

**RIDER UNIVERSITY
COLLEGE OF BUSINESS ADMINISTRATION
DEPARTMENT OF MANAGEMENT SCIENCES
PMBA 8052 MODELS AND METHODS OF OPERATIONS MANAGEMENT
FALL XXXX**

INSTRUCTOR xxxxx xxxxxxxx

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OFFICE HOURS T x:xx – x:xx p.m.
Th x:xx – x:xx p.m.

TEXT *Quantitative Analysis for Management, Tenth Edition*, by B. Render, R.M. Stair Jr., and M. E. Hanna, Prentice Hall, 2009.

COURSE DESCRIPTION This course provides students with some of the most frequently used quantitative tools necessary in analyzing and resolving issues and problems in PMBA 8053 Operations and Supply Chain Management. These tools may also be used in other PMBA courses such as Economic Analysis and Decision Making, and Business Intelligence.

ASSESSMENT METHOD	Exams (25% each)	50%
	Projects	30%
	Final Exam	<u>20%</u>
		100%

LEARNING OBJECTIVES **STUDENTS COMPLETING THIS COURSE**

1. Should develop an understanding and appreciation of some of the most widely used quantitative techniques in managerial decision making.
2. Learn the benefits and limitations of these quantitative techniques.
3. Develop skills in applying these techniques in managerial decision making in general and in operations and supply chain management in particular.

LIST OF TOPICS I. Decision Analysis

- Types of decision making environments
- Decision Making Under Uncertainty
 - Payoff Tables
 - Strategies for Decision Making
 - Maximin
 - Maximax
 - Criterion of Realism (Hurwicz Criterion)
 - Minimax Regret
- Decision Making Under Risk
 - Expected Monetary Value
 - Opportunity Loss and Expected Opportunity Loss
 - Expected Value of Perfect Information
 - Sensitivity Analysis
 - Marginal Analysis
- Decision Trees for Multi-Stage Decisions
 - Expected Value of Sample Information
 - Calculating Revised Probabilities by Bayesian Analysis

II. Linear Programming (LP)

- Use of LP as a decision making tool under environment of certainty.
- Assumptions of LP models.
- Formulation of real world problems as LP models.
- Solving two-variable LP models using graphical method.
- Solving LP models using computer software (e.g. Excel Solver, POM/QM for Windows, etc.).
- Interpretation of computer solution of a LP problem.
- Discussion of sensitivity analysis based on information from computer solution, including shadow prices, allowable ranges for objective function coefficients and constraint right-hand-sides.
- Formulation of transportation problems as special LP models. Discussion of Transportation Model and its computer solution.

III. Quality Management and Statistical Process Control

- Concepts of quality and total quality management.
- Costs of quality
- Distinguishing between design quality and conformance quality. Taguchi's concept of robust quality.
- Tools of quality and process improvement (i.e. magnificent seven).
- Concepts of common causes and assignable causes of process variation and importance of distinguishing between them.
- Brief review of acceptance sampling.
- Control charts for process control.
- X-bar and R charts for variables.
- p-charts and c-charts for attributes.
- Process capability as a measure of quality of products produced.
- Six sigma concept and six sigma system.

IV. Project Management

- Special nature of a project and its differences from day-to-day operations of an organization.
- Duties and challenges of a project manager.
- Objectives of project planning and project control
- Work breakdown structure of a project
- Use of networks as representation of projects (activity-on-node, and/or activity-on-arrow).
- Distinguishing between PERT and CPM.
- Critical path and the role it plays in managerial decision making.
- Earliest and latest start and finish times. Determining the critical path.
- PERT: Project management in an environment of uncertainty (i.e. probabilistic time estimates).
- Determining the probability of project completion time.
- Project compression/crashing (time permitting).