ADS3293A 570
Modeling, Risk and Simulation
Fall 2026

Instructor: Xing Jiang, PhD
Email: xjiang32@uwo.ca

Course Information

Mode of Instruction: In-Person

Calendar Description:

Stochastic optimization modelling, decision making under uncertainty, simulation modelling, regression and forecasting models, and sensitivity analysis.

Pre-requisite(s): Analytics and Decision Sciences 2298A/B, 0.5 from Mathematics 1229A/B or Mathematics 1600A/B; 1.0 from Economics 2122A/B, Economics 2123A/B, Economics 2222A/B, Economics 2223A/B or Analytics and Decision Sciences 2036A/B, Statistical Sciences 2035, Statistical Sciences 2857A/B, Statistical Sciences 2858A/B.

Extra Information: 3 lecture hours, 1 lab hour.

Course Weight: 0.50
Breadth: Category A
Subject Code: ADS

Notice: Unless you have either the requisites for this course (fulfilment of pre-requisites, no anti-requisite conflicts), or special permission from your Dean to enrol in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

KING'S Western University | School of Management, Economics, and Mathematics

Analytics and Decision Sciences ADS 3293A: Section 570
Modeling, Risk and Simulation—2026-2027

Instructor Information

Instructor Name: Xing Jiang
Email: xjiang32@uwo.ca

Office Hours: Mon/Wed 12:30 to 1:30 pm or by appointment.

Course Description: Optimization modeling, decision making under uncertainty, simulation modeling, Queueing Models.
Antirequisite(s): none

Prerequisite(s): 2298A/B, 0.5 from Mathematics 1229A/B or Mathematics 1600A/B; 1.0 from Economics 2122A/B, Economics 2123A/B, Economics 2222A/B, Economics 2223A/B or Analytics and Decision Sciences 2036A/B, Statistical Sciences 2035, Statistical Sciences 2857A/B, Statistical Sciences 2858A/B.

Course Textbooks & Software:

- Modeling, Risk and Simulation, first edition ($83.00). This is a custom eBook available at the UWO bookstore through the following link: https://bookstore.uwo.ca/textbook-search...570_KC/ADS3293A

Software:

- You are required to have access to a personal computer with internet access during class time, lab sessions, and exams. Your computer should have MS Excel and Analytic Solver Basic for Students (Analytic Solver Academy) (https://www.solver.com/welcome-students). This software is used throughout the textbook. For Analytic Solver, there is a 15-day trial available, with the option to purchase a 140-day (one semester) license for a nominal fee of $25 USD.
- Students can use the software in Excel for Windows, Excel for Macintosh, or Excel for the Web through a browser.
  Your instructor will provide *a course code* to help you install Analytic Solver Basic Desktop or Analytic Solver Basic Cloud. The detailed installation guide is posted on OWL.

Course Assessments:

(a) Suggested Exercises (Not graded)

Recommended textbook exercises are provided in this course outline (see below). Although these exercises are NOT graded, they offer valuable practice and will help you perform well in tutorial tests in the lab. Solutions to the textbook exercises can be found on OWL (or through the textbook's online resources from the publisher).

(b) Attendance and Class participation by using iClicker

Clickers will be used as a tool for active learning and in-class participation assessment and attendance checking. They allow students to answer questions during lectures using their smartphone, tablet, or laptop, providing instant feedback on comprehension to help monitor understanding of the course content.
Instructions for creating an iClicker account and signing in will be posted on OWL. Students can use the iClicker software free of charge through Western's license agreement.

During the first few lectures, we will have practice questions to help everyone become familiar with the software. Participation and attendance will be officially recorded from September 17 to December 9 for all lectures and Labs.

The clicker grade component will be calculated as follows:

- If a student answers 80% to 100% of all clicker questions, they will receive full marks 10/10.
- If a student answers less than 80% of all clicker questions, the clicker mark will decrease linearly using the formula:

  Clicker mark = 12.5(y), where y is the proportion of all iClicker questions the student answered.

Note if a student answers 40% or less of the iClicker questions the above formula will not be used and a grade of 0 will be applied. See the attendance policy below for details.

Please note that students will receive a participation grade only if they attend class. The participation grade includes a "free" 20%, which accounts for unexpected life events such as illness and technical issues. It is the student's responsibility to ensure their Clicker device is working properly. If you experience a technical issue during class, please send a written note to your instructor immediately at the end of class, then your record can be manually corrected. However, if you are late for class, any iClicker questions you miss will not be added to your record.

