

CURRICULUM OF

ECONOMICS

BS

(2018)



**HIGHER EDUCATION COMMISSION
ISLAMABAD**

CURRICULUM DIVISION, HEC

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PREFACE

The curriculum, with varying definitions, is said to be a plan of the teaching-learning process that students of an academic programme are required to undergo to achieve some specific objectives. It includes scheme of studies, objectives & learning outcomes, course contents, teaching methodologies and assessment/evaluation. Since knowledge in all disciplines and fields is expanding at a fast pace and new disciplines are also emerging; it is imperative that curricula be developed and revised accordingly.

University Grants Commission (UGC) was designated as the competent authority to develop, review and revise curricula beyond Class-XII vide Section 3, Sub-Section 2 (ii), Act of Parliament No. X of 1976 titled "Supervision of Curricula and Textbooks and Maintenance of Standard of Education". With the repeal of UGC Act, the same function was assigned to the Higher Education Commission (HEC) under its Ordinance of 2002, Section 10, Sub-Section 1 (v).

In compliance with the above provisions, the Curriculum Division of HEC undertakes the revision of curricula regularly through respective National Curriculum Revision Committees (NCRCs) which consist of eminent professors and researchers of relevant fields from public and private sector universities, R&D organizations, councils, industry and civil society by seeking nominations from their organizations.

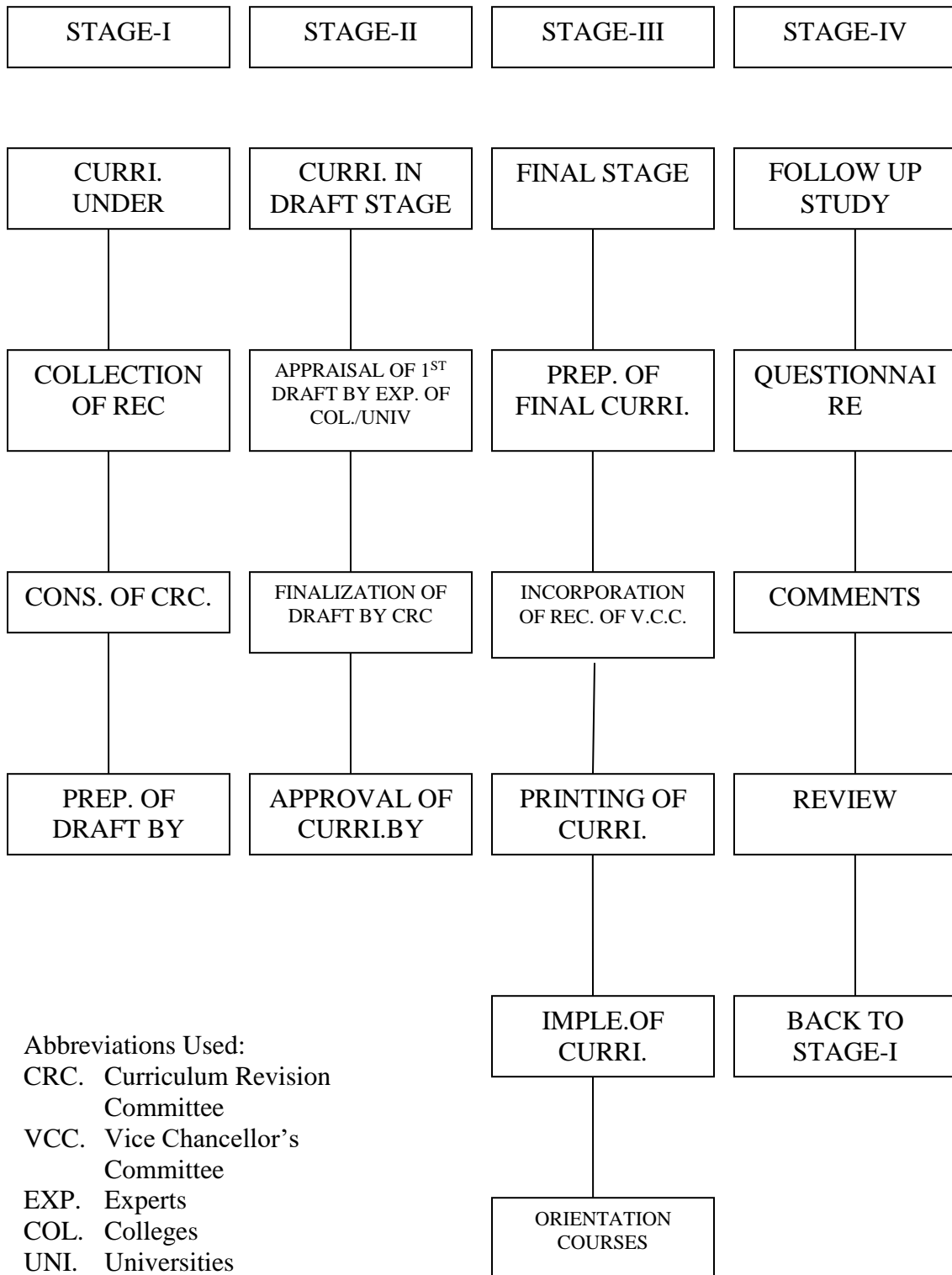
In order to impart quality education which is at par with indigenous needs and international standards, HEC NCRCs have developed unified framework/templates as guidelines for the development and revision of curricula in the disciplines of Basic Sciences, Applied Sciences, Social Sciences, Agriculture and Engineering.

It is hoped that this curriculum document, prepared by the respective NCRC's, would serve the purpose of meeting our national, social and economic needs, and it would also provide the level of competency specified in Pakistan Qualification Framework to make it compatible with international educational standards. The curriculum is also placed on the website of HEC

<http://hec.gov.pk/english/services/universities/RevisedCurricula/Pages/default.aspx>

(Muhammad Raza Chohan)
Director General (Academics)

CURRICULUM DEVELOPMENT PROCESS



Abbreviations Used:

- CRC. Curriculum Revision Committee
- VCC. Vice Chancellor's Committee
- EXP. Experts
- COL. Colleges
- UNI. Universities
- PREP. Preparation

CURRICULUM DEVELOPMENT CYCLE



1. PROGRAM DESCRIPTION:

An understanding of economics is a vital component of education in social sciences and absolutely necessary for anyone interested in areas as business, environmental policy, welfare reform, international trade and finance, or globalization.

BS Economics is a four years degree program comprising of eight regular semesters. Students with degree of F.Sc. / F.A. / I.Com / A. levels or equivalent are given admission in this program. An eligibility criterion is defined by university. Along with the eight regular semesters, university may offer summer sessions to provide opportunities to the students who fail or withdraw a course and those who wish to improve their grades.

This program is designed to familiarize students with the broad range of issues and situations studied by economists and the tools they use. The curriculum starts at the very basic introductory level. As such no specific high school preparation is required, therefore students with diversified background equally fit in the program. However an appreciation for mathematics and statistics shall prove to be useful. All economics undergraduate majors study a significant core of economic theory and mathematical and statistical methods, and are then in a position to choose among a wide variety of higher electives.

