

BUA 685
Problem Solving and Decision Analysis
Graduate School of Business
Maine Business School
University of Maine
Term: TBD

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MISSION:

The mission of the Maine Business School is to advance business knowledge, connect with our local and global communities, seek adaptive approaches for business processes, and foster a sense of professionalism, teamwork, and respect for ourselves and our constituents.

COURSE DESCRIPTION:

This course is dual focused on business problem formulation and decision analysis. First, the course introduces students to a variety of ways to formulate a business problem and identify its decision alternatives using systems thinking and process thinking. Second, the course presents core concepts and techniques for conducting data-driven decision analysis (e.g. utility/objective function, linear/nonlinear optimization, and simulation optimization) with purpose of recommending optimal decision options by taking advantage of the results of predictive analytics.

COURSE OBJECTIVES:

After completing this course, students are expected to

- acquire skills to formulate a business problem into a data analytical problem that can be solved by some analytical models (especially, predictive models)
- apply popular optimization techniques to conduct business decision analysis based on the results of analytical models

Specifically, upon completion of this course, students are expected to

- acquire basic knowledge of systems thinking and process thinking
- decompose a business problem scenario into different interrelated parts
- measure a business factor using proper quantitative metric(s)
- express a business problem scenario with analytical model
- understand fundamental concepts and theorems in decision analysis and utility theory
- apply popular analytical techniques to optimize decision making

COURSE CONTENT OUTLINE:

Module 1 - The Philosophical Framework

Introduction to Systems Paradigm
Thinking in Systems
Process Thinking

Module 2 - Analyticalization of Business Problem

Analyticalization of Business
Measure Everything Using Data
From Business Problem to Analytical Problem
Simple Analytical Model for Problem Formulation

Module 3 - Foundations of Decision Analysis

Introduction to Quality Decision Making

Building Decision Rules

Analysis of a Decision Scenario

Module 4 - Computing Decision Problems

Linear Programming and Optimization

Bayesian Networks: Optimization Under Uncertainty

Module 5 - Problem Formulation and Decision Analysis Capstone Project

UNIVERSITY POLICIES:

- [Student Conduct Code](#)
- [Student Handbook](#)
- [Student Accessibility Services](#)
- [Inclement Weather Policy](#)

Academic Honesty Statement: Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers, to submit papers written by another person, to fake experimental results, or to copy or reword parts of books or articles into your own papers without appropriately citing the source. Students committing or aiding in any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University.

Students with disabilities statement: If you have a disability for which you may be requesting an accommodation, please contact Student Accessibility Services, 121 East Annex, 581.2319, as early as possible in the term. Students who have already been approved for accommodations by SAS and have a current accommodation letter should meet with me (the instructor of the course) privately as soon as possible.

Course Schedule Disclaimer: In the event of an extended disruption of normal classroom activities, the format for this course may be modified to enable its completion within its programmed time frame. In that event, you will be provided an addendum to the syllabus that will supersede this version.

Observance of Religious Holidays/Events: The University of Maine recognizes that when students are observing significant religious holidays, some may be unable to attend classes or labs, study, take tests, or work on other assignments. If they provide adequate notice (at least one week and longer if at all possible), these students are allowed to make up course requirements as long as this effort does not create an unreasonable burden upon the instructor, department or University. At the discretion of the instructor, such coursework could be due before or after the examination or assignment. No adverse or prejudicial effects shall result to a student's grade for the examination, study, or course requirement on the day of religious observance. The student shall not be marked absent from the class due to observing a significant religious holiday. In the case of an internship or clinical, students should refer to the applicable policy in place by the employer or site.

Sexual Discrimination Reporting: The University of Maine is committed to making campus a safe place for students. Because of this commitment, if you tell a teacher about an experience of sexual assault, sexual harassment, stalking, relationship abuse (dating violence and domestic violence), sexual misconduct or any form of gender discrimination involving members of the campus, your teacher is required to report this information to the campus Office of Sexual Assault & Violence Prevention or the Office of Equal Opportunity. If you want to talk in confidence to someone about an experience of sexual discrimination, please contact these resources: For confidential resources on campus: Counseling Center: 207-581-1392 or Cutler Health Center: at 207-581-4000. For confidential resources off campus: Rape Response Services: 1-800-871-7741 or Spruce Run: 1-800-863-9909. Other resources: The resources listed below can offer support but may have to report the incident to others who can help: For support services on campus: Office of Sexual Assault & Violence Prevention: 207-581-1406, Office of Community Standards: 207-581-1409, University of Maine Police: 207-581-4040 or 911. Or see the OSAVP website for a complete list of services at <http://www.umaine.edu/osavp/>

COMMUNICATIONS SKILLS PHILOSOPHY:

- Oral and written skills (presentation, grammar, spelling, typographical layout, etc.) are an important component of this course, as such, they are also an important component in the grading criteria. For all oral/written assignments and projects, the assessment of communication skills can account for approximately 20% of the overall assignment or project grade.

EXAM

- There will be one exam given during the semester. The exam will include short answer/essay types of questions. Material for the exams will come from the readings, lectures, discussions, articles read in class, videos, and/or presentations from guest lecturers.

ASSIGNMENTS

- There will be 3 Individual Assignments and 2 Group Assignments during the semester. The assignments will be a combination of short reports and creative designs. Each assignment is worth 50 points. All assignments should be submitted electronically via Blackboard.

ANALYTICAL BRIEFINGS

- There will be 3 Briefings during the semester, and each will be worth 50 points. Each Brief should be 3 pages or less (typed) and should include these sections: 1. Summary of content, 2. Critical Analysis / Implications / Relevance of content, 3. Personal opinion and Recommendations regarding the content. All Briefings should be submitted electronically via Blackboard.

GRADING:

- The following grading scale will be used to determine your grade at the end of the semester:

Course Requirements

Final Exam:	100 points
Assignments:	250 points
Briefings:	150 points
<u>Semester Project/Presentation:</u>	<u>200 points</u>
Total:	700 points

Course Grading Scale

92 – 100% = A
88 – 91% = B+
82 – 87% = B
78 – 81% = C+
70 – 77% = C
Below 70% is a failing grade