Quantitative Reasoning - I

Course Code	Credit Hours
QR-100	3-0

Course Description

Quantitative Reasoning (I) is an introductory-level undergraduate course that focuses on the fundamentals related to quantitative concepts and analysis. The course is designed to familiarize students with the basic concepts of mathematics and statistics and to develop students' abilities to analyze and interpret quantitative information. Through a combination of theoretical concepts and practical exercises, this course will also enable students cultivate their quantitative literacy and problem-solving skills while effectively expanding their academic horizon and breadth of knowledge of their specific major/ field of study.

Text Book:

1. Quantitative Reasoning: Tools for Today's informed citizen by Bernard L. Madison, Lynn Arthur Steen
2. Quantitative Reasoning for the Information Age by Bernard L. Madison and David M. Bressoud
3. Fundamentals of Mathematics by Wade Ellis
4. Quantitative Reasoning: Thinking in Numbers by Eric Zaslow
5. Thinking clearly with Data: A guide to Quantitative Reasoning and Analysis by Ethen Beuno de Mesquita Anthony Fowler
6. Using and Understanding Mathematics: A Quantitative Reasoning Approach by J. O. Bennett, W. L. Briggs, and A. Badalamenti
7. Discrete Mathematics and its Applications by Kenneth H. Rosen
8. Statistics for Technology: A Course in Applied Statistics by C. Chatfield
9. Statistics: Unlocking the Power of Data by Robin H. Lock, Patti Frazer Lock, Kari Lock Morgan, and Eric F. Lock

Reference Book:

Prerequisites:

Nil

Assessment System for Theory

	Without Project (%)	With Project/Complex Engineering Problems (%)
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10
End Semester Exam	50	45-50

Teaching Plan

Theory:

Week	Topic Covered	Reading Assignment/ Home Work		CLO No	Assessment Methodology
1	Introduction to Quantitative Reasoning, Number systems and basic arithmetic operations, Units, and their conversions	Ref 1		1	Assignments, Quizzes,MSE, & ESE
2-3	Dimensions, area, perimeter, and volume, Rates, ratios, proportions, and percentages, Types and sources of data, Measurement scales, Tabular graphical presentation of data, Quantitative reasoning exercises using number knowledge	Ref 3	Assignment 1 Quiz 1	1	
4-5	Basics of geometry (lines, angles, circles, polygons etc.), Sets and their operations, Relations, Functions, and their graphs, Exponents, factoring, and simplifying algebraic expressions	Ref 3	Quiz 2	1	
6-7	Algebraic and graphical solutions of linear and quadratic equations and inequalities, Quantitative reasoning exercises using fundamental mathematical concepts	Ref 6	Assignment 2 Quiz 3	2	
8	Population and sample, Measures of central tendency, Dispersion, and data interpretation			2	
9	**Mid Semester Exam**				
10	Rules of counting (multiplicative, permutation, and combination)	Ref 8		1	

11-12	Basic probability theory	Ref 8	Assignment 3 Quiz 4	1	
13	Introduction to random variables	Ref 2 & 8	Quiz 5	2	
14-15	Probability distributions	Ref 2 & 8	Assignment 4 Quiz 6	2	
16	Quantitative reasoning exercises using fundamental statistical concepts	Ref 2 & 8		2	
17-18	**End Semester Exam**				

Practical: Nil