Lincoln University

BA 241 – Quantitative Analysis

COURSE SYLLABUS

Spring 2026

Instructor:	Ms. Olesya Agafontseva
Lecture Schedule:	Thursdays, 12:30 PM – 3:15 PM
Credits:	3 units / 45 lecture hours
Level:	Advanced (A)
Office Hours:	Tuesdays and Thursdays, 11:45 – 12:30, or by appointment e-mail: oagafontseva@lincolnuca.edu
Textbook:	1. David R. Anderson, Dennis J. Sweeney, Jeffrey D. Camm, James J. Cochran, Michael J. Fry and Jeffrey W. Ohlmann (2015) **An Introduction to Management Science: Quantitative Approaches to Decision Making**, 14th ed. , ISBN-10: 1111823618 | ISBN-13: 9781111823610, Cengage Learning. 2. Fredrick S. Hiller and Mark S. Hillier (2014) **Introduction to Management Science; A Modeling and Case Studies Approach with Spreadsheets** (and Student CD), 5th ed. ISBN 0078024064, or 4th ed. ISBN 978 -0-07-809660-0, McGraw-Hill, Irwin
Last Revision:	January 25, 2026

CATALOG DESCRIPTION

This course covers quantitative techniques for solving business problems and making management decisions. Techniques include production or output planning, capital investment and project analysis, linear and non-linear programming, probability theory, inventory control, scheduling, and waiting line models, as well as mathematical decision techniques (3 units) *Prerequisite: BA 115*

COURSE OVERVIEW

Welcome to Quantitative Methods for Business and Finance Management! This course introduces non-mathematical business professionals to data science principles used in today's corporations. In this course you will be able to learn about linear programming, distribution problems, decision theory, and data mining. Data mining refers to methodical preparation and analysis using statistical models such as decision three, logistic regression, and neural networks. This course will focus on concepts in data mining, methodologies, models as they apply to business and finance. Special emphasis will be given to prediction, classification, and forecasting models.

This course will give students an understanding of basic concepts in quantitative methods that include application in business. Case study topics include understanding

customer demand, marketing, new market forecasting, revenue projections, and data mining to improve decisions.

COURSE LEARNING OUTCOMES[1]

	Course LO	Program LO	Institutional LO	Assessment
1	Solidify the student's prerequisites in algebra, geometry, statistics and elements of computer science as applied to Quantitative Methods in Business and Financial Management.	PLO 4	ILO 1a, ILO 5a.	Homework: problems and, cases
2	Model realistic phenomena while paying attention to model's assumptions and borders.	PLO 1 PLO 2 PLO 4 PLO 6	ILO 1a, ILO 5a. ILO 1a, ILO 2a, ILO 6a. ILO 1a, ILO 5a. ILO 4a, ILO 5a.	
3	Formally and precisely express ideas with the aid of notations, symbols and formulae as they apply to structured set-ups and solutions.			
4	Solve complex problems by their breakdown to several ordered sub problems in a hierarchical manner.			
5	Demonstrate his/her comprehension of the necessary in problem setups and in the structure of algorithms for problem solutions.			
6	Interpret results of quantitative models.			
7	Demonstrate working knowledge of sensitivity analysis.			
8	Use linear programming as a flexible optimization tool and apply the EXCEL software for its application.			
9	Learn to formulate and operate variety Transportation, Assignment, and Transshipment problems.			
10	Become familiar with a variety of concepts, criteria and techniques used in Decision Making and apply them.	PLO 1 PLO 4 PLO 6	ILO 1a, ILO 5a. ILO 1a, ILO 5a. ILO 4a, ILO 5a.	

[1] Detailed description of learning outcomes and information about the assessment procedure are available at the Learning Outcomes Assessment section of LU website.

11	Conduct an Operations Research based project which may be of applied nature or a theoretical contribution.	PLO 1 PLO 2 PLO 4 PLO 6	ILO 1a, ILO 5a. ILO 1a, ILO 2a, ILO 6a. ILO 1a, ILO 5a. ILO 4a, ILO 5a.	Homework: problems and, cases. Project assignments, written report and presentation

INSTRUCTIONAL METHODS

This is a direct classroom instruction course.

Lecture method, where every student must participate in an intensive preparation and classroom activity. The emphasis will be on learning by examples and solving problems. Problem solving assignments will be given throughout the course during the class and as a homework.

Assignments and projects require students to actively use resources of the library. Detailed guide to business *resources of the library* as well as the description of Lincoln University approach to *information literacy* are available at the LU Library website (lincolnuca.libguides.com).

