Supply Chain Analytics

LSCM 361_1

BALL STATE UNIVERSITY

Instructor Information

Dr. Lakshika Kuruppuarachchi

Assistant Teaching Professor
Information Systems and Operations Management
Ball State University, Muncie, IN

Email: lkurupp@bsu.edu
Phone: 765-285-5611
Office Hours: Tuesdays & Thursdays, 8:45 am – 10:45 am and 2:00 pm – 3:00 pm
Office Location: WB 235

Course Information

Course Description

An applications-oriented course focused on computer modeling and simulation of issues in transportation and logistics planning using optimization tools. Modeling tools include linear programming, integer programming, regression, heuristic methods, and other techniques.

Prerequisites

ISOM 251 or ISOM 351.

Course Objectives

This course is designed to develop student's ability to model and analyze real systems using simulation, modeling, and optimization. Through this course, the student will understand the power and characteristics of discrete event simulation modeling, and to the concepts of modeling and optimization. During the course, the student will get experience in:

1. Formulating an appropriate simulation model for a system,
2. Implementing the model as a computer program,
3. Evaluating the output of the model,
4. Developing a fundamental understanding of linear programming models,
5. Developing a linear programming model from problem description,

6. Conducting sensitivity analysis for linear programming problems and interpret the results,
7. Demonstrating hands-on problem-solving skills for linear programming problems using Excel Solver.

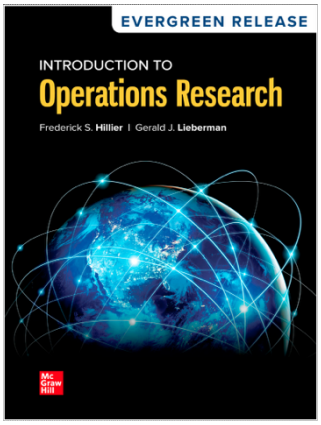
This course is an applications-oriented course focused on computer modeling and simulation of issues in transportation and logistics planning using optimization tools. Modeling tools include: linear programming, integer programming, regression, heuristic methods, and other techniques.

Course Modality/Structure

LSCM 361_1 – Meets in person on Tuesdays and Thursdays from 11:00 am to 12:15 pm in WB 216C

The course is organized into weekly modules. Each module begins on Monday and ends on Sunday. Unless otherwise stated, assignments are due by Sunday at midnight (ET).

Course Materials



Recommended Textbook
Introduction to Operations Research
By Frederick Hillier and Gerald Lieberman
ISBN10: 9781264856961
2024 Release – 11th edition

Course Assignments and Assessments

Course Assignments

Assignment/Exam	Percent of Grade
Problem Set	20%
Quiz	10%
Classroom Activity	30%
Case Study	20%
Exams	20%
Total	**100%**

Assignment details, including instructions, relevant readings, due dates, and grading criteria/rubrics will be posted and updated on Canvas. Please check Canvas regularly to stay informed and on track.

Grading Scale

Letter Grade	Percentage Lower Bound
A	94%
A-	90%
B+	87%
B	84%
B-	80%
C+	77%

Letter Grade	Percentage Lower Bound
C	74%
C-	70%
D+	67%
D	64%
D-	60%
F	<60%

Course Outline

The schedule/calendar included with this syllabus is tentative and subject to change at the instructor's discretion.

Week of	Week	Topic(s)	Assignments
08/24/2026	Week 1	Syllabus Review / Introduction	Quiz Classroom Activity
08/31/2026	Week 2	Introduction to Operations Research	Problem Set Quiz Classroom Activity
09/07/2026	Week 3	Linear Programming	Problem Set Quiz Classroom Activity

09/14/2026	Week 4	Case Study	
09/21/2026	Week 5	Transportation & Assignment Problem	Problem Set Quiz Classroom Activity
09/28/2026	Week 6	Case Study	
10/05/2026	Week 7	Integer Programming	Problem Set Quiz Classroom Activity
10/12/2026	Week 8	Case Study	
10/19/2026	Week 9	**Exam 1**	
10/26/2026	Week 10	Introduction to Simulation Modeling	Problem Set Quiz Classroom Activity
11/02/2026	Week 11	Introduction to AnyLogic	Problem Set Quiz Classroom Activity

