MSC 615: Decision Modelling

# Course Information

## Contact

Instructor: Hieu Pham, PhD

Office: 368 Business Administration Building

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Phone Numbers: 256.824.2331

Availability/Office Hours: By Appointment

Teaching Assistant: Shirlyn Mwangi

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## Details

Course Name: MSC 615 – Decision Modeling

Mode of Delivery: Online

Credit Hours: 3

Semester/Year: Fall 2024

Meeting day, time, and location: Online

Prerequisites: MSC 600 – Quantitative Methods

## Overview

## This course focuses on tools and methods for modeling, analyzing and solving problems involving business decision making. Spreadsheet analysis, optimization, and simulation techniques will be covered. Topics include linear and nonlinear optimization, network models, decision analysis and simulation of complex models in a spreadsheet environment as well as using other commercial software packages. Prerequisite: Excel proficiency is required.

## Objectives

Upon completion of this course, the student will be able to:

## Understand and explain the ways mathematical modeling can be utilized in the managerial decision-making processes.

## Identify and differentiate different model components.

## Understand and explain the modeling process and be able to apply it in a variety of different business situations.

## Compare and contrast different model structuring techniques and these techniques to analyze various situations.

## Implement and interpret optimization models using Excel.

## Materials

### Required

* Introduction to Management Science: A Modeling and Case Studies  
  Approach with Spreadsheets, 6th Edition, Hillier and Hillier, McGraw-Hill, 2019 (ISBN: 978-1-259-91892-6)
* Software: Excel; Excel Solver

## Technology Statement

This course will use UAH’s learning management system, Canvas, as well as other technology tools. Students will be expected to have access to a computer with internet capabilities to fully participate in this course.

## Evaluation and Grading

The following grading scheme will apply in this course:

A = 90 <= grade  
B = 80 <= grade < 90  
C = 70 <= grade < 80  
D = 60 <= grade < 70  
F = grade < 60

Additionally, the instructor reserves the right to modify a student’s final grade, for the benefit of the student, if deemed necessary.

Evaluation and grading will be based upon weighted assignment groups.

Evaluation and grading will be based upon the following scale. The instructor will make every attempt possible to grade all assignments within 1 week.

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| --- | --- | --- | --- |
| **Assignment Groups** | | **Percentage of Grade** | **Note** |
| Homework | | 34% | May need Excel Solver. This category also includes discussions, quizzes, and similar assignments |
| Midterm Exam | | 33% | Take home - 24-hour window to take exam. **Thursday Oct. 13, 2022, from 12:00 AM to 11:59 PM** |
| Final Exam | | 33% | Take home - 24-hour window to take exam. **Thursday Dec. 8, 2022, from 12:00 AM to 11:59 PM** |
| **TOTAL** | | **100%** |  |
|  | |  |  |
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| **Assignment** | **Description** | | | |
| Homework | These assignments will consist of homework, forum discussions, quizzes, and similar assignments | | | |
| Midterm Exam | The Midterm Exam will cover linear optimization. That is, Chapters 1, 2, 3, 4, and 5 in the required text. | | | |
| Final Exam | The Final Exam will be a comprehensive final and will cover all the topics and materials in this course. | | | |

## Missed Assignments/Make-Ups/Extra Credit

Homework assignments must be turned in for credit. A late homework will result in a reduction of homework grade, 20% of full grade per day. Any work turned in after the homework has been returned to the class, or after the solution has been posted will receive no credit. Homework may be graded immediately or after a few days. There is no guarantee that any late work will receive credit.

There are several exceptions for this policy:

* The late work for the mid-term or final exam will not be accepted.
* Discussion postings after the due date will not be accepted.
* The final exam cannot be late.

If you miss an exam without my permission, you will receive no grade for the exam. To be eligible for makeup, you must contact me immediately. If you cannot take the exam during the given time window, you will receive an alternative version of the exam which may or may not be more difficult that the original exam.

## Attendance Policy

This online course is accessible completely online and active participation will greatly improve your success in this course. Attendance will be monitored through required course interactions and assignment submissions. You are expected to log into the course to view lectures, complete course assignments, and to check updates related to the course.

## Communication & Instructional Continuity

Canvas and email will be used extensively for communication. You must ensure that you have an active Canvas account and UAH email address. Resources and assignments will be posted to Canvas and other online locations, as announced. You are responsible for checking your Canvas and UAH email accounts regularly. Monday through Friday I will attempt to respond within 24 hours. Saturday and Sunday emails will be answered within 48 hours.

If our regular scheduled class meeting is interrupted or the campus should unexpectedly close, students should immediately log onto Canvas and read any course announcements. Students are encouraged to continue the readings and other assignments as outlined on the course syllabus until otherwise advised. Any student who does not could fall behind in the course.

## Course Conduct

All students must treat others with civility and respect and conduct themselves in a way that does not unreasonably interfere with the opportunity of other students to learn. All communication between student/instructor and between student/student should be respectful and professional.