Falsifying attendance in class by completing iClicker questions while not physically in the classroom is considered a violation of academic integrity and potential penalties include 0 on the entire attendance/participation grade, course failure, or other penalties as determined by the office of the academic dean.

(c) Lab

Labs will cover Lab Quizzes, advanced Excel functions, and learning Analytic Solver. Lab quizzes are scheduled for the following dates at 8:30 am to 10:30 am:

Quiz 1: Oct 2	Quiz 2: Oct 23
Quiz 3: Nov 6	Quiz 4, Nov 27

The quizzes are 90-minute open-book tests based on recent course material. There are no make-up quizzes. The best three of the four quiz scores will count toward the 30% quiz component of the final grade.
If a student misses one quiz for a valid, documented reason, that quiz will be excused, and the remaining three quizzes will each count equally toward the 30% quiz component. Since the student has no remaining quiz to drop, all three completed quizzes will be used.

If a student misses more than one quiz, a mark of zero will be assigned to the second and any subsequent missed quizzes unless otherwise approved by the Dean's Office.

(e) Final exam

The final exam will be scheduled during the final exam period. It will cover all lecture materials and may consist of multiple-choice questions or a combination of multiple-choice and spreadsheet answer questions. The duration is 4 hours.

(f) Religious accommodations

Students seeking religious accommodation for any coursework must make such requests to academic counselling at least one week in advance (and at least two weeks in advance for final exams). After academic counselling has been contacted, you must then notify your instructor.

Evaluation

Your course grade will be determined using the following marking scheme:

Assessments	Weight (%)
In-Class and Lab Participation (iClicker)	20%
Lab Quizzes	30%
Final Exam	50%

Learning Outcomes and Course Objectives:

The course Modeling, Risk and Simulation introduces you to a variety of techniques from the field of business analytics that can be applied in spreadsheet models to assist in the decision-analysis process. We are focusing on three aspects: Simulation, Decision Analysis and Queuing Theory.

We use the Analytic Solver add-in to perform spreadsheet simulation and optimization. In Decision Analysis, we present several techniques for analyzing a variety of decision problems, especially to create Decision trees in multistage decision problem. We discuss how utility theory can be applied to decision problems to account for the different results. In Queuing theory, we introduce several different types of queues. For many models, closed-form equations have been developed to describe various operating characteristics of the system. When closed-form solutions are not possible, we introduce the technique of simulation to analyze the behavior of the system.

Email Communication Policy

Students must use their uwo email address when emailing the instructor so it does not end up in spam and can be verified. Subject line must include course and section number. MEM faculty will endeavor to respond to student emails within 3 business (working) days.

Email communication should be reserved only to provide information or ask a question that requires a very brief response; questions related to the course content (statistics questions) should be communicated during regular office hours or by appointment.

Student Expectations

- regular attendance at classes and Labs. We need to use Excel and iClicker in each class. Students need to bring their laptop or other related device to classroom, Lab and exams.
- completion of all assigned work including suggested exercises, Lab tests.
- awareness of items on the OWL and use of materials posted on the course OWL web site.
- Seeking help when needed.

Attendance Policy

Attendance is required! Missing 30% of scheduled classes is considered to be too frequent. A warning email will be issued at the 25% point and if absences continue the instructor will implement the King's attendance policy below:

King's policy states that "A student may be debarred from writing the final exam for failure to maintain satisfactory academic standing throughout the year. Any student who, in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, will be reported to the Dean of the Faculty offering the course, after due warning has been given. On the recommendation of the department concerned, and with the permission of the Dean of that Faculty, the student will be debarred from taking the regular examination in the course."*

* implies that faculty must be tracking and have communicated attendance concerns to student

Intellectual Property Statement

Course content created by a faculty member is considered the faculty member's intellectual property; it should not be distributed, shared in any public domain, or sold by a student or other third party without prior written consent of the faculty member. Sharing, posting, selling or using this material outside your personal use in this course is considered to be an infringement of intellectual property rights.

