exercise sessions to support your learning
- No exam
- Grading based on exercises and project
- To get points towards your grade, you need to:
 - 1. Return your solutions to the exercises
 - 2. ATTEND the exercise sessions and be prepared to PRESENT your solutions
- Lecturer: Mikko Kivelä
- Assistant: Abbas K. Rizi

Info on course exercises:

- The exercises and calculations done by the students are the main focus point of this course. This is not a lecture course with some exercises but more an exercise course with some lectures.
- Exercise sheets are published as early as possible, at the latest on Thursday morning before the lecture.
- Each exercise set corresponds to one lecture. Getting familiar with the exercise problems already before the corresponding lecture is recommended.
- In the exercise sessions, students present their solutions on the blackboard. Before each exercise session, students are asked to mark which problems they are ready to present on the blackboard - you can mark your solution as either completely or partially finished. We want to encourage students to present partial solutions in order to discuss problems commonly faced while solving the exercises. For each problem set, there is a Google Form that you can use for this purpose.
- Make sure that you can participate in the exercise sessions before the course begins. We will only grant exceptions to the attendance policy of the exercise sessions only if there are unexpected situations that prevent you from coming or if there are other very compelling reasons. In such cases, you should contact the course assistant.

- **The mandatory exercise sessions are held on Wednesdays (from 12:15 to 2 PM).** On Mondays (from 2:15 to 4 PM), there is an advice session where students can ask questions about the exercise set they are working on.
- You can only miss one Wednesday session.
- In addition to the exercise sheets, there is a course project. In the project, students will go through the assumptions and calculations of a scientific article. More information about the project will be given later.
- In case of missing the submission of the problem set, you cannot submit it after its deadline. Instead, you can submit an item in the project list. This alternative, adhering to project guidelines, allows you to make up for the missed assignment. Remember, a paper chosen for this purpose cannot be selected again for the final project.
- Besides presenting their solutions in the exercise sessions, students are also asked to submit their written solutions for grading. The deadline for each exercise sheet is at the beginning of the corresponding exercise session (on Wednesday at 12 PM), approximately one week after the corresponding lecture (see table below).
- Note that we only grade problems that the student has marked as completely or partially finished. The maximum amount of points can be received only for problems marked as completely finished.
- Should you need to miss a TA session due to unavoidable circumstances, you can either share a video presentation of your solved problems or engage with one of the following enlightening lectures, followed by submitting a summary:
 - [Mark Newman on Networks in Sports, Markets, and Society](#) (Sep 5, 2023)
 - [Nobel 2021 PHYSICS with Mark Newman](#) (Dec 10, 2021)
 - [Steven Strogatz’s exploration of network synchronization](#) (Nov 17, 2020)
- The assistant’s comments and corrections are sent to the students via MyCourses (see Handing in exercises).

Round	Lecture date	Advice session	Exercise session	Ex. Set due
1	11.1.2024	15.1.2024 (14:15)	17.1.2024 (12:15)	17.1.2024 : 12:00
2	18.1.2024	22.1.2024 (14:15)	24.1.2024 (12:15)	24.1.2024 : 12:00
3	25.1.2024	29.1.2024 (14:15)	31.2.2024 (12:15)	31.2.2024 : 12:00
4	01.2.2024	05.2.2024 (14:15)	07.2.2024 (12:15)	07.2.2024 : 12:00
5	08.2.2024	12.2.2024 (14:15)	14.2.2024 (12:15)	14.2.2024 : 12:00
6 / project	15.2.2024	18.2.2024 (14:15)		03.3.2024 : 23:55

Getting Help

- In Advice sessions, the assistant will answer questions about the present exercise set.
- The assistant is happy to answer your questions. However, do your background work before asking! Read the problem carefully, and think about how you would start solving it. We encourage asking well-reasoned, specific questions ("So far my approach has been this and this, but now I'm facing this problem. How should I proceed to get around it?") while vague, open-ended questions ("What is asked here and how should I start?") should be avoided.
- Outside the exercise sessions, the primary channel of asking questions is through the General Dis-

discussion forum in MyCourses

- The assistant will be reading this regularly (multiple times a day)
 - Feel free to help out other students in the forum, the course staff appreciates your efforts in helping other students!
- When required, it is also possible to contact the course staff via e-mail using the course e-mail address. However, use this only for personal issues (problems in grading, etc.).

Handing in exercises

- Collaboration is allowed (with proper acknowledgments), but each student should return their own solutions.
- All exercises should be returned in electronic form in MyCourses (Assignments page).
- Both typed and scanned pen-and-paper solutions are allowed.
- For each exercise, you should return a report as one **.pdf** file (NOT as .doc or .docx, etc.)
- When reporting results, remember the following:
 - Always mark your name and student number in the pdf file.
 - If there are sections a), b), and c) in the exercise sheet, there should be corresponding sections in your report as well.
 - Always properly cite your sources. You do not want to become accused of plagiarism.
- Late submissions:
 - Because of the nature of the exercise sessions (discussing solutions on the blackboard), late submissions cannot be accepted. Be careful to submit in time!
- Deadline extensions:
 - We will not grant deadline extensions without very strong reasons. It is up to you to keep up with your schedules.
 - If you nevertheless happen e.g. to be extremely ill please contact the teaching assistant well ahead of time. Extensions are granted on a casewise basis.

Grading

- For the exercise problems, points are given.
 - **NOTE!** Solutions are graded only if you attend the exercise sessions and mark the exercises as done
- The sum of the exercise points determines the final grade of the course.
- The project is graded as failed, pass, or pass with distinction. If you obtain a pass with distinction grade from the project, you'll get one higher course grade than you would get otherwise (obviously assuming you would not be getting a 5 already).
- Additionally, it is possible to obtain further bonus points by giving feedback during the course.
- To pass the course, one has to get at least 60% of the exercise points as well as a pass from the project.

- Assistant's comments and corrections are sent to students via MyCourses. However, we don't use the grading pipeline of MyCourses, so the grades are not visible there. Instead, the results of the course (including exercise points) will be published in a separate table at the Results tab in MyCourses. Because of this, your assignment may show as ungraded in MyCourses also after grading. If your points are correct in the Results table, there is nothing to worry about this.

		Min points for grade					Max points	
Grading table:	Grade	1	2	3	4	5	no feedback	with feedback
	Points	71	85	100	114	129	143	148

On feedback

To continuously improve the course, we will collect feedback for each exercise set and the project. To motivate you to give feedback, we reward you with 1 bonus point for each feedback given.

<https://forms.gle/pb4mXPuzGoWAqNDj7>.