Programme	ADP Home Economics	Course Code	GQR-202	Credit Hours	3(3+0)
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 and modeling / analysis techniques to equip students with analytical skills and critical thinking abilities necessary to navigate the complexities of the modern world. The course is designed to familiarize students with the quantitative concepts and techniques required to interrupt and analyze numerical data and to inculcate an ability in students the logical reasoning to construct and evaluate arguments, identifying fallacies, think systematically. Keeping the pre-requisite course of Quantitative Reasoning (I) as its base, this course will enable students further their quantitative, logical and critical reasoning abilities to complement their specific major / field of study.

Learning Outcomes
By the end of this course, students shall have: 1. Understanding of logic and logical reasoning: 2. Understanding of basic quantitative modeling and analyses. 3. Logical reasoning skills and abilities to apply them to solve quantitative problems and evaluate arguments. 4.   Ability to critically evaluate quantitative information to make evidence based decisions through appropriate computational tools.

Course Content		Assignments/Readings
Week 1	Logic, Logical and Critical Reasoning: Introduction and importance of logic	Tools for Quantitative Reasoning by Dr Abdul Rahman pg 16 Read Topic Introduction and Importance of Logic
Week 2	Logic, Logical and Critical Reasoning: Inductive, deductive and adductive approaches of reasoning;	Tools for Quantitative Reasoning by Dr Abdul Rahman Read Topic inductive, deductive and abductive logic
Week 3	Logic, Logical and Critical Reasoning: Propositions, arguments (valid; invalid), logical connectives, truth tables and propositional equivalences;	Tools for Quantitative Reasoning by Dr Abdul Rahman Exercise 1.3 for practice
Week 4	Logic, Logical and Critical Reasoning: Logical fallacies	Tools for Quantitative Reasoning by Dr Abdul Rahman pg 36 Read topic Rules of inference and logical fallacies
Week 5	Logic, Logical and Critical Reasoning: Venn Diagrams	Tools for Quantitative Reasoning by Dr Abdul Rahman Exercise 1.1 & 1.2 for practice **Quiz of 5 marks in week 6**: topics covered in week 4 and 5
Week 6	Logic, Logical and Critical Reasoning: Quantitative reasoning exercises using logical reasoning concepts and techniques **Quiz**	Tools for Quantitative Reasoning by Dr Abdul Rahman practice Exercise 1.4
Week 7	Mathematical Modeling and Analyses: Introduction to deterministic models; Use of linear functions for modeling in real-world situations;	Tools for Quantitative Reasoning by Dr Abdul Rahman practice Exercise 2.1
Week 8	Mathematical Modeling and Analyses: Modeling with the system of linear equations and their solutions	Tools for Quantitative Reasoning by Dr Abdul Rahman Read pg 57 Modeling with system of linear equations and exercise set 2.4
Week 9	**Mid Term Exam**	
Week 10	Mathematical Modeling and Analyses; Elementary introduction to derivatives in mathematical modeling;	Tools for Quantitative Reasoning by Dr Abdul Rahman practice Exercise 3.1

Week 11	Mathematical Modeling and Analyses: Linear and exponential growth and decay models	Tools for Quantitative Reasoning by Dr Abdul Rahman exercise 2.2 and 2.3
Week 12	Mathematical Modeling and Analyses: Quantitative reasoning exercises using mathematical modeling.	Tools for Quantitative Reasoning by Dr Abdul Rahman exercise practice Exercise 3.2
Week 13	Statistical Modeling and Analyses: Introduction to probability models; Basic concept of Normal distribution and Binomial distribution with simple applications	Reading: Khan R. A., *Quatitative reasoning II*, Ilmi Kitab Khana, Chapter 6, page 253-270, Practice questions Example 2, 3, 6, 9,10, 17, 18 and 19.
Week 14	Statistical Modeling and Analyses: Bivariate analysis, scatter plots; Pearson correlation; Simple linear regression	Reading: Khan R. A., *Quatitative reasoning II*, Ilmi Kitab Khana, Chapter 9, page 442-463. Practice questions 6, 7, 11, 14, 21, 22.
Week 15	Statistical Modeling and Analyses: Bivariate analysis, scatter plots; Pearson correlation; Simple linear regression	Reading: Khan R. A., *Quatitative reasoning II*, Ilmi Kitab Khana, Chapter 9, page 442-463. Practice questions 17, 18, 22, 37, 39, 41, 44, 48 and 50
Week 16	Statistical Modeling and Analyses: Concept of statistical Inference in decision making; Chi-square test of association	Reading: Khan R. A., *Quatitative reasoning II*, Ilmi Kitab Khana, Chapter 10, page 488-492. Practice questions 1-10
Week 17	Quantitative Reasoning exercises using statistical modeling.	Group assignment: Kamal S., Introduction to Statistics Book II, Ilmi Kitab Khana. Chapter 17 and 18
Week 18	Final Term Exam	

Textbooks and Reading Material

- h) Using and Understanding Mathematics: A Quantitative Reasoning Approach" by Bennett, J. O., Briggs, W. L., & Badalmenti, A.
- i) "Discrete Mathematics and its Applications" by Kenneth H. Rosen.
- j) "Discrete Mathematics with Applications" by Susanna S. Epp.
- k) "Applied Mathematics for Business, Economics and Social Sciences" by Frank S Budnick.
- l) "Elementary Statistics: A Step by Step Approach" by Allan Bluman.
- m) "Introductory Statistical Modeling" by Prem S. Mann.
- n) "Applied Statistical Modeling" by Salvatore Babones.
- o) "Barrons SAT" by Sharvon Weiner Green, M.A and Ira K. Wolf.
- p) Abbas A., *Quantitative Reasoning,* Iqra Publishers

Teaching Learning Strategies

Lecture-based learning through lectures and presentations.
Technology-based learning -use of Multimedia etc.
Group learning through group assignments and discussion.

Assignments: Types and Number with Calendar

1.**Quiz of 5 marks in week 6**: topics covered in week 4 and 5

2.**Group assignment of 10 marks in week 17**: Kamal S., Introduction to Statistics Book II, Ilmi Kitab Khana. Chapter 17 and 18