MTAT.05.080 Graphs
Course organization
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General
The course is based on the Lecture notes and problem set on Graphs compiled by A. Buldas, P. Laud and J. Willemson. As the main goal of the course is to introduce and give experience with proof techniques in graph theory, most of the work (both in seminars and in homework) will be theoretical in nature.

The course has weekly lectures (M 14.15 r. 404) and seminars (W 14.15 r. 402). Attendance is not mandatory and will not give any extra credit – although it is highly recommended as the material is difficult to absorb purely by reading the textbook.

Grading
The final grade of the course is made up of 4 equal parts, 25 points each. These are

- First test – Chapters 2-5 (Basics, Eulerian and Hamiltonian graphs, Trees)
- Second test – Chapters 6-8 (Flows, Matchings, Edge coloring)
- Third test – Chapters 9-11 (Cliques, Planar graphs, Vertex coloring)
- Homework

To pass, a student needs at least 7 points from each of these and a score of 51 or more in total.

Each of these may give more than 25 points so the sum total can be above 100. The final grading is nevertheless based on the standard scale of F: ≤50, E: >50, ..., A: >90.

Homework
The course will assign weekly homework sets, 11 in total. The homework will be introduced in the seminar and will also be posted on the course website during the same workday. The homework is individual, except to those who come to the seminar and choose to work with a partner there – in which case the homework can (but does not have to) be handed in together with the same partner as in that weeks seminar. The deadline for the homework will always be the Wednesday seminar, 2 weeks from the date on which it was assigned. (ex: first homework is assigned on W, Feb. 8 and is then due W, Feb 22, 14.15 AM). It can be handed in at the seminar, or sent to me via e-mail.

The most common format of homework (which is assumed, unless otherwise specified) is the following. Students each choose 2 of the problems listed under “Homework problems” on the course website for the given practical. They will then write an example solutions (in english) to those problems, which have to be clearly legible and easily understandable to most of their peers (in the course). The understandability of the proof will be tested in the seminar following the deadline, in which the solutions are distributed among the other groups (for analysis and grading). For this reason, the homework MUST NOT contain the name or any other identifying information about the author.
**Homework grading** (for the most common homework format): one group of students attending the seminar will grade the solution on the following 4 point scale (with .5 precision):

- **0** - Solution completely wrong. Student did not understand the question, proved the wrong thing, etc.
- **1** – Parts missing or wrong. The general approach is correct, but hasn't been followed through completely or went down the wrong tracks at some point.
- **2** - Minor inaccuracies. The general idea is correct, but some non-trivial steps do not work out quite as proposed or are overlooked/skipped.
- **3** – Correct solution. The proof seems correct, but some small steps may be skipped or overlooked.
- **4** – Exemplary solution. The proof is correct and without omissions and the explanations are very clear. This is how I would like explanations to be in my textbooks.

Each group doing the grading will have to be able to explain their grades. In addition, groups giving grade 2.5 or higher should also be able to explain the solution they graded on the blackboard.

The number of points received for a given homework set is the average of the two grades of the solutions presented. A solution not presented counts as 0.

**Late homework will not be accepted**, as students have by then seen the correct solutions in seminar.

If homework is done in a pair formed in the seminar, both get the same full grade.

If the solution presented is in fully digital form (i.e. LaTeX), it gets an additional 0.5 of a grade point. If only the illustrations are hand-made, it gets additional .25.

A maximum of 44 points is available for homework (for 11 exemplary solutions).