

MGMT 30600 – Management Science

Spring 2026

Professor: Alex L. Wang
Email: wang5984@purdue.edu
Office: KRAN 463
Office Hours: F, 11am-12pm, KRAN 463
F, 3-4:45pm, KRAN 250

Course Information

Section 04:	Wang	T-Th 3:00pm – 4:15pm	RAWL 1057
Section 05:	Wang	T-Th 4:30pm – 5:45pm	RAWL 1057

Office Hours

Day	Time	Location	Instructor
Monday	11am-12:30pm	Young 1023	Prof. Jaiswal
Tuesday	1-2pm	Kran 544	Prof. Alexander
Thursday	1-2pm	Kran 544	Prox. Alexander
Thursday	3-4:30pm	Young 1023	Prof. Jaiswal
Friday	11am-12pm	Kran 463	Prof. Wang
Friday	3:05-5pm	Kran 463	Prof. Wang

Course Webpage

Brightspace by D2L <https://purdue.brightspace.com>

Required Textbook

The textbook will be a valuable resource throughout the entire semester and is **required**.

Title: *Management Science with Spreadsheet Modeling*

Author: Patrick Johanns

Publisher: Kendall/Hunt

Version: 4th edition is recommended

Direct link to the publisher:

<https://he.kendallhunt.com/product/management-science-spreadsheet-modeling>

Course Overview

With abundant and powerful processing capabilities, low-cost data storage solutions, and a ruthlessly competitive, yet incredibly lucrative marketplace, every company in the world seeks data-driven insights to drive strategic goals and objectives. In this course, we will study management science, which focuses on quantitative methods that aid in making effective decisions in a business environment. Students will learn to formulate, solve, and interpret optimization models from various application areas in management, including operations, marketing, accounting, and finance. Insights gained from the mathematical modeling and solution process will be discussed and analyzed. Results will be examined in the context of the decision problem and revision of the model will be proposed and analyzed.

Primary emphasis will be placed on formulating decision problems as optimization or simulation models and solving them in Excel and Solver. This course will require the use of personal computers and spreadsheet-based decision tool software.

Course Objectives

At the end of this course, students should be able to:

- Objective 1: Develop quantitative methods for optimized business solutions and managerial decision-making.
- Objective 2: Solve management science problems with decision tool software.
- Objective 3: Analyze the results of optimization models.
- Objective 4: Adjust inputs, formulas, and processes to derive business solutions.

Class Calendar

All chapter readings and due dates are subject to change with all alterations to be announced on Brightspace.

Exam and Quiz Schedule:

	Date	Location
Quiz 1	Jan. 29	In-class
Quiz 2	Feb. 12	In-class
Midterm Exam	6:30pm, Mar. 2	TBD
Quiz 3	Apr. 2	In-class
Quiz 4	Apr. 9	In-class
Quiz 5	Apr. 23	In-class
Final Exam	7pm, May 7	STEW 183

All deadlines are at 11:59pm ET on the due date indicated in the calendar below.

Week	Date	Class	Topic/Activity	Reading	Due
<u>Week 1</u>	Jan. 13	1	Module 1: Course Introduction, Syllabus Review, Introduction Linear Programming Model	Syllabus, Ch. 1	
	Jan. 15	2	Linear Programming Model Continued	Ch. 1, Notes 1	Intro poll

