



# Engineering and Technology Management

## COURSE SYLLABUS

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**Course Number:** E M 540

**Course Name:** Operations Research and Analytics for Managers

**Instructor:** Luna Magpili

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**Semester Credits:** 3

**Prerequisites:** None

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### Course Description and Objectives:

This course introduces students to the thought process and mathematical representation of decision making. Operations Research represents physical reality in deterministic models seeking solutions to managerial decisions, organizational problems, and business systems. Operations Research uses these models to better understand the options available to the manager, their impact, and sensitivity analysis. These techniques help rationalize and quantify the role of the decision maker. Using these tools, the manager can move towards the 'best solution' among the many possible satisfying solutions.

The student is exposed to a large number of models which have proven effective in solving certain classes of managerial problems. The student will see the rationale behind the techniques and understand how to apply them in simple cases. Students learn the strengths and weaknesses, the applications, and limitations of the models presented. More importantly, good students begin to master the systematic and logical approach to problem solving, which extends beyond the collection of tools presented into everyday application.

### Course Topics:

- Linear Programming
- Sensitivity Analysis
- Transportation Models
- Assignment Models
- Integer Programming
- Goal Programming
- Nonlinear Programming
- Network Models
- Queuing Models
- Simulation
- Markov Analysis

### Grading:

Mid-Term Exam: 20% Application Project: 20% Final Exam: 20% Classwork/Homework: 40%