11/09/2026	Week 12	Queue Systems	Problem Set Quiz Classroom Activity
11/16/2026	Week 13	Process Operations	Problem Set Quiz Classroom Activity
11/23/2026	Week 14	**Thanksgiving Break** (We will hold class on November 24th)	
11/30/2026	Week 15	Case Study	
12/07/2026	Week 16	**Exam 2**	

Course Expectations and Policies

Course Participation Expectations

- This course is designed with weekly activities, discussion, and other forms of regular collaboration and communication.
- It is recommended that you log into your course 3 to 4 times a week and check your official Ball State email account daily to view announcements and prepare for class.
- Complete all assignments, quizzes, tests, and any other activities by the stated due dates.

Feedback Policy

- I will respond to email from your official Ball State email address within 24 hours during weekdays (Monday-Friday) and within 48 hours on the weekend.
- I will read every discussion post, but I will not always personally comment on posts.

- I will grade your quizzes, assignments, and discussions no later than within 5 school days of submission.
- Contact me directly if you have questions or concerns about your performance in class.

Late Assignment Policy

The professor does not review the merits of why assignments were not submitted by their respective due dates and times. Thus, assignments are not accepted late. All due dates and times align with that of Muncie, Indiana, home of Ball State University). Please be sure to adjust appropriately if living or traveling outside the Muncie, Indiana, time zone (Current Time in Muncie, Indiana).

- All assignments are due by midnight EST/EDT time on the due dates indicated.
- Internet connectivity and technical issues may occur and impede you from turning in work on time. Turn in work early and often, and set up a back-up plan, such as visiting a local library or borrowing a peer's computer.
- You have one (1) permitted late assignment to allow for these issues, to which you can turn in one assignment 24 hours late.
- Canvas will not accept assignments for grading after 11:59 pm EST/EDT on the final day of class.

Grading Policy

- It is my policy that appropriate evaluation of your academic performance is an integral part of your learning experience.
- In the absence of mistakes, fraud, bad faith or incompetence, I will be the key decision-maker on the assignment of grades.

Engagement Expectations

To support a respectful and engaging academic community that encourages the free exchange of ideas and civil discourse, we will follow these ground rules:

- Respect different perspectives. Share your ideas and let others share theirs.
- Challenge ideas, not people. Disagree respectfully. No personal attacks or put-downs. Focus on exploring ideas critically and constructively.
- Listen to understand. Stay curious, ask questions to understand, and give others space to speak.
- Assume good intentions. Approach discussions with curiosity and compassion.
- Keep it private. What is shared in class stays in class. Do not share others' words or work without permission.
- Be respectful. Avoid hurtful language, stereotypes, or content that may demean others. Keep feedback constructive.

Assurance of Learning (AOL)

The Miller College of Business is committed to ensuring that every student graduating with a business degree is competent in five areas that are crucial to success in business. These learning goals can be easily remembered with the acronym C-KITE (Communication, Knowledge, Integration, Technology, and Ethics).

Communication: Miller College Graduates will be able to communicate appropriately in a professional context. Specifically, they will be

- Effective oral communicators who can: organize a presentation; use transitions; avoid verbal pauses; maintain audience interest; use eye contact, body language, and use visual aids effectively
- Effective written communicators who can: introduce the main idea; provide closure consistent to the main idea; use content to support the main idea; use transitions and emphases; maintain connections between ideas; use organizational structure effectively (paragraphs, flow); effectively use diction and conventions; and avoid spelling and grammatical errors.

Knowledge: Miller College Graduates will demonstrate basic knowledge in

- Operations
- Marketing
- Finance
- Management
- Accounting
- Economics

Integration: Miller College Graduates will be able to integrate business knowledge in decision making. They will be able to

- Identify issues confronting the organization
- Synthesize and analyze available information
- Draw well-reasoned inferences and judgments for courses of action
- Design a plan for implementing the course of action

Technology: Miller College Graduates will be able to obtain, manage and communicate data effectively. They will be able to

- Analyze data for information to support decision-making using technology
- Identify common data security risks and safeguards
- Use common cloud technologies to collaborate on projects effectively

Ethics: Miller College Graduates will be able to recognize and resolve ethical dilemmas. They will demonstrate an ability to

- Identify an ethical dilemma in a business situation
- Identify relevant stakeholders
- Assess potential consequences to the stakeholders
- Recognize the importance of making ethical decisions

In this class, you will demonstrate

Knowledge by learning how to address a variety of computer modeling and simulation of issues in transportation and logistics planning using optimization tools.