<u>Week 2</u>	Jan. 20	3	Graphical Solution Method	Ch. 3 (first half)	
	Jan. 22	4	Computer Solutions of Linear Programming Problems	Ch. 3 (first half), Notes 2	
<u>Week 3</u>	Mon, Jan. 26				HW 1
	Jan. 27	5	Computer Solutions of Linear Programming Problems and Ratio Constraints	Ch. 2	
	Jan. 29	6	Linear Programming Sensitivity Analysis	Ch. 4 Notes 3	Quiz 1
<u>Week 4</u>	Mon, Feb. 2				HW 2
	Feb. 3	7	Linear Programming Sensitivity Analysis	Ch. 3 (second half)	
	Feb. 5	8	Linear Programming Applications: Product-Mix, Marketing Research Daniels School of Business Career Fair Hosted by the School of Business Career Council (SBCC): https://krannertsmef.com/	Ch. 4, Notes 4	
<u>Week 5</u>	Feb. 10	9	Linear Programming Applications: Multi-period Production-and-Inventory Management	Ch. 4	
	Feb. 12	10	Additional LP Applications	Ch. 4, Notes 5	Quiz 2
<u>Week 6</u>	Mon, Feb. 16				HW 3
	Feb. 17	11	Module 2: Nonlinear Optimization Models, Solution and Applications, Pricing Models	Ch. 5	
	Feb. 19	12	Nonlinear Optimization Models: Portfolio Optimization Model	Ch. 5, Notes 6	
<u>Week 7</u>	Mon, Feb. 23				HW 4
	Feb. 24	13	Review for Midterm (attendance optional)		
	Feb. 26	14	Review for Midterm (attendance optional)		
<u>Week 8</u>	Mon, Mar. 2		Midterm Exam 6:30pm		Midterm Exam
	Mar. 3	15	Module 3: Optimization Model with Integer Variables: Basic Concepts, Capital Budgeting Model	Ch. 6	
	Mar. 5	16	Optimization Model with Integer Variables: Fixed-Cost Model	Ch. 6, Notes 8	Mid-Semester Poll

<u>Week 9</u>	Mar. 10	17	Practice with fixed-cost models	Ch. 6	
	Mar. 12	18	Additional Integer Linear Programming Problems	Ch. 6, Notes 9	
	Sun, Mar. 15				HW5
<u>Week 10</u>	Mar. 17		Spring Break – no class		
	Mar. 19		Spring Break – no class		
<u>Week 11</u>	Mar. 24		No class in lieu of midterm		
	Mar. 26	19	Module 4: Project Management: LP formulation	Ch. 7, Notes 11	
<u>Week 12</u>	Mar. 31	20	Critical Path Method (CPM)	Ch. 7	
	Apr. 2	21	Project Evaluation and Review Technique (PERT)	Ch. 8, Notes 12	Quiz 3
<u>Week 13</u>	Mon, Apr. 6				HW 6
	Apr. 7	22	Project Management: Project Crashing	Ch. 8	
	Apr. 9	23	Module 5: Decision Analysis: Pay-off Table, Optimistic and Pessimistic Approaches	Notes 13	Quiz 4
<u>Week 14</u>	Apr. 14	24	Decision Analysis: Min-max regret Approach, EV Approach, EV Perfect Information	Ch. 9	
	Apr. 16	25	Multi-stage decision analysis with Decision Trees and Linear Programs: EV Approach, EVPI	Ch. 9 Supplement, Notes 14	
<u>Week 15</u>	Mon, Apr. 20				HW 7
	Apr. 21	26	Module 6: Multi-criteria Decision Models: Efficient Frontier, Efficient Solutions for Investment	Ch. 10	
	Apr. 23	27	Goal Programming	Ch. 10, Notes 15	Quiz 5 Exit poll
	Sun, Apr. 26				HW 8
<u>Week 16</u>	Apr. 28	28	Review for Final (attendance optional)		
	Apr. 30	29	Review for Final (attendance optional)		

Final Exam Week	Final Exam Week May 4 – May 9 TBD		Final Exam
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Grading System

Coursework elements will be weighted as follows to evaluate student performance:

Attendance & Intro/Mid-Semester/Exit Polls	15%
Homework Assignments	25%
Quizzes	30%
Exams	30%

At the end of the semester a student's weighted points will be totaled, and two grading schemes will be considered.

