Lincoln University

BA 360 – Quantitative Methods for Business and Finance Management

COURSE SYLLABUS
Fall 2020

Instructor: Professor Themis D. Pantos, Ph.D.,

Lecture Schedule Tuesday, Time:12:30-3:15 pm.

Credits: 3 units / 45 lecture hours

Level: Mastery 1 (M1)

Office Hours: Monday: 1:00-4:00 pm, or by appointment.

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Textbooks: 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.

Recommended Textbook: Lawrence L. Lapin and William D. Whisler. (2002) *Quantitative Methods for Business Decisions,* 7th ed., Belmont CA: Duxbury, Thomson Learning.
(ISBN 0-534-38024-7).

Themis D. Pantos, Notes in Quantitative Analysis, Lincoln University, Fall 2020.

Last Revision: August 21, 2020

COURSE 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.
Prerequisite: BA 115 or BA 241

EDUCATIONAL OBJECTIVES:

BA 360 introduces the students to formal mathematical and statistical reasoning in Business. It familiarizes the student with methods of decisions and measurement as applied in models that are widely used by decision-makers in industry and business. Special attention is given to applications in Financial Management. These are strongly affecting decision making in other disciplines, e.g., Marketing, Logistics, Management, and Production. The course requires elementary knowledge in mathematics and statistics on which we will build further knowledge. Several key topics in Operations Research and statistics are covered and applied. There is an emphasis on both procedure and rationale. The student is trained in problem formation and setting and in the usage of procedures and algorithms in the solution of the problems. The student thus needs to pay attention to the rationale in problem's setting as well as to the rationale embedded in the algorithmic process.

The purpose of this course is to solidify the mathematical knowledge of the students in algebra, geometry, statistics, and computer science and to bring the student to use those in the mathematical formation and solution of business problem. Hence, student should be able to read business situations and systematically and rigorously form mathematical models that address them. The student should become familiar with standard types of models, identify the applicable model type and in selected cases apply computerized software for the solution of his/her formalized problems. The following course outcomes provide specifics regarding the course objectives.

COURSE LEARNING OUTCOMES[1]

As a result of your study you should be able to:

	Course Learning Outcomes	Program LO	Institutional LO	Assessment Activity
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 3	ILO 1b, ILO 6b.	Homework: problems and, cases
2.	Model realistic phenomena while paying attention to model's assumptions and borders.	PLO 3 PLO 5	ILO 1b, ILO 6b. ILO 4b, ILO 5b.	
3.	Formally and precisely express ideas with the aid of notations, symbols and formulae as they apply to structured set-ups and solutions.			

[1] Detailed description of learning outcomes and information about the assessment procedure are available at the Center for Teaching and Learning website (ctl.lincolnuca.edu).

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.	Compare Inventory models.			
10.	Set up project activity network, and determine the critical path and optimal scheduling.			

METHODOLOGY:

This is an online course. The teaching will be done mostly by lecture and exercise mode. The students will achieve comprehension of the topics through routine individual problem set ups and solving. The professor's requirements for set ups and solutions are often more stringent than those in the textbook. Thus, the course requirements supersede the textbook's requirements. The HW is individually and group supervised to assure turning of complete HW. The deadlines of submission of homework and examination under no circumstances would be violated. No further extension will be provided. Hence, any homework past the due date extension deadline will not be accepted for grading.

Attendance will be taken at these sessions. Students joining the class late due to administrative delays must attend special lectures during the office hours in order to catch up with the material and not delay the rest of the class. Failure to do so may result in/or non-admission to the class and course failure.

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 Center for Teaching and Learning website (ctl.lincolnuca.edu).