2. PROGRAM OBJECTIVES:

BS Economics program is designed to equip the graduates with the knowledge of economic theory, so that they could understand that how economic agents interact and economy operates. The graduates of this program are expected not only to identify the economic problems, but also to also suggest set of alternative solutions. In specific following are the objectives of this program:

1. The graduates shall be equipped with the comprehensive knowledge and skill set in order to contribute competently as economists and analysts in various capacities.
2. The graduate shall have cross-disciplinary knowledge of the core functions and operations of the economy.
3. The graduate shall be prepared to respect diversity and endeavor to work ethically.

PROGRAM LEARNING OBJECTIVES:

1. **Critical Thinking Skills:** An ability to optimally apply economic analysis to everyday economic problems in the real world. This shall allow them to understand current events and evaluate potential policy proposals. Moreover, an appreciation shall be developed to evaluate the role played by assumptions in situations that reach various conclusions to a specific economic or policy problem.

2. **Quantitative Reasoning Skills:** An ability to use empirical evidence to assess the validity of an economic argument. This shall involve the use of statistical data and methodology, ability to interpret statistical results and conduct appropriate statistical analysis.

3. **Problem-Solving Skills:** An ability to solve problems that have precise solutions as well as those that do not have precise answers and clarify conditions under which these solutions may be correct.

4. **Specialized Knowledge and Application of Skills:** An ability to develop critical as well as quantitative thinking skills specific to economics, finance, business and/or accounting.

5. **Communication Skills:** An ability to communicate effectively in written, oral and graphical form about concrete questions and to prepare well-organized written arguments that clearly state assumptions/hypotheses supported by evidence.

SCHEME OF STUDIES FOR BS (4-YEAR) ECONOMICS

DIVISION OF COURSES		
1. For All Disciplines of BS (4 Years Degree Program):	Courses	Credit Hours
Compulsory Courses (with no choice):	9*	25
General Courses (diversification courses):	8	24
Common Courses For all BS Disciplines:	17	49
2. Specific Courses for BS. Economics (4 Years Degree Program):	Courses	Credit Hours
Foundation Courses :	8	24
Major Courses :	11 - 15	33 – 45
Optional Courses :	4 – 8	12 - 24
Discipline Specific Courses For BS Economics:	27	81
Total Courses for BS Economics (4 Years Degree Program):	44	130

Compulsory Courses (with no choice): 9		
English I	English II	English III
English IV*	Islamic Studies / Ethics**	Pakistan Studies**
Introduction to Computer	Basic Mathematics	Intermediate Mathematics*

* In lieu of English IV and Intermediate Mathematics university has option to offer any other (non - economics) courses such as Non-English language course, Citizenship Education and Community Engagement, Entrepreneur or any other course.

** Each course worth 3 credit hours, except Islamic Studies/Ethics and Pakistan Studies. The two courses are of two credit hours each.

General Courses (Diversification): 8	
International Relations	Introduction to Geography
General Science	Introduction to Law
Introduction to Sociology	Introduction to Mass Communication
Principles of Political Science	Principles of Psychology
Principles of Accounting	Introduction to Anthropology
Introduction to Philosophy	Principles of Management
Introduction to Logic	Introduction to Education
Introduction to Commerce	One Non-English Language Course such as Arabic, Chinese, etc.

University has option to offer any diversification course depending upon the availability of teacher. Moreover university can expand the list of diversification courses.

Foundation Courses: 8	
Principles of Microeconomics	Intermediate Microeconomics
Principles of Macroeconomics	Intermediate Macroeconomics
Statistics – I	Statistics – II
Mathematical Economics	Econometrics

Major Courses: 11 – 15	
Microeconomic Analysis	Macroeconomic Analysis
International Economics	Financial Economics
Development Economics	Monetary Economics
Islamic Economics	Public Finance
Research Methodology	Issues in Pakistan Economy
Overview of World Economy	Dynamic Optimization***
Time Series and Panel Data	Economic Growth***
Econometrics***	
General Equilibrium & Welfare Economics***	

*** University has option to offer any other course(s) in lieu of these, from the list of approved optional courses.

Optional Courses: 4 – 8

Microeconomics

Game Theory
Industrial Organization
Behavioral Economics
Experimental Economics

Macroeconomics and Public Sector Economics

Monetary Policy
Fiscal Policy
Cost-Benefit Analysis
Economics of Regulations and Competitive Economy

Labour and Population

Labour Economics
Population Economics
Human Resource Development

Islamic Economics

Islamic Banking: Theory and Practice
Islamic Finance
Divine Economics

International Economics and Finance

Trade and Development
International Finance

Resource Economics

Natural Resource Economics
Environmental Economics
Energy Economics
Economics of Climate Change

Development Studies

Development Policy
Poverty and Income Distribution
Political Economy
History of Economic Thought
World Economic History
Economics of Happiness and Wellbeing

Other Courses

Economics of Education
Urban Economics
Transport Economics
Health Economics
Institutional Economics
Real Analysis
Real Estate Economics
Economics of Terrorism, War and Conflict

Note: University has option to expand the list of optional courses.

SEMESTER WISE SPLIT UP OF COURSES BS (4-YEAR) ECONOMICS

Semester	Subject	Credit Hours
First Semester (Credit Hours:17)	English - I	3
	Principles of Microeconomics	3
	Islamic Studies / Ethics	2
	Basic Mathematics	3
	Diversification - I	3
	Diversification - II	3
Second Semester (Credit Hours:17)	English - II	3
	Pakistan Studies	2
	Principles of Macroeconomics	3
	Statistics - I	3
	Diversification - 3	3
	Diversification - 4	3
Third Semester (Credit Hours:18)	English - III	3
	Intermediate Microeconomics	3
	Introduction to Computer	3
	Intermediate Mathematics *	3
	Diversification - 5	3
	Diversification - 6	3
Fourth Semester (Credit Hours:18)	English - IV*	3
	Intermediate Macroeconomics	3
	Statistics - II	3
	Issues in World Economy	3
	Diversification - 7	3
	Diversification - 8	3
Fifth Semester (Credit Hours:15)	Microeconomic Analysis	3
	Monetary Economics	3
	Public Finance	3
	Mathematical Economics	3
	Econometrics	3
Sixth Semester (Credit Hours:15)	Macroeconomic Analysis	3
	International Economics	3
	Development Economics	3
	Financial Economics	3
	Research Methodology	3
Seventh Semester (Credit Hours:15)	Time Series and Panel Data Econometrics**	3
	Dynamic Optimization**	3
	Islamic Economics	3
	Optional - 1***	3
	Optional - 2	3
Eighth Semester (Credit Hours:15)	General Equilibrium & Welfare Economics **	3
	Economic Growth**	3
	Issues in Pakistan Economy	3
	Optional - 3***	3
	Optional - 4	3

Total Credit Hours: 130

Important Clarifications:

* English-IV and Intermediate Mathematics are University optional. In lieu of these two courses, university has option to offer any other (non - economics) courses such as Non-English language course, Citizenship Education and Community Engagement, Entrepreneur or any other course.

