

## **Graph theory:**

Code:

Short name: Graph theory

Instructor: Dr. Ivan Veselić

For following groups of students: wob. MMM 5-9, TMM 5-9, WMM 5-9, IF 5-9, MPM

Hours per week: 3 lecture / 1 exercise session

Contents: Graph theory is a central part of discrete mathematics and plays an important role in geometry, topology, discrete probability and other mathematical disciplines.

Moreover, one can formulate problems in game theory, artificial intelligence, optimisation and logistics in the language of graph theory.

The course presents a systematic introduction to graph theory. If there is enough time it will cover extremal graphs, Ramsey theory and/or the probabilistic method of Erdős.

The following books are recommended for further reading:

Alon, Noga; Spencer, Joel H. The probabilistic method.

Wiley-Interscience Series in Discrete Mathematics and Optimization. 1992. ISBN: 0-471-53588-5

Second Edition ISBN: 0-471-37046-0

Bollobás, Béla: Modern graph theory.

Graduate Texts in Mathematics 184, Springer, 1998, ISBN 0-387-98488-7.

Bollobás, Béla: Graph theory. An introductory course.

Graduate Texts in Mathematics, 63, Springer, 1979, ISBN 0-387-90399-2.

Reinhard Diestel: Graphentheorie

Springer, ISBN 3-540-67656-2.

or the English edition (Graduate Texts in Mathematics 173 )

Molloy, Michael; Reed, Bruce Graph colouring and the probabilistic method.

Algorithms and Combinatorics, 23., Springer, 2002. ISBN: 3-540-42139-4

Grading: Students can enroll for a „Schein“ with or without grades and can do a „Fachprüfung“, i. e. partial Bachelor/Masters exam.

This and more information is available at the course page:

<http://www.tu-chemnitz.de/mathematik/schroedinger/lehre.php>