1. The traditional 90-80-70-60 **percentage-based** grade will be calculated. For example, any student with a final class percentage of 97% or better of the total course points will receive an A+, any student with a final class score between 83% and 87% will receive a B, and so on.
2. The student's class **percentile rank** will be calculated with grades determined as shown in the table below that follows Krannert's guidelines for upper-level undergraduate core classes.

Grade	Percentile needed
A	75 th
A-	70 th
B+	65 th
B	40 th
B-	35 th
C+	30 th
C	10 th
C- and below	Instructor's judgment will be used for the cut offs for grades below a C-.

****Final course grade decision rule:** Students will receive the **better** of the two grades.**

In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Updated information will be provided through Brightspace and email.

Class Attendance and Participation

Class attendance is expected and will be recorded by the instructor most lecture days. A total of three (3) classes can be missed at the student's discretion without affecting the overall participation score. These absences can be due to sickness, job interviews, conflicting extracurricular responsibilities, or any other reason and do not require an email to the instructor.

In the unfortunate event of a passing in the family, contact the Office of the Dean of Students ([Student Support Services](#)) immediately. Under the Grief Absence Policy of Students (GAPS), students are excused

for funeral leave and given the opportunity to earn equivalent credit on course assessments, but the Office of the Dean of Students must be contacted by the student to begin the process. The Office of the Dean of Students determines the appropriate amount of excused time and informs all the student's faculty.

Ultimately, students are responsible for all required coursework and bear full responsibility for any academic consequences that may result due to absence. Only absences excused by the official Purdue policy on class attendance will be considered. Please review the official Purdue policy for more information: [Absence Policies | Purdue University](#)

Homework Assignments

Students will apply the concepts, theory, and methods learned in the course to a variety of problems. Students will formulate, solve, and analyze models with the help of Microsoft Excel, add-ins, and other software applications. **Homework assignments must be prepared individually.**

1. Homework assignments will be posted approximately one week prior to their due date.
2. All assignments should be prepared individually and in a professional manner. Unorganized or illegible assignments will receive a penalty or even not graded.
3. When completed, assignments will be submitted online through Brightspace, which will be set to allow multiple upload attempts. If submitted more than once, only the last submission will be graded.
4. Due dates are specified in the Class Calendar section and any changes will be communicated through Brightspace. **Late submissions will be penalized by a deduction of 10% for each hour late and will not be accepted more than 10 hours late.**
5. Homework solutions will be posted on Brightspace shortly after the submission deadline.
6. The lowest homework grade will be dropped. This policy exists to account for a job interview, illness, or other situation that might prevent you from completing an assignment. **It is not intended to be a "freebie" and it is strongly recommended that you do not purposefully skip an assignment.**

*Students may discuss the homework problems with classmates, but **do not copy another student's work**. Duplicate or very similar assignments are considered cheating. See the Course Integrity section for more information on the consequences of cheating.*

Please double check that you have submitted the correct homework assignment and that the file is readable. Any file we cannot open or that corresponds to the homework assignment from a different week will automatically receive a zero.

Grade Challenges

Any challenge to a grade in Brightspace must be made **within seven (7) calendar days** of its posting. Grade challenges may be done via email that include your name and course starting time as well as the specific points and problems to be reconsidered. A meeting during office hours may also be required depending on the situation.

After the seven (7) day period, all grades are final.

In-Class Quizzes

Five in-class quizzes will be given during the semester and those dates are listed in the class calendar.

1. The quiz will be based on the material covered in the previous two homework assignments as well as any discussed material in lecture.
2. Quizzes will be **closed** book and course notes. Each student will be allowed a **single, handwritten** (not typed) **one-sided** sheet of 8.5" x 11" paper of notes for each quiz. Auxiliary tables and formulas will only be included by the instructor if required.
3. No make-up quizzes will be given unless deemed necessary and must be agreed upon by the instructor **in advance**.
4. The quiz solution will be posted on Brightspace.

Examinations

A midterm and final examination will be administered in-person as scheduled in the course outline. If gathering in person for an exam is deemed unsafe by the University or the professor, then an alternate online exam through Brightspace will be given.