** Time Series and Panel Data Econometrics, Dynamic Optimization, General Equilibrium & Welfare Economics and Economic Growth are university optional. In lieu of these courses university can offer courses from the list of approved optional courses.

*** University has option to offer research project / research thesis (worth 6 credit hours) in lieu of two optional courses. It will be evaluated by a panel of examiners, as per university rules.

The scheme of studies is divided in two blocks; first two years and last two years. The sequence of courses within each block can be changed, however courses across block cannot be changed. Moreover the condition of pre-requisite should be carefully considered while changing the sequence of courses.

A student can opt for associate degree / cutoff degree after passing all courses of first two years.

Teaching methodology given in outlines of each course is a general guideline; course instructor can deviate as per requirements. Moreover university can expand the list of optional courses as per its requirement.

PRE-REQUISITES

- Basic Mathematics and Intermediate Mathematics (if offered) are pre-requisite for Mathematical Economics.
- Basic Statistics and Inferential Statistics are pre-requisite for Econometrics.
- Principles of Microeconomics is pre-requisite for Intermediate Microeconomics.
- Principles of Macroeconomics is pre-requisite for Intermediate Macroeconomics.
- Econometrics is pre-requisite for Econometrics of Time Series and Panel Data.
- Mathematical Economics is pre-requisite for Dynamic Optimization.
- Intermediate Microeconomics is pre-requisite for Microeconomic Analysis
- Intermediate Macroeconomics is pre-requisite for Macroeconomic Analysis
- Intermediate Microeconomics is pre-requisite for General Equilibrium & Welfare Economics

**COURSE CODING SCHEME FOR BS ECONOMICS
(4 Years Degree Program)**

Following are the compulsory courses for all BS (4 years degree program). So their codes should be same for all BS programs.

English - I	Introduction to Computer	Diversification - 4
English – II	Basic Mathematics	Diversification - 5
English - III	Intermediate Mathematics	Diversification - 6
English - IV	Diversification - 1	Diversification - 7
Islamic Studies / Ethics	Diversification - 2	Diversification - 8
Pakistan Studies	Diversification - 3	

Course Coding for Discipline Specific Compulsory Courses		
Year	Course	Subject
First Year	ECON 101	Principles of Microeconomics
	ECON 111	Principles of Macroeconomics
	ECON 121	Statistics – I
Second Year	ECON 201	Intermediate Microeconomics
	ECON 211	Intermediate Macroeconomics
	ECON 221	Statistics – II
	ECON 231	Issues in World Economy
Third Year	ECON 301	Microeconomic Analysis
	ECON 311	Macroeconomic Analysis
	ECON 321	Econometrics
	ECON 312	Monetary Economics
	ECON 313	Public Finance
	ECON 341	Mathematical Economics
	ECON 351	International Economics
	ECON 361	Development Economics
	ECON 371	Financial Economics
ECON 381	Research Methodology	
Forth Year (compulsory courses)	ECON 401	General Equilibrium & Welfare Economics
	ECON 421	Econometrics of Time Series and Panel Data
	ECON 441	Dynamic Optimization
	ECON 461	Economic Growth
	ECON 462	Issues in Pak Economy
	ECON 491	Islamic Economics

Note: Course coding scheme is a guideline, however university can use its own nomenclature for course coding

Course Coding for Discipline Specific Optional Courses		
<i>Forth Year (Optional Courses)</i>	ECON 402	Game Theory
	ECON 403	Industrial Organization
	ECON 404	Behavioral Economics
	ECON 411	Monetary Policy
	ECON 412	Fiscal Policy
	ECON 413	Cost-Benefit Analysis
	ECON 414	Economics of Regulations and Competitive Economy
	ECON 451	Trade and Development
	ECON 452	International Finance
	ECON 463	Development Policy
	ECON 464	Poverty and Income Distribution
	ECON 465	Political Economy
	ECON 466	History of Economic Thought
	ECON 467	World Economic History
	ECON 468	Economics of Happiness and Wellbeing
	ECON 471	Economics of Education
	ECON 472	Urban Economics
	ECON 473	Transport Economics
	ECON 474	Health Economics
	ECON 475	Institutional Economics
	ECON 476	Real Estate Economics
	ECON 477	Economics of Terrorism, War and Conflict
	ECON 482	Labour Economics
	ECON 483	Population Economics
	ECON 484	Natural Resource Economics
	ECON 485	Environmental Economics
	ECON 486	Energy Economics
	ECON 487	Economics of Climate Change
	ECON 492	Islamic Banking: Theory and Practice

	ECON 493	Islamic Finance
	ECON 494	Divine Economics
	ECON 495	Comparative Economic System
	ECON 496	Economy, ethics and Universal Values

**OUTLINES OF COMPULSORY COURSES
(FOUNDATION AND MAJOR)
FOR BS ECONOMICS (4 YEARS DEGREE PROGRAM)**

Course Code	Course Title
ECON 101	Principles of Microeconomics
ECON 111	Principles of Macroeconomics
ECON 141	Basic Mathematics
ECON 121	Statistics – I
ECON 201	Intermediate Microeconomics
ECON 211	Intermediate Macroeconomics
ECON 241	Intermediate Mathematics
ECON 221	Statistics – II
ECON 231	Issues in World Economy
ECON 301	Microeconomic Analysis
ECON 311	Macroeconomic Analysis
ECON 321	Econometrics
ECON 312	Monetary Economics
ECON 313	Public Finance
ECON 341	Mathematical Economics
ECON 351	International Economics
ECON 361	Development Economics
ECON 371	Financial Economics
ECON 381	Research Methodology
ECON 401	General Equilibrium & Welfare Economics
ECON 421	Econometrics of Time Series and Panel Data
ECON 441	Dynamic Optimization
ECON 461	Economic Growth
ECON 462	Issues in Pak Economy
ECON 491	Islamic Economics

ECON 101: PRINCIPLES OF MICROECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

Principles of Microeconomics is an introductory undergraduate course that teaches the fundamentals of microeconomics. This course introduces microeconomic concepts, supply and demand analysis, theories of the firm and individual behavior, competition and monopoly. Students will also be introduced to the use of microeconomic applications to address problems in current economic policy throughout the semester. The course will rely heavily on graphical analysis and simple numerical calculations.

