

MAS 714 Algorithms and Theory of Computing

Objectives

- Provide an introduction to the Theory of Computing
- Introduce approaches of designing algorithms in different scenarios with analysis.

Textbooks

- T. H. Cormen, C. E. Leiserson, R. L. Rivest, C. Stein: Introduction to Algorithms (any edition), MIT Press.
- M. Sipser: Introduction to the Theory of Computation (any edition).

Syllabus

- Models of Computation
- Basic Algorithms (Sorting and Searching)
- Algorithm Design (greedy, divide and conquer, dynamic programming)
- Graph Algorithms
- Time Complexity
- NP Completeness
- Computability
- Space Complexity
- Formal Languages and Automata
- Circuits

Assessment

- Continuous Assessments: 40%
- Examination: 60%

References

- S. Arora, B. Barak: Computational Complexity, A Modern Approach. Cambridge University Press, 2009.