



Course Code and Title: BUS 4030: Quantitative Techniques
Prerequisite: BUS 3030
Credit: 3 Units

COURSE DESCRIPTION

Study of the mathematical techniques/ methods used to solve business problems. Include meaning and scope, Linear programming-Graphic, simplex and duality, Transportation, Assignment, Replacement, Queuing, Decision theory, Inventory management, Sequencing, PERT, Game theory, Investment Decision Analysis and Simulation.

LEARNING OUTCOMES

Chandaria School of Business is committed to excellence in formulation and delivery of high quality programs at both undergraduate and graduate levels in a dynamic and challenging business environment.

MISSION STATEMENT

In line with the university mission, the mission of Chandaria School of Business is to provide a range of knowledge, skills, attitudes and problem-solving abilities to enable students to respond to the need for successful management and leadership of profit and not for profit organizations in a dynamic environment.

SCHOOL LEARNING OUTCOMES

1. **Global Oriented** – Demonstrate awareness, knowledge and appreciation of global business operations and practices.
2. **Multidisciplinary** – Demonstrate knowledge about the different functions of business and show an appreciation and integration of functional business areas.
3. **Change Oriented** – Make use of adaptive and innovative skills.
4. **Experiential** – Develop practical working experience through participation and contribution to community and societal causes.
5. **Initiative and Problem Solving Abilities** – Collect and analyze data to provide business solutions.
6. **Team Player** – Demonstrate understanding of diversity and work harmoniously with individuals and groups in organizations.
7. **Effective Communication** – Develop competencies in oral and written communication skills and use of technology.
8. **Preparedness for Career** – Develop mastery of knowledge, skills and values relevant to careers in their selected disciplines.
9. **Transformational Leadership** - Demonstrate effective, efficient and ethical leadership.

PROGTAM MISSION STATEMENT

The mission of BSc Accounting program is to impart a range of knowledge, skills, problem-solving abilities and develop Program Learning Outcomes:

In addition to the university wide outcomes of: higher order thinking; oral and written competence; scientific and technological literacy; global understanding and multicultural perspectives; and service to the community, whose foundation is laid by the General Education Program (see section on general Education), the following are the Accounting program specific Learning Outcomes:

PROGRAM LEARNING OUTCOMES:

1. Prepare, analyze and interpret financial statements
2. Design, record and use accounting information systems and applications in business transaction cycles.
3. Identify, measure and communicate cost information to management for decision making.
4. Apply International audit guidelines to verify financial information
5. Uphold and practice ethical behavior in the work place
6. Contribute positively to the community through service

COURSE OBJECTIVE

The main objective of this course is to enable students to use quantitative techniques to analyze business decision problems

Course pre-requisite: Bus 3030

Week	Main Topic	Topic Detail	Duration
	Introduction of Course	<ul style="list-style-type: none"> o Opening session o Review of course outline and expectations 	30mins
	Linear Programming	<ul style="list-style-type: none"> o Introduction to Quantitative Techniques to business o Basic Concepts – Conditions for problems to modeled and solved as LPs problems o Discussion of LP problems from business are generally and Accounting areas o Types of LP Problems 	3.2hrs
2	Linear Programming Cont.	<ul style="list-style-type: none"> o Modeling Decision problem as Maximization and Minimization LP problems o Solution procedures – Graphical Methods and limitation 	3hrs .20min
	Linear Programming Cont.	<ul style="list-style-type: none"> o Simplex Method 	
	Linear Programming Cont.	<ul style="list-style-type: none"> o Duality <ul style="list-style-type: none"> o Modeling o Solution and interpretation of results 	
3	Transportation Problems (TP)	<ul style="list-style-type: none"> o Basic Concepts – Meaning and conditions modeling problems as TP o LP formulation of TP and Limitations of LP solution procedures 	3hrs .20min
SUBMISSION OF ASSIGNMENT 1 (1ST WEEK OF WEEK 4)			
4	Transportation Problems Cont.	<ul style="list-style-type: none"> o Solution procedures and interpretation of results 	1hr 40mins
	Assignment Problems (AP)	<ul style="list-style-type: none"> o Basic Concepts – Meaning and conditions modeling problems as AP o LP formulation of AP and Limitations of LP solution procedures 	1hr 40mins
5	Assignment Problems Cont.	<ul style="list-style-type: none"> o Solution procedures and interpretation of results 	3hrs .20min
6	Network Analysis	<ul style="list-style-type: none"> o Basic concept and rules in network analysis 	3hrs .20min

