Institute of English Studies
Faculty of Arts and Humanities
University of the Punjab, Lahore.

Course Outline

Programme	BS English Literature	**Course Code**	GQR-201	**Credit Hours**	3
Course Title	**Quantitative Reasoning (II)**				

Course Introduction

Quantitative Reasoning (II) is a sequential undergraduate course that focuses on logical reasoning supported with mathematical and statistical concepts. It involves modeling and analysis techniques to equip students with analytical skills and critical thinking abilities necessary to navigate complexities of the modern world. The course is designed to familiarize students with the quantitative concepts and techniques required to interpret and analyze numerical data. It also aims to inculcate logical reasoning in students so that they can construct and evaluate arguments, identify fallacies, and think systematically. Keeping the prerequisite course of Quantitative Reasoning (I) as its base, this course will enable students to further their quantitative, logical and critical reasoning abilities.

Learning Outcomes

On the completion of the course, the students will be able to:

1. Develop fundamental understanding of logic, logical reasoning and basic quantitative modeling and analyses.
2. Understand the logical reasoning skills and abilities to apply them to solve quantitative problems and evaluate arguments.
3. Critically evaluate quantitative information to make evidence-based decisions through appropriate computational tools.

Course Content		**Assignments/Readings**
Week 1	**Unit I Logic, Logical and Critical Reasoning** 1.1 Introduction and importance of logic	What is logic?
Week 2	1.2 Inductive, deductive and adductive approaches of reasoning	Different approaches of reasoning
Week 3	1.3 Propositions 1.3.1 Arguments (valid; invalid)	Arguments
Week 4	1.4 Logical connectives, truth tables and propositional equivalences	Truth tables
Week 5	1.5 Logical fallacies 1.6 Venn Diagrams	Venn diagrams
Week 6	1.7 Predicates and quantifiers	Quantifiers
Week 7	1.8 Quantitative reasoning exercises using logical reasoning concepts and techniques.	Related exercises

Week 8	**MIDTERM EXAMINATION**	
Week 9	**Unit II Mathematical Modeling and Analyses** 2.1 Introduction to deterministic models	Deterministic models
Week 10	2.2 Use of linear functions for modeling in real-world situations	Modeling in real world situations
Week 11	2.2 Modeling with the system of linear equations and their solutions 2.3 Elementary introduction to derivatives in mathematical modeling	Modeling using derivatives
Week 12	2.4 Linear and exponential growth and decay models 2.5 Quantitative reasoning exercises using mathematical modeling.	Growth and Decay Models
Week 13	**Unit III Statistical Modeling and Analyses** 3.1 Introduction to probability models 3.2 Basic concept of Normal distribution and Binomial distribution with simple applications	Normal and Binomial distribution
Week 14	3.3 Bivariate analysis 3.3.1 scatter plots 3.4 Pearson correlation 3.4.1 Simple linear regression 3.5 Concept of statistical Inference in decision making 3.6 Chi-square test of association	Correlation and Regression analysis
Week 15	3.7 Quantitative Reasoning exercises using statistical modeling	Related Exercises
Week 16	**END TERM EXAMINATION**	

Textbooks and Reading Material

1. Bennett, J. O., & Briggs, W. L. (2019). *Using and understanding mathematics : a quantitative reasoning approach*. Pearson.
2. Rosen, K. H. (2019). *Discrete mathematics and its applications*. New York, Ny Mcgraw-Hill Education.
3. Budnick, F. S. (1993). *Applied Mathematics for Business, Economics, and the Social Sciences*. McGraw-Hill Companies.
4. Bluman, A. G. (2010). *Elementary statistics. A brief version : [a step by step approach]*. Mcgraw-Hill.
5. Sharon Weiner Green, Wolf, I. K., & Stewart, B. W. (2021). *Barron's SAT Study Guide Premium, 2021-2022 (Reflects the 2021 Exam Update): 7 Practice Tests + Comprehensive Review + Online Practice*. Simon and Schuster.

Teaching Learning Strategies

1. Class Discussion
2. Reading and analyzing the text through interactive sessions.
3. Class presentations.
4. Group Discussions
5. Lectures, seminars and tutorials

Assignments: Types and Number with Calendar
Two assignments, one before midterms and one after midterm, to be submitted. The students are advised to get their topics approved by the teacher.

Assessment

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	25%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	15%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	60%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.