



COURSE PRESENTATION FORM – ACADEMIC YEAR 2010/2011

COURSE NAME	Advanced Algorithms
COURSE CODE	70106 (MSc 509) / 72019 (MSc 270)
LECTURER	Jurg Nievergelt
TEACHING ASSISTANTS	--
TEACHING LANGUAGE	English
CREDIT POINTS	4
LECTURE HOURS	24
EXERCISE HOURS	12
TIME SPAN	27.09.2010 - 21.01.2011
TIME TABLE	See Timetable Page
OFFICE HOURS LECTURER	During the lecture time, Monday 17:00-18:00 after the Exercise session, Faculty of CS, POS Building, piazza Domenicani 3 , office 2.10
OFFICE HOURS TEACHING ASSISTANT	--
PREREQUISITES	A first course on algorithms and data structures, and the basics of discrete mathematics and calculus.
OBJECTIVES	<p>The discipline of algorithm design, analysis and implementation is vast, covering many different application areas, types of objects to be processed, requirements, design and analysis techniques.</p> <p>This course surveys the broad spectrum of algorithm design and analysis, emphasizing basic concepts, techniques, and examples.</p>
SYLLABUS	<ul style="list-style-type: none">• Introduction and overview.• Computational geometry.• Graph algorithms and network optimization.• Algorithm analysis techniques.• Numerical algorithms.• Linear programming.• Approximation algorithms.• Randomized algorithms.• Online algorithms and competitive analysis.
TEACHING FORMAT	Lectures, with exercises during the lab sessions.



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ASSESSMENT

Written final exam (100% of mark).

READING LIST

- Dasgupta, Papadimitriou, Vazirani: Algorithms

Additional references will be handed out in class.

SOFTWARE USED

Demos of our own educational software, GeoBench and GraphBench.

Students write programs in any language of their choice.

LEARNING OUTCOME

Upon successful completion of this course, students will understand the general concepts and techniques used across the spectrum of algorithms, and be able to study specialized monographs and research papers.

COURSE PAGE

<http://www.jn.inf.ethz.ch/education>