COURSE OBJECTIVES

By the end of the course, students will be able to understand introductory microeconomic theory, solve basic microeconomic problems, and use these techniques to think about a number of basic policy questions relevant to the operation of the economy. More specifically, this course aims:

- To develop an understanding of introductory microeconomic theory and its relevance to the real world
- To sharpen the problem solving tactics required to solve basic microeconomic problems
- To give a broader implications of microeconomics principles and their applications
- To train the students to work with others as a part of team to solve problems

COURSE LEARNING OUTCOMES

After completing this course, students should have developed a range of skills enabling them to understand economic concepts and use those concepts to analyze specific questions. By the end of this course, students should be able to:

- **UNDERSTAND** consumer and firm behavior
- **APPLY** graphical analysis for a variety of economic situations.
- **CALCULATE** and **INTERPRET** elasticities
- **DEFINE** and **DERIVE** short-run and long-run production costs
- **EXPLAIN** various market structures

COURSE CONTENT

1. Introduction

- The Economic Problem
- Economic Decision Makers
- The Circular Flow Model
- Distinction Between Microeconomics and Macroeconomics
- The Market System

2. Demand & Supply:

- Demand, Demand Function, Demand Curve, Engel Curve, Changes in Demand, Law of Demand, Shift in Demand, Factors Affecting Demand, Consumer Surplus
 - Supply, Supply Function, Supply Curve, Changes in Supply, Factors Affecting Supply, Law of Supply, Producer Surplus
 - Equilibrium of Demand and Supply, Market Equilibrium, Price Controls, Taxes and Subsidies
- 3. Elasticity of Demand & Supply:**
- Price Elasticity of Demand & Supply
 - Point Elasticity of Demand & Supply
 - Arc Elasticity of demand & Supply
 - Income Elasticity of Demand & Supply
 - Cross Elasticity of demand & Supply
- 4. Consumer Behavior:**
- Utility Analysis (Cardinal Approach), Marginal Utility
 - Law of Diminishing Marginal Utility and Law of Equi-Marginal Utility, Consumer Equilibrium
 - Ordinal Approach of Consumer Behavior, Indifference Curves, Features of Indifference Curves, Budget Line, Consumer Equilibrium, Comparison between two approaches
- 5. The Theory of production & Theory of Cost:**
- Cost of Production, Short Period and Long Period Analysis
 - Economies of Scale, Elasticity of Cost, Graphical Representation of Long Run Cost
 - Production, Factors of Production, Production Function, Short Period Production Relations, Total, Average and Marginal Product, Elasticity of Production
 - Laws of Returns to Scale
 - Duality Between Production and Cost of Production
- 6. Market Structure:**
- Basics of Perfect Competition, Monopoly, Monopolistic Competition and Oligopoly
 - Different Possibilities of Short Run firm Equilibrium under Perfect Competition
 - Profit Maximization in Short-run and long-run under Perfect Competition
 - Supply Curve of Perfectly Competitive Firm under Short and Long Run
 - Short run and Long run Equilibrium under Monopoly

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**
Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Michael J. Swann, William A. McEachern *Microeconomics: A Contemporary Introduction*, 3rd edition (or latest available)
- Mankiw N. Gregory, *Principles of Microeconomics* 7th edition (or latest available).
- Campbell R. McConnell, Stanley L. Brue, *Principles of Economics*, 17th edition (or latest available).
- Paul A. Samuelson, William D. Nordhaus, *Economics*, Latest Edition

ECON 111: PRINCIPLES OF MACROECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

The course is specially designed for the beginners with no formal background or little association with economics. This course is an introduction to the macroeconomic indicators and issues such as national income, unemployment, inflation etc. The course will establish the students understanding on the behavior and performance of the economy as a whole.

COURSE OBJECTIVES:

By the end of the course, students will be able to understand introductory macroeconomic theory and understand the concepts of macro aggregates like National Income, inflation, unemployment and etc. More specifically, this course aims:

- To familiarize the student with the generally accepted principles of macroeconomics.
- To understand the computation of National Income Accounts.
- To Interpret and evaluate media reports on the macro-economy.

COURSE LEARNING OUTCOMES:

After completing this course, students should have developed a range of skills enabling them to understand basic concepts of macroeconomics. By the end of this course it is expected that the student should be able to:

- **ACQUIRE** the basic knowledge of terminologies used in macroeconomics and the key elements involved in the business decision
- **UNDERSTAND** the meaning and components of the National Income Accounts, especially GDP and GNP;
- **APPLY** three different approaches to **MEASURE** National Income, and the problems associated with calculating, interpreting and comparing National Income statistics
- **UNDERSTAND** the tools, advantages and drawbacks of fiscal policy and monetary policy and how these policies operate.

COURSE CONTENT:

1. Introduction:

- What is macroeconomics and how economist thinks?
- The economy in aggregate,
- Complexities of the world of business,
- Scope of macroeconomics,
- Brief account of classical and the development of macro-economic after the World War-II,
- Concept of business cycles: Boom and Depression,

- Three concerns of macroeconomics, Inflation, GDP growth and unemployment,
 - Macroeconomic variables and their mutual relationship,
 - Macro-models as abstraction from the real economy.
- 2. National Income Accounting:**
- Definition and concept of national income,
 - Measures of national income: Gross Domestic Product (GDP) and Gross National Product (GNP), GDP at factor cost and at market prices, GDP deflator
 - Computation of national income: Product, Income and Expenditure approaches,
 - Circular flow of income,
 - Nominal versus Real income,
 - Per capita income and the standard of living.
 - Measuring the cost of living: the consumer price index, CPI versus GDP deflator
 - Measuring Unemployment rate
- 3. Components of Aggregate Demand:**
- The Concept of Open and closed economy models,
 - Concept of aggregate markets: Product, Money, Labor and Capital markets,
 - Components of aggregate demand: Consumption, Investment and Government spending, Income and expenditure identities.
 - Money and Monetary policy,
 - Fiscal Policy

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**
Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- N. Gregory Mankiw. *Principles of Macroeconomics*, (latest edition)
- Samuelson and Nordrons. *Economics*, 18th Edition, (or latest available)
- Parkin, Michael. *Macroeconomics*, Edition Wesley International Inc. (latest edition)

ECON 141: BASIC MATHEMATICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

This is the first of a compulsory two-course sequence. This part is to be taught in Semester I, this course introduces some basic mathematical tools needed in Economics. The principal aims of the course are to introduce students to the basic mathematical methods.

COURSE OBJECTIVES

Objectives of the course are:

1. To prepare the students, not majoring in mathematics, with the essential tools of functions of one real variable and single-variable optimization.
2. To transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level.
3. To understand those methods of mathematics needed to pursue economic analyses.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- **ACQUIRE** the basic knowledge of mathematical methods and perform basic arithmetic operations on algebraic expressions and fractional algebraic expressions
- **UNDERSTAND** mathematical information, concepts, and thoughts in verbal, numeric, graphical and symbolic forms while solving a variety of problems.
- **SOLVE** systems of linear equations in up to three unknowns and explain how to solve systems in more than three unknowns;
- **EVALUATE** Graphs; elementary types of functions and Geometric properties of functions.
- **DEMONSTRATE** the basic computational methods in functions of one real variable, single-variable optimization and Integration of functions

COURSE CONTENT:

1. Preliminaries:

- Logic and proof techniques; sets and set operations;
- Relations; functions and their properties; number systems.

2. Functions of one real variable:

- Graphs; elementary types of functions: quadratic, polynomial, power, exponential, logarithmic;
- Sequences and series: convergence, algebraic properties and applications;

- Continuous functions: characterizations, properties with respect to various operations and applications;
 - Differentiable functions: characterizations, properties with respect to various operations and applications;
 - Second and higher order derivatives: properties and applications.
- 3. Single-variable optimization:**
- Geometric properties of functions: convex functions, their characterizations
 - Applications; local and global optima: geometric characterizations, characterizations using calculus and applications.
- 4. Integration of functions:**
- Areas under curves;
 - Indefinite integrals; the definite integral.
- 5. Difference equations:**
- First order difference equations.

