Lincoln University Spring 2018
School of Business Mr. Hibshoosh

Course: BA 460: Quantitative Methods for Business and Finance Management
Credit: 4 units, 45 contact hours. (1 unit Project required)
Level: Mastery 2 / Research (M2R)
Day/Time: Wednesday 15:30 - 18:15
Instructor: Aharon Hibshoosh
Office Hours: Wed. and Th. 18:15 - 23:15
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Required Textbook: 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).

BA 460: Quantitative Methods for Business and Finance Management

Course description:

Catalog description: While solving a problem, managers must consider both qualitative and quantitative factors. This course covers quantitative methods which help to solve different business problems. Techniques include decision analysis, regression analysis, forecasting, transportation, and assignment models, Markov Analysis, stochastic equations, statistical quality control and others. A one-unit written research project and its oral presentation are required for the course. (4 units). Prerequisite: Math 10 or Math 15.

BA 460 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.

Methodology:

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. We are using the CANVAS software for HW collection, submission time monitoring and grade assignments. The HW files are submitted for grade *only* through CANVAS. In addition, every student must bring the hard copy of the submitted HW for inspection at the beginning of the class and use it to pass over the solutions or to present the student's solution to the rest of the class. Failing to do so may result in lower HW credit. Every student must be listed with CANVAS. An added student must belong to a group and inform the teaching assistant his/her added status and group number. HW is due by 1AM Wednesday, as instructed by CANVAS. If you are late, you still may use an automatic extension of 8 hours and submit the HW by 9 AM Wednesday through CANVAS. CANVAS has a built in time cut off function and will not allow submission past the deadline or the deadline extension. No further extension will be provided. Hence, any homework past the due date extension deadline will not be accepted for grading.
In reporting to CANVAS every student must list on his/her assignment by the following order, the following information: Student ID, Last Name and First Name- as appear on the enrolment sheet and group number.

The problems will be assigned from the textbook as well as from the recommended supporting sources. Students may be called to the board to demonstrate and explain their solutions. The textbook will be used as a handbook. It must be brought to class, whenever its topics are studied.

Students should be aware that past experience indicates that the overall effect of HW performance on the grade is on average about 70 to 80 percent, even though the direct contribution of the HW to grade as computed is only 10%. There will be weekly exercise session where the Teaching Assistant will go over the solutions to the given problems and help understanding most recently taught material. Attendance will be taken at these sessions.

Additional Material Requirements:

> A simple calculator without any second function but with a square root function. Memory storage and recall functions are allowed. Possession of the textbook and of the simple calculator is required in every class meeting.

<u>Course Learning Objectives</u>:

As a result of this course the student should be able to:

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.
2. Model realistic phenomena while paying attention to model's assumptions and borders.
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. Compare Inventory models
10. Set up project activity network, and determine the critical path and optimal scheduling.
11. Conduct an Operations Research based project which may be of applied nature or a theoretical contribution.

BA 460 Learning Objectives*	**PLO1**	**PLO2**	**PLO4**	**PLO6**
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.			**Y**	
2. Model realistic phenomena while paying attention to model's assumptions and borders.	**Y**	**Y**	**Y**	**Y**
3. Formally and precisely express ideas with the aid of notations, symbols and formulae as they apply to structured set-ups and solutions	**Y**	**Y**	**Y**	**Y**
4. Solve complex problems by their breakdown to several ordered sub problems in a hierarchical manner.	**Y**	**Y**	**Y**	**Y**
5. Demonstrate his/her comprehension of the necessary in problem setups and in the structure of algorithms for problem solutions.	**Y**	**Y**	**Y**	**Y**
6. Interpret results of quantitative models.	**Y**	**Y**	**Y**	**Y**
7. Demonstrate working knowledge of sensitivity analysis.	**Y**	**Y**	**Y**	**Y**
8. Use linear programming as a flexible optimization	**Y**	**Y**	**Y**	**Y**

tool, and apply the EXCEL software for its application.				
9. Compare Inventory models	**Y**	**Y**	**Y**	**Y**
10. Set up project activity network, and determine the critical path and optimal scheduling.	**Y**		**Y**	**Y**
11. Conduct an Operations Research based project which may be of applied nature or a theoretical contribution.		**Y**	**Y**	**Y**

*For Program Level Objectives and Institutional Objectives see Appendix.