Chapter	**Suggested Exercises (**This list may be updated or modified as needed.)
1	N/A
2	1, 3, 5, 7, 8, 9, 11, 13, 15, 17, 18, 19, 21, 23, 27, 29, 31, 35
12	2, 3, 5, 6, 7, 9, 11, 13,17, 21, 25, 28, 31, 36 (a) and (b)
13	1, 3, 5, 7, 9, 11, 13, 15, 17, 23, 25
14	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25

Schedule for Lecture and tests *(Approximate)*	
Chapter	**Topics**
Week 0 (Sept 9 to 11)	There is no lab on Friday, Sept 11
Week 1 (Sept 14 to 18) Chapter 1 Introduction to Modeling and Decision Analysis Chapter 2 Introduction to Spreadsheet Modeling	Course introduction Sections 2.1-2.2, Basic Spreadsheet Modeling: Concepts and Best Practices,
Week 2 (Sept 21 to 25) Chapter 2 (cont'd)	2.3 Cost Projections, 2.4 Breakeven Analysis, 2.5 Ordering with Quantity Discounts and Demand Uncertainty,
Week 3 (Sept 28 to Oct 2) - no class on Sept 30 Chapter 2 (cont'd)	2.6 Estimating the Relationship between Price and Demand, 2.7 Decisions Involving the Time Value of Money
• **Quiz 1 is available in Lab from 8:30 am to 10:30 am, Friday, Oct 2**	
Week 4 (Oct 5 to 9) Chapter 12 Introduction to Simulation Using Analytic Solver	Section 12.0 to 12.5, Methods of Risk Analysis, Spreadsheet Simulation Using Analytic Solver,
Week 5 (Oct 12 to 16) **Fall Reading Week**	
Week 6 (Oct 19 to 23) Chapter 12 (cont'd)	Section 12.6 to 12.12, Running simulation, Data analysis, Uncertainty of Sampling, interactive simulation, extra examples
• **Quiz 2 is available in Lab from 8:30 am to 10:30 am, Friday, Oct 23**	
Week 7 (Oct 26 to 30) Chapter 12 (cont'd)	Section 12.15 Reservation Management example.
Week 8 (Nov 2 to 6) Chapter 12 (cont'd)	12.15 to 12.17, examples in inventory control, project selection and Portfolio optimization.
• **Quiz 3 is available in Lab from 8:30 am to 10:30 am, Friday, Nov 6**	
Week 9 (Nov 9 to 13) Chapter 12 (cont'd)	project selection and Portfolio optimization.
Week 10 (Nov 16 to 20) Chapter 14 Decision Analysis	Section 14.1 to 14.8, Decision Rules (Nonprobabilistic and Probabilistic), Decision tree 14. 9-10
Week 11 (Nov 23 to 27) Chapter 14 (cont'd)	Section 14.11 to 14.14, Multistage, Sensitivity Analysis, Using sample information, Bayes' Theorem.
• **Quiz 4 is available in Lab from 8:30 am to 10:30 am, Friday, Nov 27**	
Week 12 (Nov 30 to Dec 4) Chapter 14 (cont'd) Chapter 13 Queuing Theory	Section 14.15 to 14.16, Utility Theory ,Section 13.0 to 13.5, Kendall Notation, Queuing Models (if time is permitted)
Week 13 (Dec 7 to 9) Final review	

KING'S UNIVERSITY COLLEGE
GENERAL COURSE POLICIES
2026-2027

1. Academic Accommodations, Consideration for Absences

Academic Accommodation (Accessibility)

Accessibility Services works to ensure that academic programs are accessible to all students, and supports students who may have a condition related to, but not limited to, vision, hearing, mobility, different ways of learning, mental health, chronic illnesses, chronic pain, autism spectrum disorder, ADD/ADHD, and temporary conditions (beyond short-term academic consideration). Accessibility Services provides recommendations for accommodation based on medical documentation or psychological and cognitive assessment. The accommodation policy can be found here Academic Accommodation for Students with Disabilities. Information on Accessibility Services at King's can be found here.

Academic Consideration for Student Absence

If a student is unable to meet a course requirement due to substantial but temporary extenuating circumstances (medical or compassionate), they should follow the procedures below.

In some cases, where instructors have built flexibility into their assessments, this flexibility will already address consideration needs.

Requests for academic consideration should be directed to the Academic Advising Office of your faculty/college of registration. Requests must be made as soon as possible and no later than 48 hours after the missed assessment.

As a rule, documentation is required for academic consideration. For academic consideration requests on medical grounds, the Student Medical Certificate is available at https://registrar.uwo.ca/academics/pdfs/student-medical-certificate.pdf

Students are permitted one academic consideration request without supporting documentation per term per course.

Instructors may designate one assessment per half-course weight as requiring formal supporting documentation. Please refer to the course outline for each course.

For further information, please see:
https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf

Absences from Final Examinations

If you miss the Final Exam, contact the Academic Advising Office of your faculty/college of registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, or more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under Special Examinations).