1. The midterm exam will cover the course material for the first half of the course (chapters 1-5 in the textbook).
2. The final exam will cover the course material for the second half of the course (chapters 6-10) in the textbook).
3. No make-up exams will be given unless required by University policies. Students eligible for a make-up exam or who need extra time must contact the instructor at least one week prior to the exam date.
4. Further details, including seating arrangements, will be provided closer to the exams.
5. Exams will be **closed** book and course notes. Each student will be allowed a **single, handwritten** (not typed) **two-sided** sheet of 8.5" x 11" paper of notes for each exam. Auxiliary tables and formulas will only be included by the instructor if required.

Student Role in the Course

Class participation is crucial for learning course content and maintaining class progress.

1. Be prepared for each class and contribute to class discussions. While in the classroom, students are expected to be active, cooperative learners by raising questions and participating in lecture activities, such as modeling, solving problems, and interpreting solutions.
2. Read the assigned sections from the textbook and routinely monitor Brightspace for updates.
3. Cell phones should be put away for the entire class. Texting during class is a distraction to others and can result in a loss of class participation points.
4. Laptop computers are allowed in class, but refrain from doing non-course activities, as it is distracting to other students and can result in a loss of class participation points.

Software

Microsoft Excel with the built-in Solver add-in will be the main software application used throughout the semester. For Mac OS, screenshots and keyboard shortcuts in the course materials will be different and students are responsible for finding the equivalent functionality.

Student Resources and Information

Student Health

Student life can be incredibly rewarding but sometimes unexpectedly difficult. If you find yourself beginning to feel some stress, anxiety, or a sense of being overwhelmed, try WellTrack at

<https://purdue.welltrack.com/>. Sign in and find information and tools about self-help therapy, available at any time.

If you need support and information about options and resources, please contact or see the [Office of the Dean of Students](#). Call 765-494-1747. Hours of operation are M-F, 8 a.m.- 5 p.m.

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc., sign up for free one-on-one virtual or in-person sessions with a [Purdue Wellness Coach at RecWell](#). Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is free and can be done on BoilerConnect.

Medically Excused Absence Policy for Students (MEAPS)

[Medical Excused Absences](#): Students may occasionally miss class and other academic obligations due to hospitalization, emergency department, or urgent care visits, whether physical or mental health-related. This policy intends to afford arrangements for students experiencing serious and short-term medical situations that cause them to miss coursework or exams. A student should complete the [Medical Excused Absence Request Form](#) to request that an absence notification be sent to instructors.

A student can contact the [Office of the Dean of Students \(ODOS\)](#) to request that a notice of the leave be sent to instructors when a situation involving **hospitalization, emergency department or urgent care visits emerges**. The student can then provide documentation of hospitalization, emergency department or urgent care as proof of legitimate absence to the ODOS as soon as these documents are available."

Link to Student Absence Policy:

<https://www.purdue.edu/advocacy/students/absences.html>

Protect Purdue

Any student who has substantial reason to believe that another person is threatening the safety of others by not complying with Protect Purdue protocols is encouraged to report the behavior to and discuss the next steps with their instructor. Students also have the option of reporting the behavior to the [Office of the Student Rights and Responsibilities](#). See also [Purdue University Bill of Student Rights](#) and the Violent Behavior Policy under University Resources in Brightspace.

CAPS Information

Purdue University is committed to advancing the mental health and well-being of its students. If [you or someone you know](#) is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765) 494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

Disability Resource Center

Purdue University is committed to making learning experiences accessible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at drc@purdue.edu or by phone 765-494-1247.

Basic Needs Security

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.-5 p.m. Monday through Friday.

Nondiscrimination

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. A hyperlink to Purdue's full Nondiscrimination Policy Statement is included in our course Brightspace under University Policies.

Emergency Preparedness and Planning

[Home - Emergency Preparedness and Planning - Purdue University](#)

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors by email. You are expected to read your @purdue.edu email on a frequent basis.