Individual research project (1 unit)

Each student registered for a 400-level course must complete a one unit research project in addition to the coursework described in this syllabus. The specific topic will be assigned by the instructor.

The project requires 45 hours of independent study with regular consultations in accordance with the schedule determined by the instructor. The project work results in a written report (not less than 15 pages; APA style) and an oral presentation during the class session.

Evaluation of the student's work on the Individual Research Project will be done using the following rubric:

WRITTEN REPORT				
	Exceeds Standards	*Meets Standards*	*Does Not Meet Standards*	*Not Present*
Research Problem Statement	The statement of a research problem is crystal clear, novel and thought provoking	Clearly and concisely identifies a research problem	The statement of a research problem is incomplete, lacking precision.	The statement of a research problem is absent.
Organization	The report is logically organized; ideas are exceptionally well-developed and support a thoughtful and engaging conclusion.	The development of ideas is present; the conclusion is effective and directly addresses the original thesis.	Organization is confusing, disjointed, and inconsistent; ideas, if present, are not developed; the conclusion is vague and/or does not address the original thesis.	The report lacks organization
Sources and formatting	A variety of high-quality sources is used; all factual claims are supported with citations. The report follows the APA style guidelines.	A few high-quality sources are used; majority of factual claims are supported with citations The report mostly follows the APA style guidelines.	Sources used are of a questionable quality; factual claims are not supported. Use of APA style is inconsistent.	Sources are not identified or of a poor quality; factual claims are unsubstantiated. The report is poorly formatted

PRESENTATION			
	Exceeds Standards	*Meets Standards*	*Does Not Meet Standards*
Style and Organization	Presentation is clear, confident and fully engaging; the use of visual aids enhances its effectiveness; the presentation is well-timed and structured.	Presentation is clear; the use of visual aids is not detrimental to audience engagement; all necessary components are given appropriate time.	Presentation lacks clarity, no attempt is made to engage the audience; visual aids are haphazard and distracting; lack of structure results in an inefficient use of time.
Questions and Answers	Student demonstrates extensive knowledge of the topic by providing confident, precise and appropriate responses to all audience question.	Student demonstrates knowledge of the topic by responding adequately to questions of the audience.	Student demonstrates lack of knowledge of the topic by responding inaccurately and inappropriately to audience questions.

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 **on time.** Late arrivals disturb everyone else. 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.

Examination Policy:

The exams are closed books exams. I will use exams with mixed format. One part of every exam is objective, consisting of TF and MC questions. The student should be aware that questions in this part often require problem solving and/ or involve

challenging conceptual questions. It is thus as challenging as the second part. The second part (with larger weight in the exam) is comprised of problems which require students' written answers. No breaks are allowed during the midterm or the final. (I will make alternative testing opportunities where the need for break is medically required and professionally supported by a letter from a medical doctor.).
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. In particular, 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.

Grading Guidelines:

Class participation and attendance 10 pts
Homework and assignments 10 pts
Midterm 30 pts
Final 50 pts.
Project 35
Total course points: 135 pts
The grade will be based on a curve, reflecting the standards of Lincoln University.

Grade	Satisfactory Cut points for Grade
A-, A	110, 115
B - ,B, B+	88, 100, 105
C-, C, C+	71, 78, 80
D, D+	64, 68
F	Below 64

To gain a passing grade, a student must participate substantially in HW.;this regardless of the student's exams' grade. Similarly the student must participate in both exams to receive a passing grade.

