

**OPERATIONS RESEARCH II
MATH 4310/8316**

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1.0 Course Description

- 1.1 Overview of Content and Purpose:** (3 hours) Basic concepts of Integer Programming, Network Programming and related topics. Content includes the mathematical foundations and solution algorithms of discrete optimization problems including transportation problems, network problems, and integer programming.
- 1.2 For Whom Intended:** Advanced Undergraduates and Graduates interested in Applied Mathematics.
- 1.3 Prerequisites:** MATH 2050 and MATH 4300, or permission of instructor.
- 1.4 Unusual Circumstances:** None

2.0 Objectives

- 2.1 Performance Objectives for the Students:**
1. To be able to develop and solve mathematical modeling problems
 2. Integer Programming
 3. Network Programming
 4. Related Programming

3.0 Content and Organization

- 3.1 Topics:**
- 1) Transportation problem
 - 2) Network model
 - 3) Integer programming
 - 4) Traveling salesman and knapsack problems
 - 5) Dynamic programming
 - 6) Game theory
 - 7) Decision theory (optional)

4.0 Teaching Methodology

- 4.1 Methods to be Used:** Lecture

5.0 Evaluation

- 5.1 Basis for Evaluating Student Performance:** Exams given as open book, closed book or take home. In addition to all requirements, Graduate Student will be assigned a project. (Decisions are made by the instructor.)

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- 5.2 Basis for Determining Final Grade:** Examination grades and homework and, if applicable, the graduate student project, with written examinations at least 50% of the grade, as announced at the beginning of the semester by the instructor. The grading scale will also be announced by the instructor.
- 6.0 Resource Material**
- 6.1 Textbook(s) or Other Required Readings:** Jensen, *Operations Research: Models & Methods*, Wiley, 2003.
- 6.2 Other Suggested Reading (if any):**
- 6.3 Other Sources:**
- 6.4 Current Bibliography of Resources:** Winston, Wayne L., *Operations Research, Applications and Algorithms*, Duxbury.
Phillips, Ravindran and Solberg, *Operations Research Principle and Practice*, Wiley.