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Educational Asia, Delhi, 2002.
- A.C. Chiang, *Fundamental Methods of Mathematical Economics*. N.Y, McGraw Hill Co, Latest edition.

ECON 121: STATISTICS - I

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

This course deals with statistical concepts, such as data presentation, graphs, measures of central tendency and dispersion, correlation, and index numbers.

COURSE OBJECTIVES

By the end of the course, students will be able to collect, present and analyze the data. More specifically, the course will equip students to:

- Understand techniques of data collection and data presentation
- Analyze data by using statistical techniques
- Communicate the results of statistical work, and more specifically write up the results of statistical analysis in a report consisting of a non-technical abstract for decision makers, so that they can improve their decisions.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will:

1. UNDERSTAND and be able to CALCULATE basic statistical concepts (tabular and graphic representation of data, measures of central tendency, dispersion and asymmetry, correlation)
2. APPLY knowledge to SOLVE simple tasks using computer software, such as MS Excel, SPSS.
3. based on the acquired knowledge to INTERPRET the meaning of the calculated statistical results

COURSE CONTENTS

1. Statistics and Statistical Thinking

- The Science of Statistics and its importance
- Fundamental Elements of Statistics
- The Role of Statistics in Critical Thinking and Ethics

2. Organizing Data

- Types of Variables Measurement Scales (nominal, ordinal, interval and ratio scale)
- Data Collection Methods
- Presentation of data through classification, tabulation, diagrams and graphs

3. Descriptive Measures

- Measures of Location: Mean, Median, Mode, Geometric Mean, Quartiles, Deciles & Percentiles
- Measures of Dispersion; Range, Mean Absolute Deviation, Standard Deviation, Coefficient of Variation, Boxplots

4. **Index Numbers**
 - Defining an Index Number
 - Un-weighted Aggregates Index
 - Weighted Aggregates Index
 - Average of Relative Methods
 - Quantity and Value Indices
5. **Time Series Analysis:**
 - Introduction
 - Components of Time Series
 - Deseasonalization of Data
6. **Probability**
 - Probability
 - Rules of Probability
 - Bayes Theorem
7. **Random Variable and Discrete Distributions**
 - Discrete Random Variables
 - Mean and Standard Deviation of a Discrete Random Variable
 - The Binomial, Poisson and other discrete distributions
8. **The Normal Distribution**
 - Central Limit Theorem
 - Introducing Normally Distributed Variables
 - Areas under the Standard Normal Curve
 - Working with Normally Distributed Variables
 - Assessing Normality; Normal Probability Plots

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Assignments
- Practical (Basics of Excel / SPSS, optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Anderson, Sweeney and Williams, *Statistics for Business and Economics*, South-Western, Cengage Learning. (latest edition)
- Weiss, N. A. *Elementary Statistics*, Pearson. (latest edition)
- McClave, J. and Sincich, T. *Statistics* Pearson. (latest edition)

- Lind, D. A. *Statistical Techniques in Business and Economics*, The McGraw-Hill Companies (latest edition)
- Gerald, K. *Statistics for Management and Economics*, Pearson. (latest edition)

ECON 201: INTERMEDIATE MICROECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 101: PRINCIPLES OF MICROECONOMICS

COURSE DESCRIPTION:

Intermediate Microeconomics is the second course of Microeconomics in the BS (Economics) program that builds up an extended knowledge of microeconomic concepts, principles and theories. This course mainly focuses on the conceptual foundations of microeconomics: prices, markets, optimization, equilibrium, and comparative statics. The course presents a logical and analytical framework for the observed economic phenomena. The course includes the study of consumer theory, theory of demand, producer theory, perfect competition, imperfect competition, externalities, public goods, and government interventions. Basic algebra and calculus, along with graphical techniques, will be used to analyse these microeconomic concepts.

COURSE OBJECTIVES:

The objective of the course is to extend the knowledge of the basic microeconomic principles that will provide the foundation for future studies in economics.

1. The course is aimed to develop the economic way of thinking to tackle the issues like resource allocation of consumers and producers.
2. The course is aimed to give an insight into how economic models can help us think about important real world phenomena, like reasons behind the rise and fall of prices and wages, how firms earn profits and why they go out of business.
3. The course is aimed to analyze the role of decision making agents in the economy and their impact on input and output prices and resource allocation.
4. The course is aimed to analyze critically the role of free markets, the possible reasons behind market failure and the effects of government intervention in the market.
5. The course is aimed to obtain basic knowledge of the issues that may arise when market information is asymmetric.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- **ACQUIRE** proficiency to employ numerical and graphical techniques as well as verbal presentation of microeconomic concepts.
- **UNDERSTAND** the concepts microeconomic theories and models in terms of their policy implications, advantages and limitations.
- **EXPLAINS** consumers', firms', and market behaviour using mathematical tools and diagrams the problems.
- **DEMONSTRATE AND APPLY** microeconomic models to design solutions to practical economic issues and real-world scenarios.

COURSE CONTENT:

1. Introduction

- Analyzing Economic Problems
- Constructing Economic Models
- Optimization Principle

2. Consumer Theory

- Budget Constraint and its Application
- Utility and Preferences
- Indifference Curve Analysis
- Optimal Choice of Consumer
- Application of Consumer Theory in choosing Taxes
- Income Effect
- Substitution Effect
- Price Effect as a combination of Income and Substitution Effect
- Decomposition of Price Effect into income & substitution effects (all approaches)
- Marshallian and Hicksian Demand Curves (normal, inferior and Giffen goods)

3. Theory of Demand and Supply

- Income Consumption Curve and Engel Curves
- The Price Consumption Curve and the Demand Curve
- Derivation of Demand Curve
- Demand Function
- Supply Function
- Supply and Demand Equilibria
- Comparative Statics
- The Inverse Demand Function

4. Producer Theory

- Producer's Objective
- Technology Constraints
- Short Run and Long Run Production Function and Cost
- Diminishing Marginal Product
- Diminishing Technical Rate of Substitution
- Returns to Scale and Cost Function
- Isoquant and Isocost Analysis
- Cost Minimization in Short and Long run
- Short-Run and Long run Profit Maximization

5. Markets Analysis

- Perfectly Competitive Markets: Analysis and Application
 - Short Period Analysis (equilibrium cases, supply curve of firm)
 - Long Period Analysis (equilibrium of firm, supply curve of industry)
- Monopoly Markets: Analysis and Application

- Short Period Analysis (equilibrium cases, why no supply curve of firm)
- Long Period Analysis (equilibrium of firm, sub-optimum, optimum and super-optimum cases)
- Price Discrimination (concept, need, possibility, forms and degrees of price discrimination)
- Monopolistic Competition: Analysis and Application
 - Short Period Analysis (equilibrium cases)
 - Long Period Analysis (equilibrium of firm)
- Oligopoly: Analysis and Application
 - Cournot Model
 - Bertrand Model
 - Stackelberg Model
 - Sweezy's Kinked Demand Model

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Hal R. Varian, *Intermediate Microeconomics*, 9th Edition, 2014, W.W. Norton & Company, ISBN-13: 9780393123968
- Walter Nicholson and Christopher M. Snyder, *Intermediate Microeconomics and Its Application*, 11th Edition, Thomson South-Western, ISBN-13: 9781133189022
- Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, Prentice Hall, Fifth Edition, ISBN: 0130165832

ECON 211: INTERMEDIATE MACROECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 111: PRINCIPLES OF MACROECONOMICS

COURSE DESCRIPTION:

The course is designed to teach the basic concepts and terms used in Macroeconomics. It will help the students to understand how the economies behave keeping in view the National Income, inflation, unemployment and macroeconomic fluctuations in the long run and short run. It will discuss Aggregate Demand and Aggregate Supply. The course will help students to think like economists.

