

C520: Quantitative Analysis

Kelley Online Graduate Programs – Fall Quarter 2023

Professor Aaron Perry, Operations and Decision Technologies
Email: abperry@indiana.edu

Class Communications

If you need to contact me, please do so by emailing me directly. ***Please do not use the Canvas mail or other messaging there – I won't be monitoring it – that system removes message history and attachments.*** The Subject Line should include C520 and the topic of the message. If you send a message, do not just choose a random message, and hit reply.

Extensive use will be made of the Canvas Learning Management system. We will use it for course announcements, class files, posting recordings, delivery and submission of assignments and exams, and grading feedback. ***BUT no two-way communication.***

Online Sessions

We will have live Zoom sessions as follows on the relevant weeks:

C520 Thursdays 9:00 AM (EST)

Unauthorized Use, Sale, or Distribution of Course Material and Content: I hold the exclusive right to distribute, modify, post, and reproduce any course materials I have created, including written materials, study guides, lectures, assignments, exercises, and exams. Commercial tutoring services and/or online platforms may offer students something of value (money, access to materials for other courses, etc.) for sharing materials from this class. Doing so is a violation of my intellectual property rights, and may violate related University policies.

In addition, some online course content, including recorded lectures and/or recordings of class sessions may be made available to you to view and download. While you are permitted to take notes on such content for your personal use, you are not permitted to distribute or re-post such content either in its original or in altered form without my express written permission.

Finally, you may not record, capture, or photograph class sessions (whether in person or online) without my express written permission

Violation of course rules involving unauthorized or improper use, sale, or distribution of course material and content as outlined above is an act academic misconduct under the IU Code of Student Rights, Responsibilities, and Conduct and is subject to sanction. That sanction could be failing the course.

Why Quantitative Analysis?

Businesses around the world are looking for ways to leverage data to create business value: data about customers, inventories, business operations, product performance, prices, sales, advertising campaigns, employees, and supply chains. Decision making via quantitative analysis using tools from operations research, statistical modeling, predictive analytics, and more are a part of that leverage and a part of what is widely becoming known as *business analytics*.

Required Software and Books

Software: We will use Microsoft Excel extensively for all the analytical and modeling work. Thus, you should be comfortable with a spreadsheet environment.

Microsoft Windows: The tools we use in optimization work best (and in some cases, only work) in a Windows environment. If you are a Mac user, you may want to consider the use of Bootcamp, Parallels, or other Windows-emulator options. For information on how to set up your Mac to run Windows, we recommend the IU Knowledge Base. This page, <https://kb.iu.edu/d/ahjj>, will be a good place to start. If you have a Mac but do not want to run Windows, you may use IUAnyware (<https://iuanyware.iu.edu>), which allows you to run certain applications through your web browser without the need to install the programs on your computer.

We will also use two Excel “add-ins”, Excel’s Analysis ToolPak for statistical analysis and Excel’s Solver for math programming. These add-ins come with Excel and are easy to invoke. I will use Excel MS365, though other versions are fine, though other versions are fine – the ribbons might look a little different though so a quick google might be needed. If you do not have a copy of Excel, you can get it from <https://office.iu.edu>.

Textbook: *Microsoft Excel 2019 Data Analysis and Business Modeling*

Authors: Wayne Winston

Available in Canvas

This text is used in many MBA Programs and has excellent examples using spreadsheets.

Assignments and Exams

LATE SUBMISSIONS are not accepted and earn a grade of 0.

The assignments and exams are spaced at regular intervals, due approximately:

HW 1: End of course week 2

HW 2: End of course week 5

Exam 1: End of course week 6

HW 3: End of course week 8

HW 4: End of course week 10

Exam 2: End of course week 11 ½

(weeks do not include holiday weeks)

Submit these by the end of day (11:58pm EST) on the due date published in Canvas.