Course Schedule:

Topics and Tentative Schedule^

We will focus on elements in the following chapters^, in Lapin and Whisler:

Topics		Chapters and Other Resources *
1/17-1/24	Introduction and Quantitative tools	A 1, 2; L8
1/17-2/14	Linear Programming I (Graphical Solution)	A 1, 2; L8
2/21-3/21	Linear Programming II (Multivariate and Computer Solutions)	A 3, 4, 5; L 9

3/21 - 4/11 Inventory Models A10; L15 and elements of L16

4/11- 4/25 Project Management with PERT and CPM A9; L14

Special Dates:

3/13 - 3/17 Spring Recess

Exam Dates: Midterm 3/7. Final 5/2.

Flex. Sched. Mathematical and Statistical Software for Modeling and Analysis.

^These are tentative dates.

*Chapters are supported by other resources in the form of supporting files and computer resources. The capital letters denote the book: A-- Anderson et al. L--Lapin et all. The number(s) following the Capital letter denote the chapter(s).

I will make an effort to expedite presentation, and if time permits, introduce some elective topic(s) in Linear Programming, Networks, Inventory, Probability or Decision Sciences, etc. I will also expose interested students to advanced math and stat techniques and software outside the classroom. While these presentations will not be part of the required course material, this exposure is likely to support a student's education and career.

Updated: January 8, 2018. Additional updates may follow. See Canvas for new updates.

Appendix

Institutional Learning Outcomes (ILOs)	
MBA Graduates of Lincoln University should be able to:	
1b	Recognize and be able to work with the components of reasoning and problem solving; understanding concepts, assumptions, purpose, conclusions, implications, consequences, objections from alternative viewpoints, and frame of reference.
2b	Gather and assess relevant information, using abstract ideas to interpret it effectively; being able to develop well-reasoned conclusions and solutions, and testing them against relevant criteria and standards
3b	Be exemplary business professionals and try to ensure that the products of their efforts will be used in socially responsible ways, will meet social needs, and will avoid harmful effects to health and welfare
4b	Lead by example in order to create highly collaborative organizational environment, and be able to develop and use strategies to encourage employees at all organizational levels to do the same.

5b	Set goals and have a vision of the future. The vision should be owned throughout the organization. As effective leaders, they should habitually pick priorities stemming from their basic values.
6b	Continually look for, develop, and offer new or improved services, and be able to use original approaches when dealing with problems in the workplace.
7b	Demonstrate fluency in the use of tools, technologies and methods in the field. They should know how to evaluate, clarify and frame complex questions or challenges using perspectives and scholarship from the business discipline.

Program Level Outcomes (PLOs)	
Students graduating our MBA program will be able to:	
1	Demonstrate expert-level understanding of the aspects of finance management including mathematical, statistical, financial, and economic.
2	Develop knowledge of finance management including international finance, international securities, commercial banking and lending, investment science, real estate, and stock market.
3	Recognize financial problems and provide creative solutions. Integrate theory and practice for strategic analysis in the field of finance management.
4	Apply quantitative methods of analysis to analyze financial data.
5	Communicate to relevant audiences including written and oral communication.
6	Work effectively with a team of colleagues on diverse projects.
7	Identify and analyze the ethical obligations and responsibilities in the field of finance management.

Code	Classification	Description
Courses 300 level w/o graduate prerequisites	Mastery 1 (M1)	Mastery 1 courses introduce graduate level concepts and ideas in a specific field of study and provide an opportunity to initiate the development of graduate level competences.
Courses 300 level with graduate prerequisites	Mastery 2 (M2)	Mastery 2 courses build upon students' execution of Mastery 1 learning outcomes and allow for further development of students' mastery of concepts, ideas, and competences in the specific field of study.
Courses 398, 399	Mastery 2 / Assessment (M2A)	Mastery 2/Assessment courses are structured to provide opportunity to assess students' achievements of set program learning outcomes.

Courses 400 level	**Mastery 2 / Research (M2R)**	**Mastery 2/Research courses employ individual research project to deepen students' understanding of the subject developed in lower level courses and to equip students with knowledge and skills required by MS and DBA degree programs.**
Courses 500 level	Doctorate Assessment (DA)	Doctoral Assessment courses are doctorate level seminars and research activities fostering the highest level of professional expertise by providing continuous assessment and development of students' ideas and analytical skills in the context of the doctorate program.