



# OPERATION RESEARCH

## Business Studies Department Mission Statement

*Aligning with the Lakewood University mission, our innovative business programs will prepare learners to work as valuable managers and leaders in their respective workplaces, facilitating change for the benefit of the organization, its stakeholders, and society.*

## Disclaimer Statement

The final examination in this course will be remotely proctored. Please be sure you have your computer's camera on so you can display your photo identification so the proctoring system can verify your identity. If you run into any issues please reach out to your Success Coach.

You can also prepare for your examination by reading this helpful guide: <https://www.talview.com/en/test-taker-guide>

## OPRS300 — Operation Research, 3.0 hours

## PROFESSOR

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Dr. Mike Cattermole, DBA possesses over eighteen years of experience teaching college/university students online and on campus. Mike has eighteen years of experience in the staff development industry as well as experience as an organizational development consultant.

## CONTACT INFORMATION

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E-mail: [mccattermole@lakewood.edu](mailto:mccattermole@lakewood.edu)

Cell Phone: 800-517-0857 X 797

## ONLINE SUPPORT (IT) AND MOODLE NAVIGATION:

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All members of the Lakewood University community who use the University's computing, information or communication resources must act responsibly. Support is accessible by calling 1-800-517-0857 option 2 or by emailing [info@lakewood.edu](mailto:info@lakewood.edu)

## BOOKS AND RESOURCES

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Taha, Hamdy A. Operations Research: An Introduction. 11th Edition. Pearson Education (US), 2022.

## EVALUATION METHOD

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Graded work will receive a numeric score reflecting the quality of performance.

#### Course Requirement Summary

- Assignments - Total of 160 Points
- Weekly discussion forums-Total of 80 Points
- Final Exam - 50 Points

## GRADING SCALE

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Graded work will receive a numeric score reflecting the quality of performance as given above in evaluation methods. The maximum number of points a student may earn is 290. To determine the final grade, the student's earned points are divided by 290.

Your overall course grade will be determined according to the following scale:

A = (90% -100%)

B = (80% - 89%)

C = (70% - 79%)

D = (60% - 69%)

F &lt; (Below 60%)

## ACADEMIC INTEGRITY/ PLAGIARISM:

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Cheating (dishonestly taking the knowledge of another person whether on a test or an assignment and presenting it as your work) and plagiarism (to take and pass off as one's own the ideas or writing of another) are a serious issue. While it is legitimate to talk to others about your assignments and incorporate suggestions, do not let others "write" your assignments in the name of peer review or "borrow" sections or whole assignments written by others. We do get ideas from life experiences and what we read but be careful that you interpret these ideas and make them your own.

I am aware that many types of assignments are available on the internet and will check these sources when there is legitimate suspicion.

Penalty is a zero on the assignment. In cases where there is a major or continuous breach of trust, further discipline, such as an "F" in the course, may be necessary.

The major consequence of any form of cheating is damage to your character and the result of trust and respect.

## DISABILITY ACCOMMODATIONS

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Students who have a disability and wish to request an academic accommodation should contact Jim Gepperth, the Disabilities Services Coordinator and Academic Dean. The student can request an accommodation at any time although it is encouraged to do so early in the enrollment process. The student should complete an accommodation request form which begins a conversation between the school and the student regarding the nature of their disability and an accommodation that would help the student succeed in their program. The school may request documentation regarding the disability to address the accommodation request effectively. The school will communicate to the student the type of accommodation arranged. This process typically follows a team approach, bringing together persons from the academic department (including the instructor) and personnel from other departments as necessary. Additional information on disability accommodations may be found in the Lakewood University Catalog.

Disability Services Email: [disabilityservices@lakewood.edu](mailto:disabilityservices@lakewood.edu)

## SUPPLEMENTAL TEXTS

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You can use the following resources to assist you with proper source citation.

American Psychological Association Style Guide- [https://www.mylakewoodu.com/pluginfile.php/118179/mod\\_resource/content/1/APA%20Style%20Guide%207th%20edition.pdf](https://www.mylakewoodu.com/pluginfile.php/118179/mod_resource/content/1/APA%20Style%20Guide%207th%20edition.pdf)

The Purdue OWL website is also a helpful resource for students. Here is a link to the OWL website: [https://owl.purdue.edu/owl/research\\_and\\_citation/apa\\_style/apa\\_formatting\\_and\\_style\\_guide/general\\_format.html](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/general_format.html)

## LIBRARY

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Mary O'Dell is the Librarian on staff at Lakewood University

She is available by appointment. You can make an appointment with her by emailing her at [modell@lakewood.edu](mailto:modell@lakewood.edu) or call at 1-800-517-0857 X 730

You may also schedule a meeting at this link: <https://my.setmore.com/calendar#monthly/r3a761583354923270/01032020>

She can assist you with navigating LIRN, research, citations etc.

## SUPPORT

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Each student at Lakewood University is assigned a Success Coach. Your Success Coach exists to assist you with academic and supportive services as you navigate your program. They will reach out to you, often, to check-in. Please use the resources they offer.

