

## **Computer-Based Decision Models (OMIS 355)**

The objective of this exam is to test a student's ability to formulate, solve, and interpret mathematical models for business problems. Spreadsheet proficiency is a prerequisite. Portions of this exam require students to interpret MS Excel Solver output, but knowledge of other spreadsheet features will not be tested. Topics are outlined below:

### I. Formulation, Optimization, and Interpretation of Spreadsheet Models

- Reading written descriptions of business decision problems and formulating them as optimization models
- Specifying decision variables, objective function and constraints for optimization models
- Interpreting and applying shadow prices
- Graphical linear optimization with constraints
- Network flow models, solving for maximum flow
- Interpreting computer solutions (MS Excel Solver Answer and Sensitivity reports)
- Applying the sensitivity information contained in the computer output

### II. Including Uncertainty and Risk in Decision Models

- Decision trees: formulating decision trees from word problems using decision nodes and event nodes; solving decision trees
- Determining minimax strategies and minimax regret policies
- Value of information: calculation and interpretation of the expected value of the perfect information and the expected value of sample information

Resources:

*Spreadsheet Modeling and Decision Analysis* by C. T. Ragsdale, Thomson  
Southwestern Publishing, fourth or later edition

Format: Multiple choice