ACADEMIC HONESTY & INTEGRITY HONOR CODE

The faculty, administration, and staff reinforce academic honesty and principles of academic honor. Independent learning is vital to the requirements of honesty and integrity in the performance of academic assignments, both in the classroom and outside. Students should avoid academic dishonesty in all of its forms, including plagiarism, cheating, and other forms of academic misconduct. The University reserves the right to determine what constitutes a violation of academic honesty and integrity.

ATTENDANCE

Students are expected to attend each class section. If you cannot attend a class due to a valid reason, please notify the instructor prior to the class. If you miss a class, you are responsible for getting notes on the material covered from a classmate or the instructor.

CLASSROOM POLICY

- Ask questions right away during the class if anything is not clear.
- Come **on time**. Late arrivals are not tolerated. Attendance will be taken each class at a time chosen by the instructor.
- Students are to remain in class during the entire session except for breaks. **Students are not allowed to come and go during class session.**
- To avoid distracting noise in class, cellular phones **must** be turned off or the ringing mode silenced.
- **Cell phones are not to be used in the classroom during instructional time.** People not following this rule will be forced to leave the class, and a note will be sent to Athletics Program Director.
- You can use a computer in class **only** to take notes, to access course materials from the course webpage, or to locate information relevant to the class discussion.

- All class participants are expected to exhibit respectful behaviors to other students and the instructor. Inappropriate or disruptive behavior will not be tolerated, nor will be lewd of foul language.
- Students engaging in disruptive behavior in class will be asked to leave and may be subject to other penalties if the behavior continues.
- No eating is permitted during lecture.
- Address instructors' and staff members by their titles, such as Dr. or Professor. When in doubt, use Mr. or Ms. Unless specifically invited, don't refer to instructors by their first name.
- Do not write an email to a college instructor or staff member the way you would send a casual text.

REQUIREMENTS

Continuous assessment is emphasized. Written quizzes will be given every class session. Problem solving homework assignments will be given every week. Students must complete all home tasks, other assignments, and take all quizzes, and midterm and final exams on the dates due.

Zero tolerance to plagiarism and cheating is enforced. Plagiarism or cheating will result in grade "F" (with zero points) and a report to the administration.

Administrative policies on ABSENCES FROM CLASSES

A student may be DISMISSED after missing 3 consecutive classes registered in a semester.

ASSIGNMENTS

The HW problems will be assigned from the textbook as well as from the recommended supporting sources.

EXAMS

There will be two exams — a midterm and a final. To assess your learning in this course, exam questions will be derived from the lecture and textbook. Topics covered in lecture will be of major emphasis on the exam, and should be the focus of your textbook readings, though there will be some test questions found in the assigned readings but not covered in the lecture. Exams may include conceptual or theoretical questions, and questions with applied scenarios. (***All exams are open books and open notes***.)

Using of electronic devices is not allowed.

GRADING POLICY

All activities will be graded according to the points as shown below:

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F
Points	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	60-66	0-59

The exam grade will be given as the percentage points of the correct answers.

The final grade for the course will be given as the total weighted score for all activities according to the percentage shown in the table below:

Activity	**Percent**
Homework Assignments and Class Activity	20%

Midterm exam	35%
Final exam	45%
Total	**100%**

MAKE-UP WORK

Assignments are to be completed on time during the course. Late assignments will result in a reduced grade. Midterm and Final exams cannot be made up if missed unless there is a documented emergency.

COURSE SCHEDULE

	Date	**Topic**	**Chapters**
1	Jan. 29	Introduction	
2	Feb. 5	Probability	Ch. 1
3	Feb. 12	Probability Distribution	Ch. 2
4	Feb. 19	Decision Analysis	
5	Feb. 26	Utility and Game Theory	Ch. 2
6	Mar. 5	Time Series Analysis and Forecasting	Ch. 3
7	Mar. 12	Time Series Analysis and Forecasting (Continued)	Ch. 5
8	Mar. 19	NO CLASS – SPRING BREAK	Ch. 6
9	Mar. 26	Midterm Exam	Ch. 1-3, 5-6
10	Apr. 2	Linear Programming	Ch. 7
11	Apr. 9	Linear Programming (Continued)	Ch. 8
12	Apr. 16	Advanced Optimization Applications	Ch. 10
13	Apr. 23	Project Scheduling. PERT/CPM	Ch. 11
14	Apr. 30	Simulation	Ch. 13
15	May 7	Markov Processes	
17	May 14	Final Exam	

MODIFICATION OF THE SYLLABUS

The instructor reserves the right to modify this syllabus at any time during the semester. Announcements of any changes will be made in a classroom.