EXAMINATION POLICY:

The exams are closed books exams. I will use exams with mixed format. One part of every exam is objective, consisting of theoretical and problem-solving questions. The student should be aware that conceptual questions in the exams would come directly from the book and the instructor's notes. It is thus as challenging as the second part. The student is required to bring an approved

simple calculator to the exams. No exchange of pencils, pens, erasers and any other material between students is allowed. No electronic instrument capable of copying material in any form (in particular, in print or visual image) is allowed in the exam or during a review of an exam. Cell phones, organizers, advanced calculators, tape recorders, cameras, computers, etc. must be closed and stored inside a closed bag. Students violating these requirements should expect an F, as well as further disciplinary hearing.

STUDENT CONDUCT:

- Please participate. What you put into the class will determine what you get out of it – and what others get out of it.
- Please come **Online on Time.** Plan to stay during the whole class period. Attendance may be taken at least one time in of each class. In the case where more than one attendance is taken, only students attending all attendances would be considered as present. Attendance is a component of the overall grading.
- Students may not read other materials (newspapers, magazines) during class and no multitasking is allowed.
- Students are not allowed to come and go during class sessions.
- If you miss a class, you are responsible for getting notes/slide printouts on the material covered from a classmate in your group.
- To avoid distracting noise in class, cellular phones **must** be turned off or the ringing mode silenced.
- During an exam or a review of an exam all recording devices of any form must be closed and stored in closed bags. (See also Examination Policy).
- All class participants are expected to exhibit respectful behaviors to other students and the instructor. All students have the right and privilege to learn in the class, free from harassment and disruption. Inappropriate or disruptive behavior will not be tolerated, nor will lewd or foul language.

GRADE ASSESSMENT:

Your performance in this course will be evaluated under the following Grading Scale Model

Assignments:	**20%**
Midterm Examination:	**30%**
Final Examination:	**50%**
Total	**100%**

There will be NO "make-up credit" or extra credit work during and after the semester. The instructor reserves the right to modify the grading system based on class performance and notification to the students about any change during the semester. You are responsible for keeping apprised of any change in syllabus. If you plan to be sick on exam days, please do the exam a day earlier before getting sick. The key to success in this course is communication and interaction. Thus, we will have to work as a team. First, we will create a positive learning environment where

everyone can participate without fear. Second, relevant reading and problem assignments will be presented and discussed in class. When in doubt, ask.

Scholastic Dishonesty

Scholastic dishonesty will not be tolerated. Students who violate rules of academic dishonesty are subject to disciplinary penalties, including failure in the course and/or other actions from the University.

GRADING SCALE:

The grade will be based on a curve, reflecting the standards of Lincoln University. The following table details the satisfactory cut points for the grade, and the corresponding grade.

Course Points	Grade
93-100	A
89-92	A-
85-88	B+
80-84	B
75-79	B-
70-74	C+
65-69	C
60-64	C-
55-59	D+
50-54	D
Below 54	F

COURSE SCHEDULE:

We will focus on elements in the following chapters in Anderson et al., Instructor's Notes and Lapin and Whisler respectively:

Dates	Topic	Chapters
Week 1:	*Introduction and Quantitative Tools*	Chapter 1
Week 2:	*Linear Programming I (Graphical Solution)*	Chapters 2,3,7
Week 3:	*Linear Programming II (Multivariate and Computer Solutions)*	Chapters 4,5,8
Week 4:	*Inventory Models*	Chapter 10
Week 5	*Inventory Models*	Chapter 16
Week 6	*PDFs, Hypotheses Testing and Type 1 and 2 Errors*	Instructor's Notes
Week 7	**Midterm Examination**	
Week 8	*Project Management with PERT and CPM*	Chapters 9&11
Week 9	*Cost Benefit Analysis*	Chapter 15
Week 10	*Single Regression Analysis*	Chapter 18 and Instructor's Notes
Week 11	*Multiple Regression Analysis*	Instructor's Notes on OLS
Week 12	*OLS, GLS and BLUE Estimators*	Instructor's Notes on GLS
Week 13	ARIMA and GARCH Models	Instructor's Notes and Chapter 22
Week 14	*Heteroscedasticity and GARCH Models*	Instructor's Notes and Chapters 20
Week 15	**Final Examination**	