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give notice in writing to the instructor and Academic Advising Office if a course requirement will be affected by a religious holiday/observance. Notice must be given as early as possible, and no later than two weeks prior to an examination, and one week prior to a midterm test date. It is the responsibility of such students to inform themselves concerning the work done in classes from which they are absent and to take appropriate action.

2. Support Services

Accessibility, Counselling and Student Development at King's University College: https://kings.uwo.ca/community/library/services/accessibility/

Students experiencing emotional or mental health distress can access services at King's University College: https://kings.uwo.ca/campus-life/student-supports/

Good2talk is a good online and phone 24/7 resource for students and is available in English, Mandarin, and French: https://good2talk.ca, 1-866-925-5454

MentalHealth@Western provides a complete list of options about how to obtain help: https://www.uwo.ca/health/mental-health/index.html

Academic Support Services at King's University College: https://www.kings.uwo.ca/current-students/academic-resources/

GBSV Support:

King's (Western) is committed to reducing incidents of gender-based sexual violence (GBSV) and providing compassionate support to anyone who is going through or has gone through these traumatic events. If you are experiencing or have experienced GBSV (either recently or in the past), you will find information about support services for survivors, including emergency contacts at the following website:

Mental Health and Wellness at King's - King's University College

You can reach someone supports at Kings by emailing Care@kings.uwo.ca or calling 519-930-4640 to reach a social worker who can offer help.

You can also reach Western's Gender-Based Violence & Survivor Support Case Manager by email or by calling 519-661-3568.

You can reach someone supports at Kings by emailing Care@kings.uwo.ca or calling 519-930-4640 to reach a social worker who can offer help.

3. Statement on Use of Electronic Devices

Use of Electronic Devices: Unless explicitly stated otherwise, you are not allowed to have a cell phone, or any other electronic device, with you during tests or examinations. Unauthorized possession of such a device during a test or examination constitutes an academic offence.

Use of Laptops, Tablets, and Smartphones in the Classroom: King's University College at Western University acknowledges the integration of new technologies and learning methods into the curriculum. The use of electronic devices such as laptop computers, tablets, or smartphones can contribute to student engagement and effective learning. At the same time, King's recognizes that instructors and students share jointly the responsibility to establish and maintain a respectful classroom environment conducive to learning.

The use of electronic devices by students during lectures, seminars, labs, etc., shall be for matters related to the course at hand only. Students found to be using electronic devices for purposes not directly related to the class may be subject to sanctions under the Student Code of Conduct; see https://kings.uwo.ca/sites/2025/assets/files/about/governance/policies/board/Board%20Policy%203_1%20Code%20of%20Student%20Responsibilities%20and%20Conduct.pdf

Inappropriate use of electronics (e.g., laptops, tablets, smartphones) during lectures, seminars, labs, etc., creates a significant disruption. As a consequence, instructors may choose to limit the use of electronic devices in these settings. In addition, in order to provide a safe classroom environment, students attending in-person class sessions are strongly advised to operate laptops with batteries rather than power cords.

4. Statement on Academic Offences

King's is committed to academic integrity. Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, is posted at
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_offences.pdf

It is expected that students will submit work that is truly their own, completed without external assistance (human or artificial) except as explicitly permitted by the course instructor. Check with you instructor on what tools, including generative AI (ChatGPT, translation tools, grammar-checking tools) are permitted in the course. Because a tool is permitted in one course, that does not mean it is permitted in other courses.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system; see https://elearningtoolkit.uwo.ca/tools/Originality Reports - TurnItIn.html.

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

5. Copyright of Course Material

Lectures and course materials, including PowerPoint presentations, tests, outlines, and similar materials are protected by copyright. Faculty members are the exclusive owner of copyright in those materials they create. Students may take notes and make copies for their own use. Students may not allow others to reproduce or distribute lecture notes and course materials publicly (whether or not a fee is charged) without the express written consent of a faculty member. Unauthorized sharing of class content is subject to academic discipline.

Similarly, students own copyright in their own original papers and exam essays. If a faculty member wishes to post a student's answers or papers on the course website, they should ask for the student's written permission.

6. Use of Recordings

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation and/or the participant has the prior written permission of the instructor. Unauthorized recording and/or sharing of class content is subject to academic discipline.

7. Policy on Attendance

Any student who, in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, will be reported to the Dean of the Faculty offering the course, after due warning has been given. On the recommendation of the department concerned, and with the permission of the Dean of that Faculty, the student will be debarred from taking the regular examination in the course.