

WESTERN KENTUCKY UNIVERSITY
GORDON FORD COLLEGE OF BUSINESS

MGT 313 – ONLINE: DECISION MODELING

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| <p>Instructor: Ismail Civelek, Ph.D. Office: GH 208 Email: ismail.civelek@wku.edu (Fastest way) Office Hours: By appointment in person or Zoom.</p> |
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Course Description & Objectives: In a dynamic, competitive world, a company's effectiveness depends significantly on how well its resources are managed. Managing the company's critical performance dimensions - quality, speed, flexibility, and cost - requires a thorough understanding of physical and information *processes* by which inputs of materials, labor, capital and information are transformed into products and services for customers. Additionally, one of the main features of today's world is the ubiquitous use of technology. Management has access to sophisticated decision models in almost every branch of industry: revenue management and crew scheduling in the airline industry; scheduling of intensive care units in hospitals; supply chain management and inventory management in manufacturing; financial models to minimize risk and maximize return; routing and pricing in telecommunication networks. In each of these industries, *quantitative decision models* are a key to success. What are the trade-offs between a nonlinear model and a simulation model? How can marginal analysis be used to make managerial decisions? Managers with basic quantitative training that we provide at the GFCB can answer these questions and make better decisions.

The central topics of study are linear, integer, and nonlinear programming. We place special emphasis on linear programming, particularly on modeling *business applications* and *sensitivity analysis*. This course follows a *practical spreadsheet-based* approach to provide hands-on experience with **Excel-Solver** (with or without Analytical Solver Platform). (You don't need to buy \$25 the 140-day license of Analytical Solver Platform. You can finish the class by using ONLY Excel-Solver, which is free in every Excel.) By the end of the course you will develop intuition to identify managerial problems amenable to optimization technology, and skills to build and interpret optimization models with *management science* perspective.

Required Materials: *Spreadsheet Modeling & Decision Analysis*, by Cliff T. Ragsdale, 7th ed. ISBN: 978-1-285-41868-1. Newer editions of the book is acceptable, too. There are 4 ways to access this book: New hardcover, Used, E-book or Rent. Renting or used books would be the cheapest option. The link for Amazon, which is cheaper than the publisher's website: [Click Here!](#)

Required Software and IT aid: *Microsoft Word, PowerPoint and Excel (Solver); Adobe Reader; Internet connection, WKU Blackboard.*

Grading: The course grade will be based on the following components.

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| Homework (8) | 80% |
| Quiz (2) | 5% |
| Final Exam | 15% |
| TOTAL | 100% |

Homework:

- There are 8 assignments that each of them is worth 10% of the total grade (100%).
- Assignments must be typed in Word, Excel, Blackboard or a similar program and submitted via Blackboard.
- If you have charts, calculations on a paper, you can scan it or take a picture of it. You should put scanned work or picture in Word document before submitting it.
- Late submissions will be penalized by 10% per day.
- None of the homework scores will be dropped.

Quiz:

- There are 2 quizzes that each of them is worth 2.5% of the total grade (100%).
- Questions will ALL be multiple-choice.
- You will be given limited time to complete the exam.
- None of the quiz scores will be dropped.

Final Exam:

- Final exam will be held in Blackboard.
- This exam is open-book, open-notes, open-everything.
- Final exam is worth 15% of the total grade.
- You will be given limited time to complete the exam.
- The final exam will include both quantitative and qualitative questions related to the readings and lecture slides.
- Questions will ALL be multiple-choice.

Letter Grades:

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| A | $\geq 90\%$ |
| B | 80% - 89% |
| C | 70% - 79% |
| D | 55% - 69% |
| F | $\leq 54\%$ |

CLASS SCHEDULE

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| <u>Module 1:</u> Introduction and Overview; Linear Programming; Analytical Solver Platform Quiz 1 Homework 1 ; Homework 2 ; Homework 3 |
| <u>Module 2:</u> Sensitivity Analysis; Network Models Quiz 2 Homework 4 ; Homework 5 ; Homework 6 |
| <u>Module 3:</u> Integer Programming Homework 7 ; Homework 8 |
| <u>Module 4:</u> Review Session Final Exam |

ADA Accommodations

In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, Room 1074. The SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via email at sarc.connect@wku.edu. Please do not request accommodations directly from the professor or instructor without a faculty notification letter (FNL) from The Student Accessibility Resource Center.

Title IX/ Discrimination & Harassment

Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's [Sex and Gender-Based Discrimination, Harassment, and Retaliation](#) (#0.070) and [Discrimination and Harassment Policy](#) (#0.2040). Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Executive Director, Office of Institutional Equity/Title IX Coordinator, Ena Demir, 270-745-6867 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121. Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are "Responsible Employees" of the University and MUST report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's [Counseling and Testing Center](#) at 270-745-3159.

COVID-19

All students are strongly encouraged to [get the COVID-19 vaccine](#). In accordance with WKU policy, all students must call the WKU COVID-19 Assistance Line at 270-745-2019 within 4 hours of testing positive for COVID-19 or being identified as a close contact to someone who has tested positive. The COVID Assistance Line is available to answer questions regarding any COVID-19 related issue. This guidance is subject to change based on requirements set forth by federal, state, and local public health entities. Please refer to the Healthy on the Hill website for the most current information. www.wku.edu/healthyonthehill

WKU Counseling and Testing Center

The university experience should be challenging, but not overwhelming. To this end, the WKU Counseling Center provides a variety of services to help strengthen students' capacity to tolerate distress, form healthy relationships, and seek healthy expressions of their ideals and values. If you would like to speak with someone, you may contact WKU's [Counseling and Testing Center](#) at 270-745-3159 or use their Here To Help service at <https://www.wku.edu/heretohelp/heretohelpemail.php>. If you need immediate help, please visit the Counseling Center in 409 Potter Hall or call the 24-hour emergency help line at 270-745-2548.

Big Red Backpack

The Big Red Backpack program is the title of WKU's partnership with Barnes & Noble College for their First Day Complete initiative. Big Red Backpack is a course materials delivery program that ensures students have their required course materials on the first day of class and may reduce the costs of materials for many of their courses. Enrollment in the program occurs automatically when students register for classes. Students may opt out of the program each semester, as long as they choose to opt out for all of their classes. Students MUST carefully and completely follow all instructions regarding the Big Red Backpack Program. Those instructions will be provided by:

1. An email to all Topper email addresses from the Big Red Backpack Program one month prior to the start of classes.
2. The Big Red Backpack Program site: <https://www.wku.edu/bigredbackpack/>.

Students should refer to the Big Red Backpack Program site referenced above for opt-out deadlines and any additional details.

Regular And Substantive Interaction (RSI) Statement

- Providing constructive feedback on student assignments, which identifies specifically what has been done correctly, needs improvement, or guides students to the next steps of learning.

- Providing information or responding to questions about the content of a course or competency.
- Providing timely and detailed feedback on assignments within 48 hours of submission.