Course Profile
Department of Management / International Logistics Management Program

Course Number: MAN 456	Course Title: Network Optimization
Required / Elective: Elective	Pre / Co-requisites: -
Catalog Description: Network structure, network flow problems. Linear programming problems applied to transportation, logistics, manufacturing, computer science, project management, and finance.	Textbook / Required Material: Network Optimization: Continuous and Discrete Models (Optimization, Computation, and Control) Publisher: Athena Scientific (May 1, 1998) ISBN-10: 1886529027 ISBN-13: 978-1886529021.

Course Structure / Schedule: **(3+0+0) 3 / 6 ECTS**

Extended Description:

This course introduce the students to the theory, algorithms and applications network flow problems. It focuses on algorithms rigorously, and consider proofs of correctness and proofs of running times for some algorithms. This course will provide an integrated view of the theory, algorithms, and the applications of key network optimization problems including the shortest path problem, the maximum flow problem, the minimum cost flow problem, the minimum spanning tree problem, and the multi-commodity flow problem. Applications to network flow problems transportation and logistics are included in this course.

Design content: None	Computer usage: MATLAB, Microsot Project

Course Outcomes:

By the end of this course, students will be able to:
1. Describe a wide range of applications of network optimization problems
2. Use the necessary tools and techniques for the design, development and analysis of such algorithms.
3. Compute network-based optimization problems and become familliar with some of the common techniques used in network algorithms.
4. Understand the principles and steps needed for planning the implementation of networked systems.
5. Apply the theory by formulating and solving their own problems that involve dynamic decisions.

Recommended reading:

- Network Flows: Theory, Algorithms, and Applications Ravindra K. Ahuja, Thomas L. MagnantiJames B. Orlin.

Teaching methods:

Lectures, Group Project, assignments, quizzes, midterm and final exam

Assessment methods:

Group project: %20

Homework /quizzes: %10

Midterm exam: %30

Final exam: %40

Student Workload/ECTS (European Credit Transfer System) Tableau:			
Activity:	Number:	Duration (hour):	Total Workload (hour):
Pre- reading	14	2	28
Lectures	14	3	42
Group Project	1	23	23
Quizzes	3	3	9
Assignments	4	2	8
Midterm	1	20	20
Final Examination	1	20	20
TOTAL: 150 hours / 25 = 6 ECTS			
Prepared by: Staff		Revision Date: 21.06.2012	