COURSE OBJECTIVES:

1. To understand concept of National income what is it and how it works, causes and effects of inflation and unemployment,
2. To learn how to critically analyze the economic fluctuation including short run and long run shocks in the economy
3. To be able to analyze and relate the facts and figures (numbers) with theory to support and strengthen the research and critical analysis.

COURSE LEARNING OUTCOMES:

By the end of this course it is expected that the students will be able to

- **AQUIRE** the knowledge about the monetary system, inflation and unemployment
- **UNDERSTAND** the concept of market Equilibrium keeping in view the demand and supply of goods and services
- **INTERPRET** and **ANALYZE** the data, graphs and trends in the macroeconomic indicators
- **UNDERSTAND** the concepts of Economic Fluctuations in the goods and money market in the light of IS and LM curves
- **DEMONSTRATE** macroeconomic concepts by using appropriate terms and explaining them with country specific examples
- **APPLY** macroeconomic theories and models to address the Macroeconomic issues

COURSE OUTLINE:

1. **Introduction to Macroeconomics**
2. **National Income: Where it Comes from and Where it Goes**
 - What determines the Total Production of Goods and Services?
 - How Is National Income Distributed to the Factors of Production?
 - What Determines the Demand for Goods and Services?
 - Equilibrium in the Market for Goods and Services
3. **Money, Prices and Unemployment**
The Monetary System: What it is and How it Works?
 - What Is Money, its types and role

- How the Quantity of Money is Controlled and measured

Inflation: It Causes, Effects, and Social Costs

- The Quantity Theory of Money
- Seigniorage: The Revenue From Printing Money
- Inflation and Interest Rates
- The Nominal Interest Rate and the Demand for Money
- The Social Costs of Inflation
- Hyperinflation

Unemployment

- Job Loss, Job Finding, and the Natural Rate of Unemployment
- Job Search and Frictional Unemployment
- Real-Wage Rigidity and Structural Unemployment
- Labor-Market Experience: The United States
- Labor-Market Experience: Europe

4. The Economy in The Short Run: Economic Fluctuations

Introduction to Economic Fluctuations

- The Facts About the Business Cycle
- How the Short Run and Long Run Differ
- The Model of Aggregate Supply and Aggregate Demand
- Aggregate Demand: The Quantity Equation, Slope and Shifts in the Aggregate Demand Curve
- Aggregate Supply curve in the Long Run and Short Run
- Stabilization Policy : Shocks to Aggregate Demand and Aggregate Supply

Aggregate Demand I: Building the IS-LM Model

- The Goods Market and the IS Curve
- The Money Market and the LM Curve
- The Short-Run Equilibrium

Aggregate Demand II: Applying the IS-LM Model

- Explaining Fluctuations with the IS–LM Model
- IS–LM as a Theory of Aggregate Demand
- The Great Depression

Aggregate Supply & the Short-run Tradeoff between Inflation & Unemployment

- The Basic Theory of Aggregate Supply
- Inflation, Unemployment, and the Phillips Curve

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**

(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Mankiw, N. Gregory. *Macroeconomics*. 8th Edition, Worth Publishers.
- Abel, Andrew, B., Bernanke, Ben S. & Croushore, D. *Macroeconomics*, Seventh Edition. Addison-Wesley.
- Williamson, Stephen D. *Macroeconomics*, 4th Edition, Prentice Hall.

ECON 241: INTERMEDIATE MATHEMATICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 141: BASIC MATHEMATICS

COURSE DESCRIPTION:

This course is the second part of a compulsory two-course sequence. This part is to be taught in Semester II following the first part in Semester I. The first course covered single variable functions and optimization and this course covers the essentials of linear algebra and optimization techniques required for the analysis of functions of several variables that are commonly used in economics.

COURSE OBJECTIVES:

Objectives of the course are:

1. To transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level.
2. To applying mathematical techniques to economic theory in general.
3. To be able to apply mathematical strategies in applied contexts.
4. To learned mathematical concepts and skills relevant to Economics.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- **ACQUIRE** the basic knowledge some more advanced areas of mathematics from among probability, real analysis, abstract algebra, complex analysis, partial differential equations, and discrete mathematics.
- **UNDERSTAND** calculus, basic discrete mathematics, and linear algebra.
- **SOLVE** and apply mathematical methods in applied contexts.
- **EVALUATE** differential equations, Linear algebra, Functions of several real variables and Multi-variable optimization
- **DEMONSTRATE** algebraic facility with algebraic topics including linear, quadratic, exponential, logarithmic, and trigonometric functions

COURSE OUTLINE:

1. **Differential equations:**
 - First-order differential equations;
 - Integral curve, direction diagram and slope field; qualitative theory and stability.
2. **Linear algebra:**
 - Vector spaces: algebraic and geometric properties,
 - Scalar products, norms, orthogonality; linear transformations: properties,
 - Matrix representations and elementary operations;
 - Systems of linear equations: properties of their solution sets;
 - Determinants: characterization, properties and applications.
3. **Functions of several real variables:**

- Geometric representations: graphs and level curves;
- Differentiable functions: characterizations, properties with respect to various operations and applications;
- Second order derivatives: properties and applications;
- The implicit function theorem, and application to comparative statics problems;
- Homogeneous and homothetic functions: characterizations and applications.

4. **Multi-variable optimization:**

- Convex sets; geometric properties of functions:
- Convex functions, their characterizations, properties and applications; further geometric properties of functions:
- Quasi convex functions, their characterizations, properties and applications;
- Unconstrained optimization: geometric characterizations, characterizations using calculus and applications;
- Constrained optimization with equality constraints: geometric characterizations,
- Lagrange characterization using calculus and applications; properties of value function: envelope theorem and applications.

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Educational Asia, Delhi, 2002.
- A. C. Chiang, *Fundamental Methods of Mathematical Economics*, N. Y., McGraw-Hill Co, Latest edition.

ECON 221: STATISTICS - II

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 121: STATISTICS – I (university may relax this prerequisite)

COURSE DESCRIPTION

This course deals with inferential statistical. Therefore, focus will be on the techniques by which decisions about a statistical population are made on the basis of sample data. It will cover topics related to sampling, estimation, testing of hypothesis and statistical inference.

