OPTIMIZATION METHODS IN MANAGEMENT SCIENCE

- **Course code**
  8123
- **Type of course (compulsory, optional)**
  Compulsory
- **Level of course** (e.g. first, second or third cycle; sub-level if applicable)
  N/A
- **Year of study**
  2013-2014
- **Semester**
  5th semester
- **Number of credits allocated**
  6 ECTS Credits
- **Name of lecturer**
  Christos D. Tarantilis, Full-Professor
- **Learning outcomes**
  This course focuses on the decision-making process of analyzing, defining, representing and solving a numerous business problems and cases, employing a number of optimization methods and tools. The optimization methods introduced are applied to solve a broad number of real-world case studies from different domains and industries such as transportation and logistics, telecommunications, manufacturing and service operations, health care management, tourist management, maritime and shipping.
  On completion of this course, students should be able to:
  - understand the computational characteristics of different types of business problems
  - design effective optimization methods for solving both complex and realistic size management science applications
- **Mode of delivery (face-to-face, distance learning)**
  Face-to face teaching
- **Prerequisites and co-requisites**
  N.A.
- **Recommended optional programme components**
  N.A.
- **Course contents**

The course material includes the following thematic areas:

- Computational complexity and management science applications
- Large scale optimization and applications
- Approximation algorithms and applications
- Construction algorithms and applications
- Local search and neighborhood structures
- Iterative improvement algorithms
- Greedy Randomized Adaptive Search Procedures and applications
- Variable Neighborhood Search and Large Neighborhood Search
- Simulated Annealing and applications

- **Recommended or required reading**

  📖 Tarantilis CD (2013). Optimization Methods in Management Science, Electronic Notes, DMST Eduportal, AUEB (in Greek).

  📖 Aarts E, Korst, J, Michiels W (2007). Theoretical Aspects of Local Search. Springer Berlin Heidelberg.

  📖 Schneider JJ, Kirkpatrick S (2006). Stochastic Optimization. Springer Berlin Heidelberg.

- **Planned learning activities and teaching methods**

  Teaching includes lectures, case studies, tutorials, business games

- **Assessment methods assessment methods and criteria**

  Final written exam (100%) **or**

  Final written exam (70%) + assignment (individual) 30%

  Students must achieve >= 5 grade in written exam

- **Language of instruction**

  Greek

- **Work placement(s)**

  N.A.