Technology by being able to work effectively with Simulation software and Microsoft Excel.

Ball State First Day

This course is part of our course material delivery program, Ball State First Day. The bookstore will provide each student with a convenient package containing all required physical books and any digital materials will be integrated into Canvas for this course.

You should have received an email from the bookstore confirming materials provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you haven't done so already, please confirm your fulfillment preference so the bookstore can prepare your materials. Students who do not want to participate in the First Day program may choose to opt out.

To access your digital materials within Canvas:

Delivery Method	**Direction**
eBook	Select the “Course Materials” link
Courseware – SSO Partner Integration	Select the “Course Materials” link
Courseware – Access Code Reveal	Reveal the access code in the “Course Materials” link and redeem the code at the link provided on that page, or in the publisher’s integration in Canvas
Courseware – Publisher Direct	Select the publisher’s link in your course

University Policies and Statements

University Statement

We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We

promote a culture of respect and civil discourse. If you need course adaptations or accommodations because of a disability, please contact the instructor of record as soon as possible. Ball State's Disability Services Office coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

Freedom of Expression

In this course, we are committed to fostering a learning environment that values intellectual diversity, encourages free expression, and promotes open inquiry. As members of the Ball State Community, we treat each person in the Ball State community with civility, courtesy, compassion, and dignity and respect and learn from differences in people, ideas, and opinions. Please review Ball State University's Statement on Freedom of Expression, the resources on Ball State's Freedom of Expression webpage, and Ball State's Beneficence Pledge.

Attendance

As stated in a recent edition of the Faculty and Professional Personnel Handbook, "At Ball State University student attendance at class meetings is expected. Faculty shall establish policies for their courses. Such attendance policies must be communicated to students by faculty through course syllabi or outlines." For this course,

- **In-Person Section (LSCM 361_1):** Attendance is documented by being present during scheduled class meetings on Tuesdays and Thursdays, as well as participating in any required classroom activities.
- **Online Section (LSCM 361_800):** Attendance is documented through active participation in online activities.

In both sections, these activities whether in person or online serve as evidence of attendance and engagement. Logging into the course alone does not count as attendance. Each week, students are expected to actively participate in course activities, such as contributing to discussion boards, submitting assignments, or completing other designated tasks which will serve as documentation of attendance and engagement.

- Absences will be excused for the following: funeral and bereavement leave, jury duty, late course addition, military absences, observance of religious holidays, pregnancy leave, student-athletes participating in University- or department-approved activities, and university advisories.
- Students may encounter other circumstances (e.g. car accidents, job interviews) that result in course absences. Only faculty members can excuse these absences and adjustments are at the discretion of the instructor. Where possible, and with sufficient documentation, faculty should support student educational activities.

- In general, students are expected to notify all their instructors once they anticipate being absent for any reason (e.g., funeral) or as soon as possible after the absence begins (e.g., unexpected injury or illness). The student may need to provide documentation (with confidential information redacted when appropriate) to each instructor if requested.

Title IX

Ball State University is committed to providing a safe and inclusive learning environment for all students. If you or someone you know has experienced sexual harassment—including sexual assault, dating violence, domestic violence, or stalking, please know that you are not alone. The University offers support services and resources. For more information or to report an incident, please visit bsu.edu/titleix or contact the Title IX Coordinator at 765-285-1545 or at titleix@bsu.edu

As your instructor, I am a mandatory reporter under the Title IX policy and required to report any information I receive about possible sexual harassment. This includes information shared in class discussions, assignments, or private conversations.

What happens after I report? The Title IX Coordinator will email the person who experienced sexual harassment (complainant) and invite them to schedule a meeting. If the complainant **chooses** to meet with the Title IX Coordinator,

- Title IX Coordinator will offer supportive measures (e.g., counseling, extensions on deadlines, course-related adjustments, changes to work or class schedules, and/or referrals to campus offices), review the policy, and discuss options to move forward.
- If a complaint is filed by the complainant or the University, an investigation will begin following University policy.