COURSE OBJECTIVES:

By the end of the course, students will be able

- To draw conclusions about population based on sample data,
- Understand techniques of sampling, estimation, hypotheses testing, experimental design
- Analyze the techniques of statistical inference.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will:

- UNDERSTAND the purpose and techniques of sampling
- APPLY the techniques of Statistical Inference
- INTERPRET the meaning of the calculated statistical results

COURSE CONTENTS

1. Sampling and Sampling Distributions

- Sampling techniques; random, cluster, systematic, convenience, judgment and stratified ° Simple random sampling
- Point estimation
- Introduction to sampling distributions
- Properties of point estimators

2. Interval Estimation

- Population with σ known
- Population mean with σ unknown
- Determining the sample size
- Population proportion

3. Hypothesis Testing

- Developing null and alternative hypothesis
- Type I and type II error
- Population mean with σ known
- Population mean with σ unknown
- Population Proportion
- Hypothesis testing and decision making
- Calculating probabilities of Type-II error

- Determining the sample size for hypothesis testing about a population mean.
- 4. **Statistical Inference About Mean and Proportions with Two Populations**
 - Inference about the difference between two population means with known and unknown values of σ_1 and σ_2
 - Inference about the difference between two population means: matched samples
- 5. **Inferences About Population Variances**
 - Inferences about a population variance
 - Inference about two population variances
- 6. **Tests of Goodness of Fit and Independence**
 - Goodness of Fit: A multinomial population
 - Tests of independence
 - Goodness of fit tests
- 7. **Analysis of Variance and Experimental designs**
 - An introduction to analysis of variance
 - Analysis of variance: testing for the equality of k population means
 - Multiple comparison procedures
 - An introduction to experimental design ° Randomized block design ° Factorial experiments
- 8. **Nonparametric Methods**
 - Sign test Wilcoxon test
 - Mann-Whitney-Wilcoxon test ,Kruskal-Wallis test , Rank correlation

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments
- Practical (SPSS / Excel etc)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Anderson, Sweeney and Williams, *Statistics for Business and Economics*, Cengage Learning.
- Wonnacott, T.H. and Wonnacott, R. J., *Introductory Statistics*, John Wiley & Sons, New York.

ECON 231: ISSUES IN WORLD ECONOMY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

This course offers a comprehensive analysis of various issues of global economy within the field of International Economics. It investigates the phenomenon of global economy and seeks to provide understanding of today's increasingly interdependent world. This course recognizes that economy cannot be treated separately from other domains of social studies so such topics as political economic theories and models, historical context, cultural phenomenon, role of information and communication technologies, and others will be discussed.

COURSE OBJECTIVES:

The basic objective of this course is to focus on major global economic issues that characterize the state of our current world. This course aims to give students a deep and a comprehensive understanding of what global economy is and how to manage domestic economy in the context of a dynamic global economy. This course introduces and critically examines the processes involving the increasing interconnection of the world and its effects on people's lives. The course provides an interdisciplinary perspective on major concepts in order to make sense of the changes taking place at a global scale. It also explores existing debates and case studies in order to illustrate the ongoing challenges that communities face.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will:

- LEARN fundamentals regarding the dynamics of the global economy. They will explore characteristics of capitalist and socialist economies; examine new trends in global economy.
- Be AWARE OF data relating to global economic performance and will be able to interpret what they show.
- Have good KNOWLEDGE of the evolution of the world's monetary and trading systems.
- Be able to apply this theory to investigate and better understand contemporary world economic issues.

COURSE CONTENTS

- 1 Economic Geography: An Introduction
- 2 The Historical Development of Capitalism
- 3 Population
- 4 Resources and Environment
- 5 Theoretical Considerations
- 6 Agriculture
- 7 Manufacturing

- 8 Services
- 9 Transportation and Communications
- 10 Cities and Urban Economies
- 11 Consumption
- 12 International Trade and Investment
- 13 International Trade Patterns
- 14 Development and Underdevelopment in the Developing World

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments
- Group Discussion

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Stutz, F. P., & De Souza, A. R. (1998). *The world economy: Resources, location, trade, and development*. Prentice Hall.
- Stiglitz, J. E. (2002). *Globalization and its Discontents*. New York.
- Dicken, P. (2007). *Global shift: Mapping the changing contours of the world economy*. SAGE Publications Ltd.
- Rosser, J. B., & Rosser, M. V. (2018). *Comparative economics in a transforming world economy*. MIT Press.
- Freidman, T. (2005). *The world is flat*. New York: Farrar, Straus and Giroux.
- Bhagwati, J. (2007). *In defense of globalization: With a new afterword*. Oxford University Press.
- Stiglitz, J. E. (2008). *Making Globalization Work*. WW Norton & Company.

ECON 301: MICROECONOMIC ANALYSIS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 201: INTERMEDIATE MICROECONOMICS

COURSE DESCRIPTION:

This course covers the advance topics in microeconomics. The focus will be on mathematical treatment of consumer theory, production theory and market analysis. Students should have good mathematical background.

COURSE OBJECTIVES:

Following are the prime objectives of this course:

1. To explain the technical concepts of microeconomics
2. To learn the latest developments in microeconomic theory,
3. To understand the modeling of consumer and production theory.

COURSE LEARNING OUTCOMES:

After completing this course, students are expected to:

- RECOGNIZE and IDENTIFY the latest development in microeconomic theory
- UNDERSTAND the modeling of consumer choices and production decisions
- APPLY the theoretical knowledge in research

COURSE CONTENTS:

1. Introduction

- The Economic Problem,
- Basic economic agents,
- Microeconomics and Macroeconomics,
- Types of Microeconomic Analysis, framework of Microeconomics

2. Consumer Behaviour

- Consumer Preferences
Consumption bundle
Axioms of consumer preferences
- Budget Constraint
- Consumer choices
 - Utility maximization subject to budget constraint
 - Marshallian demand function (Concept, Derivation and Properties)
 - Indirect utility function (Concept, Derivation and Properties)
 - Budget minimization subject to utility constraint
 - Hicksian demand function (Concept, Derivation and Properties)
 - Expenditure Function (Concept, Derivation and Properties)
 - Duality between Hicksian and Marshallian demand functions,
 - Duality between utility function and indirect utility function
 - Choice under uncertainty (elementary treatment)
 - Consumption over Time (elementary treatment)

3. Production Analysis

- Constraints
 - **Technical Constraints:** Production, production process, Types of inputs, concept of net output, production plan, Production set, Few Concepts in describing technology; Iso-quants, Technical rate of substitutions, Elasticity of substitution, Returns to scale, Elasticity of scale, Homogeneous and homothetic technologies, Euler's theorem, Technologies with distinct outputs and inputs, Production function and Classification of production functions; Fixed coefficients production function, Leontief technology, Linear production function, Cob-Douglas production function, Constant elasticity of substitution production function, Transcendental logarithmic production function.
 - **Financial Constraints:** Budget Constraint, Cost of Production, Economic Cost, Private Cost, External Cost, Implicit Cost, Explicit Cost, Cost equation and Cost Function.
 - **Market Constraints:** Price Constraints: price takers, price regulations, sticky prices, minimum prices etc, Quantity Constraints: Quota, Negatively sloped demand curve, kinked demand curve