Student Services is available to assist with technical questions regarding Lakewood University and all services available to you.

1-800-517-0857 option 2  
[info@lakewood.edu](mailto:info@lakewood.edu)  
[studentservices@lakewood.edu](mailto:studentservices@lakewood.edu)

## CAREER SERVICES

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Students are offered Career Services at any point as they journey their academics at Lakewood University.

1-800-517-0857 option 2  
[careerservices@lakewood.edu](mailto:careerservices@lakewood.edu)

## LESSONS

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TITLE	COURSE TOPIC	READINGS/ASSIGNMENTS	DUE	OBJECTIVES
Lesson #1	<ul style="list-style-type: none"><li>What Is Operations Research?</li><li>Modeling with Linear Programming</li><li>The Simplex Method and Sensitivity Analysis</li></ul>	Study Course Syllabus Read Chapters 1, 2 & 3 Participate in the Discussion Forum Complete Assignment 1 Lesson Evaluation	Assignment 1 upon completion of the lesson	Objective 1
Lesson #2	<ul style="list-style-type: none"><li>Duality and Post-Optimal Analysis</li></ul>		Assignment 2 upon completion of the lesson	Objective 2

- Transportation Model and Its Variants
  - Network Model
- Read Chapters 4, 5, & 6  
Participate in the Discussion Forum  
Complete Assignment 2  
Lesson Evaluation

TITLE	COURSE TOPIC	READINGS/ASSIGNMENTS	DUE	OBJECTIVES
Lesson #3	<ul style="list-style-type: none"> <li>• Advanced Linear Programming</li> <li>• Goal Programming</li> <li>• Integer Linear Programming</li> <li>• Heuristic Programming</li> </ul>	Read Chapters 7, 8, 9 & 10 Participate in the Discussion Forum Complete Assignment 3 Lesson Evaluation	Assignment 3 upon completion of the lesson	Objective 3

TITLE	COURSE TOPIC	READINGS/ASSIGNMENTS	DUE	OBJECTIVES
Lesson #4	<ul style="list-style-type: none"> <li>• Traveling Salesperson Problem(TSP)</li> <li>• Deterministic Dynamic Programming</li> <li>• Inventory Modeling (with Introduction to Supply Chains)</li> <li>• Review of Basic Probability</li> </ul>	Read Chapters 11, 12, 13 & 14 Participate in the Discussion Forum Complete Assignment 4 Lesson Evaluation	Assignment 4 upon completion of the lesson	Objective 4

TITLE	COURSE TOPIC	READINGS/ASSIGNMENTS	DUE	OBJECTIVES
Lesson #5	<ul style="list-style-type: none"> <li>• Decision Analysis and Games</li> <li>• Probabilistic Inventory Models</li> <li>• Markov Chains</li> <li>• Queuing Systems</li> </ul>	Read Chapters 15, 16, 17 & 18 Participate in the Discussion Forum Complete Assignment 5 Lesson Evaluation	Assignment 5 upon completion of the lesson	Objective 5

TITLE	COURSE TOPIC	READINGS/ASSIGNMENTS	DUE	OBJECTIVES
Lesson #6	<ul style="list-style-type: none"> <li>• Simulation Modeling</li> <li>• Classical Optimization Theory</li> <li>• Nonlinear Programming Algorithms</li> <li>• Additional Network and LP Algorithms</li> </ul>	Read Chapters 19, 20, 21 & 22 Participate in the Discussion Forum Complete Assignment 6 Lesson Evaluation	Assignment 6 upon completion of the lesson	Objective 6

TITLE	COURSE TOPIC	READINGS/ASSIGNMENTS	DUE	OBJECTIVES
Lesson #7	<ul style="list-style-type: none"> <li>• Forecasting Models</li> <li>• Probabilistic Dynamic Programming</li> </ul>	Read Chapters 23 & 24 Participate in the Discussion Forum Complete Assignment 7 Lesson Evaluation	Assignment 7 upon completion of the lesson	Objective 7

TITLE	COURSE TOPIC	READINGS/ASSIGNMENTS	DUE
Lesson #8	<ul style="list-style-type: none"> <li>• Case Analysis</li> </ul>	Read Chapter 25 & 26 Participate in the Discussion Forum Complete Assignment 8 Complete the Final Exam	Assignment 8 and Final exam upon completion of the lesson

## DESCRIPTION

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This course will help the learners understand how strategically important a role of an Operational Manager is and how they function by giving them an understanding of how to accomplish a task efficiently. The main task of the operation manager is the planning, directing operations and making improvement in productivity and efficiency.

### Program Objectives

1. Define and describe the term operations research.
2. Define and describe the term linear programming.
3. Define and describe the simplex method.
4. Define and describe the transportation model.
5. Define and describe the network model.
6. Define and describe goal programming.
7. Define and describe the traveling salesperson problem.
8. Define and describe the inventory model.

## OBJECTIVES

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