University Grade Appeal Policy

If you believe you received a final course grade that does not reflect your performance due to fairness or a procedural issue, you have the right to file an appeal within 5 school days after final grades are posted by the Office of the Registrar. Review the University Grade Appeal Policy and Process.]

Student Academic Ethics Policy

Honesty, trust, and personal responsibility are fundamental attributes of the university community. Academic dishonesty and other forms of academic misconduct threaten the foundation of an institution dedicated to the pursuit of knowledge and will not be tolerated. To maintain its credibility and reputation, and to equitably assign evaluations of scholastic and creative performance, Ball State University is committed to maintaining a climate that upholds and values

the highest standards of academic integrity. Visit the VPAA's academic integrity website (Students tab) for resources on understanding academic integrity, citing sources properly, and avoiding inadvertent academic dishonesty. To learn about BSU's academic integrity expectations and students' rights, please read the University Student Academic Ethics Policy.

Academic integrity violations include giving or receiving an unfair academic advantage (cheating), presenting someone else's ideas or work as your own (plagiarism), and falsifying academic records. Unless otherwise indicated, you must work independently by yourself. Check with me if you are unsure whether something constitutes academic dishonesty. Examples of academic integrity violations include but are not limited to:

- Using resources not authorized by the faculty member (including devices, AI tools, hidden notes, and open books)
- Using commercial study websites to find answers to graded assignments (Chegg, Course Hero, StudyPool, OneClass, etc.).
- Without the instructor's written permission, giving away, buying, or selling graded assignments class notes, exams, study guides, or other course materials to other students or to third-party vendors (Course Hero, Chegg, 24HourAnswers, etc.).
- Working with another person on any assignment other than authorized group projects.
- Sharing or allowing others to access your files, whether done with permission or not.
- Reusing your own work from another semester, course, or section.
- Sharing answers with others during exams (passing notes, texting, whispering, gesturing)
- Discussing exam questions and answers with students who have not taken the exam.
- Soliciting others to complete work for you.

Generative AI Statement

No Use of Generative AI Permitted
All work conducted and/or submitted in this course must be your own, completed in accordance with the Ball State University's Student Academic Ethics Policy. You may not collaborate with or make use of ChatGPT or any other generative AI applications at any time to develop materials submitted in this course.

Canvas and Student Privacy

Canvas Accessibility

Canvas provides a user experience that is easy, simple, and intuitive. Special attention has been paid to making Canvas screen readable. The Rich Content Editor encourages users to create accessible content pages (i.e. text formatting is accomplished using styles). Canvas is designed to allow limited customization of colors and schemes to be accessible for all users. The National Federation of the Blind granted Canvas the Gold Level Web Certification in 2010.

Find more information by visiting the Canvas Voluntary Product Accessibility Template (VPAT).

FERPA and Privacy

As a student, your educational records are considered confidential. Under FERPA (Family Educational Rights and Privacy Act), your records are confidential and protected. Under most circumstances, your records will not be released without your written and signed consent. However, some directory information may be released to third parties without your prior consent unless a written request to restrict this is on file. You can learn more about student rights to privacy by reading **Ball State's FERPA and Privacy and Protection.**

Plagiarism Detection

The campus subscribes to Turnitin, a plagiarism prevention service, through Canvas. You may need to submit written assignments to Turnitin. Student work will be used for plagiarism detection and for no other purpose. The student may indicate in writing to the instructor that he/she refuses to participate in the plagiarism detection process, in which case the instructor can use other electronic means to verify the originality of their work.

Subject to Change Statement

The professor will follow the expectations outlined on this syllabus and other official university documents. The professor reserves the right to modify the class outline/syllabus if in their judgment such modification would improve the operation (teaching/learning process) of the class (i.e., assignment modifications, correcting typing errors, grading scale adjustments, policy changes, etc.). The professor will notify students in advance of any changes. The current edition of the Faculty and Professional Personnel Handbook and/or other official university documents will guide all other decisions not specifically addressed on this syllabus.