## Academic Honesty

Your written assignments and examinations must be your own work. Academic misconduct will not be tolerated. Examples of unacceptable behavior include plagiarism/use of prior work/use of Chegg and other online problem-solving sites/etc. To ensure that you are aware of what is considered academic misconduct, you should review carefully the definitions and examples provided in the [Student Handbook](https://www.uah.edu/dos/student-conduct/handbook). If you have questions in this regard, please contact me without delay.

Artificial Intelligence Statement

Allowance without Restriction - The use of artificial intelligence models for assistance in completion of work for this course shall be treated as collaborative work and should be properly documented and cited, regardless of the degree to which the models have been utilized.

## Copyright Hieu Pham, 2024

All federal and state copyrights in my lectures and course materials are reserved by me. You are authorized to take notes in class for your own personal use and for no other purpose. You are not authorized to record my lectures or to make any commercial use of them or to provide them to anyone else other than students currently enrolled in this course, without my prior written permission. In addition to legal sanctions for violations of copyright law, students found in violation of these prohibitions may be subject to University disciplinary action under the Code of Student Conduct.

## Discussion of Concerns

If you have difficulties or concerns related to this course, your first action should be to discuss them with your instructor. If such a discussion would be uncomfortable for you or fails to resolve your difficulties, you should contact the Dr. Wai Mok Department Chairperson. If you are still unsatisfied, you should contact Dr. Orman Associate Dean of the College of Business.

# Class Schedule

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| --- | --- |
| **Week/Date** | **Topic** |
| Week 1, Aug. 14 | Course Introduction and Overview |
| Week 2, Aug. 21 | Introduction to Modeling |
| Week 3, Aug. 28 | Linear Optimization |
| Week 4, Sept. 4 | Linear Optimization |
| Week 5, Sept. 11 | Linear Programming Formulation and Applications |
| Week 6, Sept. 18 | Linear Programming Formulation and Applications |
| Week 7, Sept. 25 | Spreadsheet Modeling and Sensitivity Analysis |
| Week 8, Oct. 2 | Fall Break Oct. 6 – 7. No Classes |
| Week 9, Oct. 9 | Midterm |
| Week 10, Oct. 16 | Network Optimization |
| Week 11, Oct. 23 | Integer Optimization |
| Week 12, Oct. 30 | Non-linear Optimization |
| Week 13, Nov. 6 | Decision Analysis |
| Week 14, Nov. 13 | Forecasting |
| Week 15, Nov. 20 | Thanksgiving Holiday – No Classes |
| Week 16, Nov. 27 | Final Exam |

# University Information

## Disability Statement

The University of Alabama in Huntsville will make reasonable accommodations for students with documented disabilities. If you need support or assistance due to a disability, you may be eligible for academic accommodations. [Apply here](https://kea.accessiblelearning.com/s-UAH/ApplicationStudent.aspx) or contact [Disability Support Services](https://www.uah.edu/dss) (256.824.1997 or Wilson Hall 128) as soon as possible to coordinate accommodations.

## Pertinent UAH Policies

* [UAH Student Handbook](https://www.uah.edu/dos/office-of-student-ethics-education/handbook)
* [Academic Misconduct Policy](https://www.uah.edu/policies/02-01-67-academic-misconduct-policy)
* [Complete listing of UAH Policies and Procedures](https://www.uah.edu/policies)

## Campus Resources

The University of Alabama in Huntsville offers a range of student services to enhance the experience of students.

* [Academic Support Services](https://catalog.uah.edu/undergrad/support-services/academic-support-services/)—ASAP, Student Success Center, Tutoring, PASS, Academic Support Centers by College
* [Student Support Services](https://catalog.uah.edu/undergrad/support-services/student-support-services/)—Counseling Center, Disability Support Services, Student Health Services, Office of International Services, Multicultural Affairs, etc.
* [UAlert](https://www.uah.edu/ualert)—Sign up for UAH’s emergency notification system to receive urgent messages from the university
* [Registrar’s Office](https://www.uah.edu/registrar)—Academic Calendars, Course Registration, Student Records, Commencement
* [M. Louis Salmon Library](https://www.uah.edu/library)—Printed and Online Resources, Reference Services, Group Study Rooms, AV Resources, Printing
* [Office of Diversity, Equity, and Inclusion](https://www.uah.edu/diversity)—Anti-racism resources, LGBTQ resources, lactation rooms, name change requests, internet access assistance, Title IX
* [Canvas Support](https://community.canvaslms.com/t5/Student-Guide/How-do-I-get-help-with-Canvas-as-a-student/ta-p/498)—Call 844-219-5802 to report an issue with Canvas.
* [OIT Help Desk](https://www.uah.edu/oit/contact)—For technical support, contact the OIT Help Desk ([helpdesk@uah.edu](mailto:helpdesk@uah.edu); 256.824.3333)

NOTE: When submitting a support ticket include your name, your class, the element/assignment being affected, and a detailed description of the issue. Providing a [screenshot](http://www.take-a-screenshot.org/) is often very helpful in diagnosing an issue.

## Important Dates

[Review the semester dates and deadlines and the academic calendar.](https://www.uah.edu/registrar/calendars)

## Subject to Change

Every effort is made to follow the guidelines in the syllabus; however, if needed, the syllabus will be amended. You will be notified if changes are made.