Adverse Conditions

The decision to delay, dismiss, or cancel classes and/or routine operations for the West Lafayette campus and its online courses is made by the President of the University. However, the instructor reserves the right to delay, dismiss, or cancel class, and students will be notified through Brightspace.

Course Integrity

Students are encouraged to discuss readings, computer exercises, homework exercises, and other course content with classmates. Such discussions constitute a valuable aspect of the student's own learning experience. However, all work counted towards a student's grade must be prepared and answered solely by the individual student.

Incidents of academic misconduct in this course will be addressed by the course instructor and referred to the Office of Student Rights and Responsibilities (OSRR) for review at the university level. Any violation of course policies as it relates to academic integrity will result minimally in a failing or zero grade for that assignment, and at the instructor's discretion may result in a failing grade for the course. In addition, all incidents of academic misconduct will be forwarded to OSRR, where university penalties, including removal from the university, may be considered. Students are strongly recommended to read the academic integrity guide published by the Office of the Dean of Students at: <http://www.purdue.edu/odos/osrr/academic-integrity/index.html>

Purdue University Code of Honor

The purpose of the Purdue University academic community is to search for truth and to endeavor to communicate with each other. Self-discipline and a sense of social obligation within everyone are necessary for the fulfillment of these goals. It is the responsibility of all Purdue students to live by this code, not out of fear of the consequences of its violation, but out of **personal self-respect**. As human beings we are obliged to conduct ourselves with high integrity. As members of the civil community, we must conduct ourselves as responsible citizens in accordance with the rules and regulations governing all residents of the state of Indiana and of the local community. As members of the Purdue University community, we have the responsibility to observe all University regulations.

“As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.”

To foster a climate of trust and high standards of academic achievement, Purdue University is committed to cultivating academic integrity and expects students to exhibit the highest standards of honor in their scholastic endeavors. Academic integrity is essential to the success of Purdue University’s mission. As members of the academic community, our foremost interest is toward achieving noble educational goals and our foremost responsibility is to ensure that academic honesty prevails.

Academic Integrity

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials and the instructor to potential breeches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

Commercial Websites

Unless stated otherwise by the instructor, all lecture slides, notes, exams, and all other course materials presented in class or as part of the class are subject to the instructor’s copyright. From the Purdue Student Misc. Conduct Regulations, “No individual is permitted to sell or otherwise barter notes, either to other students or to any commercial concern, for a course without the express written permission of the course instructor.” Uploading any course materials to non-Purdue affiliated websites without the instructor’s permission is in violation of the instructor’s copyright and is assumed to be assisting other students in cheating and can be punished as such.

Usage of Generative Artificial Intelligence/Large Language Models

Generative AI systems, such as ChatGPT or Gemini, can serve as valuable learning tools when used appropriately. **Students are welcome to use these tools as a Socratic mentor—to ask questions, clarify concepts, explore examples, and deepen their understanding of course material. However, generative AI should not be used to directly produce or complete any part of the course deliverables.**

All course assignments, quizzes, and exams must reflect each student’s own independent work and be completed in Microsoft Excel or other tools as instructed. Submitting AI-generated answers, formulas, or solutions as one’s own is considered a violation of academic integrity. Violations can include a failing grade for the course and restrictions from further class attendance. All suspected incidents of academic dishonesty will also be referred to the Office of Student Rights and Responsibilities for further review of the student’s status with the University, which may include being separated from the University.

Course communications

I will be available and respond to student questions and discussion posts directed at me generally within 24 hours during the work week. Student inquiries made during the weekend may experience a delayed response time. Questions about the course content, assignments, or lectures should be asked in the appropriate the discussion board and not email. Students are encouraged to answer the questions their peers ask on the Q&A forum. Email should only be used for personal questions. **When emailing me, please place the course number in the subject line of the email (i.e. MGMT 306).** This will help me tremendously in responding to emails quicker.