Graph Theory

Course Overview

Level of study	Master Degree
Workload	**ECTS: 2** **Total Hours: 36** **Contact Hours:** • **Lectures: 18** • **Labs:** • **Seminars: 18**
Course Code	
Semester	**Summer**
Prerequisites	**No**
Course Objectives	1. **To learn the fundamental theory about graphs (definitions, theorems and their proofs)** 2. **To study the basic algorithms of graph theory and their modifications** 3. **To know applications of graph theory**
Learning Outcomes	1. **Knowledge of basic definitions and theoretical results of the graph theory** 2. **Knowledge of basic algorithms of graph theory and their implementation** 3. **Skills in modification of basic graph algorithms to solve nonstandard problems in different applications** 4. **Skills in both oral and written scientific communications**
Syllabus	1. **Basics of graph theory** 2. **Connectivity** 3. **Optimal paths** 4. **Location problem** 5. **Flows in networks** 6. **Covering and matching problems** 7. **Euler graphs** 8. **Hamiltonian graphs** 9. **Planarity** 10. **Coloring problem**
Labs	

Projects	**Projects include implementing algorithms in a programming language, delivering lectures and seminars, writing reviews of scientific papers. Any other options can be considered.**
Assessment	**Exam**
Resources	**https://www.coursera.org** **http://www.graphtheory.com** **http://www.freebookcentre.net/Mathematics/Graph-Theory-Books.html** **http://www.download32.com/graph-theory-software.html** **https://sourceforge.net/projects/graphalg/**
Instructors	**Yulia B. Burkatovskaya** **http://portal.tpu.ru/SHARED/t/TRACEY/English**