Graph theory

Lecturer
Gwenaël JORET (Coordinator)

Course mnemonic
INFO-F521

ECTS credits
5 credits

Language(s) of instruction
English

Course period
First term

Campus
Plaine

Course content

Introductory course to graph theory. Topics covered include:

> Matchings in bipartite and non-bipartite graphs;

> Connectivity (Menger's theorem, the structure of 2- and 3-connected graphs);

> Planar graphs (plane graphs, Euler's formula, Kuratowski's theorem);

> Coloring (coloring planar graphs, vertex- and edge-colorings, perfect graphs);

> Structural graph theory (treewidth, minors);

> Extremal graph theory;

> Random graphs;

> The probabilistic method.

Objectives (and/or specific learning outcomes)

Graphs are simple and ubiquitous structures. The course aims at providing the student with the basics of graph theory, in a mathematically sound way.

Teaching method and learning activities

Lectures (24h), exercise sessions (12h), and two homeworks.

References, bibliography and recommended reading

Reinhard Diestel, Graph Theory, Graduate Texts in Mathematics 173. Published by Springer. Available online here: https://diestel-graph-theory.com/

Other information

Place(s) of teaching

Plaine

Contact(s)

Gwenaël JORET - Campus Plaine - Département d'Informatique - CP212 Bâtiment N/O, bureau 2.08.111 (gjoret@ulb.ac.be)

Evaluation method(s)

written examination

Evaluation method(s) (additional information)

Homeworks + written exam on theory and exercises.

Determination of the mark (including the weighting of partial marks)

Homeworks: 4 points
Written exam: 16 points (half theory - half exercices)

Main language(s) of evaluation

English

Programmes

Programmes proposing this course at the faculty of Sciences

MA-INFO | Master in Computer science | finalité Professional/unit 1 and finalité Professional/unit 2

Programmes proposing this course at the Brussels School of Engineering

MA-IRIF | Master of science in Computer Science and Engineering | finalité Professional/unit 2