Homework Assignments: Assignments are delivered and submitted in Canvas. These assignments will account for **30%** of your grade. You may work with **A** partner of your choice on the homeworks; however, **each of you must submit the assignment with both names** clearly prominent in the spreadsheet. If you choose to work by yourself, that is fine too. *You may not receive help from anyone else – academic dishonesty is not acceptable in any form. If you have questions about what is allowed, ask!*

Exams: There will be two exams, where the final exam could contain material from throughout the whole course / quarter. The exams will be given online with a 4-hour limit each and are worth **70%** of your grade. *YOU CANNOT WORK TOGETHER ON THE EXAMS! You may not receive help from anyone or anything on the exam – academic dishonesty is not acceptable in any form. If you have questions about what is allowed, ask!*

Grades: Class grades will be based on the homework assignments and the exam. Your final grade will be translated into a letter grade based on the following scale:

Above 90%	A (A or A- or rarely an A+)
80% to 90%	B (B+, B or B-)
70% to 80%	C (C+, C or C-)
60% to 70%	D (D+, D or D-)
Under 60%	F

Course Topic Outline

The class schedule outlined here provides an overview of the *planned* topics that will be covered in the course. Details are presented in Canvas.

- Topic 1: Statistics and Probability Distributions
- Topic 2: Simulation
- Topic 3: Optimization
- Topic 4: Regression

APPENDIX

University Provided Statement: Unauthorized Use, Sale, or Distribution of Course Material and Content: I hold the exclusive right to distribute, modify, post, and reproduce any course materials I have created, including written materials, study guides, lectures, assignments, exercises, and exams. Commercial tutoring services and/or online platforms may offer students something of value (money, access to materials for other courses, etc.) for sharing materials from this class. Doing so is a violation of my intellectual property rights, and may violate related University policies.

In addition, some online course content, including recorded lectures and/or recordings of class sessions may be made available to you to view and download. While you are permitted to take notes on such content for your personal use, you are not permitted to distribute or re-post such content either in its original or in altered form without my express written permission.

Finally, you may not record, capture, or photograph class sessions (whether in person or online) without my express written permission

Violation of course rules involving unauthorized or improper use, sale, or distribution of course material and content as outlined above is an act academic misconduct under the IU Code of Student Rights, Responsibilities, and Conduct and is subject to sanction. Sanctions could include failing the course.

There are several key goals and objectives that we would like to accomplish with this course.

In the table below, specific course objectives are stated, along with their alignment to the higher-level goals of the MSHM Student Learning Objectives (SLOs).

Upon completion of this course, students should be able to:	Which aligns with the MSHM SLO:
1. Understand how analytical techniques and tools are used to provide solutions to operational problems in various business functional areas including finance, economics, operations, and marketing.	SLO 5.1: Investigate vital statistics and core health indicators to guide decision making and analyze health trends of the population to guide the provision of health services
2. Develop analytical models to analyze various business problems.	SLO 5.1
3. Recommend sound solutions to complex business problems based on the results of their analysis.	SLO 5.1

University Required Statement: As your instructors, one of our responsibilities is to create a positive learning environment for all students. Title IX and IU's Sexual Misconduct Policy prohibit sexual misconduct in any form, including sexual harassment, sexual assault, stalking, and dating and domestic violence. If you have experienced sexual misconduct, or know someone who has, the University can help.

*If you are seeking help and would like to speak to someone confidentially, make an appointment with: The Sexual Assault Crisis Services (SACS) at (812) 855-8900 (counseling services)
Confidential Victim Advocates (CVA) at (812) 856-2469 (advocacy and advice services) IU Health Center at (812) 855-4011 (health and medical services)*

It is also important that you know that Title IX and University policy require us to share any information brought to our attention about potential sexual misconduct, with the campus Deputy Title IX Coordinator or IU's Title IX Coordinator. In that event, those individuals will work to ensure that appropriate measures are taken and resources are made available. Protecting student privacy is of utmost concern, and information will only be shared with those that need to know to ensure the University can respond and assist. We encourage you to visit stopsexualviolence.iu.edu to learn more.