		<ul style="list-style-type: none"> ○ Construction of Network diagrams ○ Project scheduling using the critical path method and PERT/CPM 	
		<ul style="list-style-type: none"> ○ Project scheduling using the critical path method and PERT/CPM Cont. 	
SUBMISSION OF ASSIGNMENT 2 (1ST WEEK OF WEEK 6)			
7	Mid Semester Examination		1hr 40mins
	Queuing Analysis	<ul style="list-style-type: none"> ○ Introduction to Queuing Theory and its Applications ○ Basic concepts and Types of queues ○ Introduction to Statistical Arrival Models: Poisson Arrivals ○ Services distribution 	1hr 40mins
8	Queuing Analysis Cont.	<ul style="list-style-type: none"> ○ The Queuing Systems: M/M/1, M/M/∞, M/M/S/S and M/M/S. ○ Performance Measures ○ Applications 	3hrs .20min
	Inventory management	<ul style="list-style-type: none"> ○ Basic Concepts ○ Importance of inventory ○ Item classification and why ○ Inventory optimization techniques 	3hrs .20min
9	Decision Theory	<ul style="list-style-type: none"> ○ Basic concepts ○ Structuring decision problems ○ 	3hrs .20min
		<ul style="list-style-type: none"> ○ Deterministic and probabilistic decision problems and solution procedures 	
SUBMISSION OF ASSIGNMENT 3 (1ST WEEK OF WEEK 10)			
10	Game Theory	<ul style="list-style-type: none"> ○ Introduction: Introduction, overview, uses of game theory, some applications and examples, and formal definitions of: the normal form, payoffs, strategies, pure strategy Nash equilibrium, dominated strategies 	3hrs .20min
		<ul style="list-style-type: none"> ○ Mixed-strategy Nash equilibria: Definitions, examples, real-world evidence. ○ Alternate solution concepts: iterative removal of strictly dominated strategies, minimax strategies and the minimax theorem for zero-sum game 	
11	Sequencing and Replacement Models	<ul style="list-style-type: none"> ○ Optimizing costs and processing times for 2 jobs in 2 machines. ○ Overview of replacement Models 	3hrs .20min
12	Simulation	<ul style="list-style-type: none"> ○ Monte Carlo simulation Method and applications 	3hrs .20min
		<ul style="list-style-type: none"> ○ Application Cont 	
13	REVISION FOR EXAMINATION		
14	UNIVERSITY EXAMINATION		

COURSE TEXT

Lucey T., Quantitative Techniques: An instructional Manual 5th edition, ELBS.

ADDITIONAL TEXT

Tulsian P., Pandey V. Quantitative Techniques, Theory and Problems, Pearson Education, Asia

Hillier and Liebermann (2001) Introduction to Operations Research, Seventh Edition

COURSE EVALUATION

Attendance and participation	5%
Assignments & Quizzes (3.No.)	45%
Mid-Semester Exam	25%
Final Exam	25%
Total	100%

GRADING SYSTEM

A	90 – 100	C	70 – 73
A-	87 - 89	C-	67 – 69
B+	84 - 86	D+	64 - 66
B	80 - 83	D	62 - 63
B-	77 - 79	D-	60 - 61
C+	74 – 76	F	0 – 59

COURSE OFFERING GUIDING POLICES

1. Any student who misses 5 times without permission will lose all the allocated to attendance. However, missing classes at least 7 will get an F in the unit;
2. Assignments and other take away assessable work must be submitted as will be guided from time to time. Late submission will lead to a loss of 2 marks per day until the take away is submitted. No such work will be accepted 5 days after the deadline and the student/group will score a zero in the take away;
3. Cases of plagiarism will be subject to the normal procedure guiding academic dishonesty;