4. Optimization

- **Profit maximization:** Profit equation, Input demand function (concept, derivation and properties), Output supply function (concept, derivation and properties), Profit function (concept, derivation and properties).
- **Cost minimization:** The cost minimization problem, Conditional input demand function (concept, derivation and properties), Cost function (concept, derivation and properties)
- **Revenue maximization:** The revenue maximization problem, Revenue function concept, derivation and properties)

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Gravelle and Rees, *Microeconomics*, Third Edition, Pearson Education,
- Varian H. R. *Microeconomic Analysis*, Third Edition, W.W. Norton and Company, New York, 1992
- Silberberg E. *The Structure of Economics: A mathematical analysis*, Second Edition, McGraw Hill publishing Company, 1990

ECON 311: MACROECONOMIC ANALYSIS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 211: INTERMEDIATE MACROECONOMICS

COURSE DESCRIPTION:

This is an advanced course of macroeconomics built on principles of macroeconomics and intermediate macroeconomics courses. There will be in depth analysis of macroeconomic theories and policies and effort will be made to make the study more realistic and applicable in real life situations relating to macroeconomic activities.

This course focuses mainly on the economy in the very long run (growth theories), towards microeconomic foundations of the macro economy, open economy, macroeconomic policy

COURSE OBJECTIVES:

1. To give students a thorough understanding of the macroeconomic system. The theoretical and empirical underpinnings of the Growth models, conduct of monetary policy and fiscal policy in closed and open economies.
2. To provide students with the necessary mathematical tools to analyze complex macroeconomic problems.
3. To enable students to understand and analyze short-run behavior of an economy
4. To look at the role of different stabilization policies in the short-run of an economy.
5. To utilize macroeconomic theories in applied research

COURSE LEARNING OUTCOMES:

Upon completion of this course students should:

- **STRENGTHEN** grip on macroeconomic tools with a wider coverage of topics and scope of study and their application in real life situations.
- **UNDERSTAND** the main insights into the economic growth process that economists have gleaned over the past half century
- Be **ABLE** to identify applications and limitations of the macro models learned
- **IDENTIFY** the underlying causes of important economic problems and possible strategies to tackle them.
- **CRITICALLY ANALYZE** the economic events taking place around us and to evaluate government economic policies
- **UNDERSTAND** the complications of open economies and strengths of economies to compete in global competition.

COURSE OUTLINE:

1. **The Economy in The Very Long Run**
 - Economic Growth I: Capital Accumulation and Population Growth

- The Accumulation of Capital; The Supply and Demand for Goods, Growth in the Capital Stock and the Steady State, Approaching the Steady State: A Numerical Example, How Saving Affects Growth
 - The Golden Rule Level of Capital; Comparing Steady States, Finding the Golden Rule Steady State: A Numerical Example, The Transition to the Golden Rule Steady State
 - Population Growth; The Steady State with Population Growth, The Effects of Population Growth, Alternative Perspectives on Population Growth
 - Economic Growth II: Technology, Empirics, Policy, and Human Capital
 - Technological Progress in the Solow Model; The Efficiency of Labor, The Steady State with Technological Progress, The Effects of Technological Progress
 - From Growth Theory to Growth Empirics; Balanced Growth, Convergence, Factor Accumulation Versus Production Efficiency
 - Policies to Promote Growth; Evaluating the Rate of Saving, Changing the Rate of Saving, Allocating the Economy's Investment, Establishing the Right Institutions, Encouraging Technological Progress
 - Beyond the Solow Model: Endogenous Growth Theory; The Basic Model, A Two-Sector Model, The Microeconomics of Research and Development, The Process of Creative Destruction
 - Economic Growth III: Beyond the Correlates of Economic Growth
 - The Effect of Culture on Economic Growth; Openness to New Ideas, Hard Work, Saving for the Future, Trust, Social Capital, Social Capability
 - What Determines Culture?; Climate and Natural Resources, Cultural Homogeneity and Social Capital, Population Density and Social Capability
 - Cultural Change; Economic Growth and Cultural Change, Government Policy and Cultural Change
 - Geography; Location, Trade and Growth, Geographic Concentration and Spillovers, Geography's Effect on Government
 - Climate; Climate and Agricultural Productivity, Climate and Disease, Climate and Human Effort,
 - Natural Resources; The Relationship between Natural Resources and Growth, Explanations for the Resource Curse
2. **Towards Microeconomic Foundations of The Macro Economy**
- Understanding Consumer Behavior
 - John Maynard Keynes and the Consumption Function; Keynes's Conjectures, The Early Empirical Successes, Secular Stagnation, Simon Kuznets, and the Consumption Puzzle
 - Irving Fisher and Intertemporal Choice; The Intertemporal Budget Constraint, Consumer Preferences, Optimization, How Changes in Income Affect Consumption, How Changes in the Real Interest Rate Affect Consumption, Constraints on Borrowing

- Franco Modigliani and the Life-Cycle Hypothesis,
- Milton Friedman and the Permanent-Income Hypothesis,
- Robert Hall and the Random-Walk Hypothesis,
- David Laibson and the Pull of Instant Gratification
- The Theory of Investment
 - Business Fixed Investment; The Rental Price of Capital, The Cost of Capital, The Determinants of Investment, Taxes and Investment, The Stock Market and Tobin's q
 - Alternative Views of the Stock Market: The Efficient Markets Hypothesis Versus Keynes's Beauty Contest, Financing Constraints,
 - Residential Investment; The Stock Equilibrium and the Flow Supply, Changes in Housing Demand
 - Inventory Investment; Reasons for Holding Inventories, How the Real Interest Rate and Credit Conditions Affect Inventory, Investment
- 3. International Macroeconomics: The Open Economy**
 - The Open Economy
 - The International Flows of Capital and Goods; The Role of Net Exports, International Capital Flows and the Trade Balance, International Flows of Goods and Capital: An Example
 - Saving and Investment in a Small Open Economy; Capital Mobility and the World Interest Rate, Why Assume a Small Open Economy?, The Model, How Policies Influence the Trade Balance, Evaluating Economic Policy,
 - Exchange Rates; Nominal and Real Exchange Rates, The Real Exchange Rate and the Trade Balance, The Determinants of the Real Exchange Rate, How Policies Influence the Real Exchange Rate, The Effects of Trade Policies, The Determinants of the Nominal Exchange Rate, The Special Case of Purchasing-Power Parity
 - Open Economy Revisited
 - The Mundell–Fleming Model; The Key Assumption: Small Open Economy With Perfect Capital Mobility, The Goods Market and the IS* Curve, The Money Market and the LM Curve, Putting the Pieces Together
 - The Small Open Economy Under Floating Exchange Rates; Fiscal Policy, Monetary Policy, Trade Policy
 - The Small Open Economy Under Fixed Exchange Rates; How a Fixed-Exchange-Rate System Works, Fiscal Policy, Monetary Policy, Trade Policy, Policy in the Mundell–Fleming Model: A Summary
 - Interest Rate Differentials; Country Risk and Exchange-Rate Expectations, Differentials in the Mundell–Fleming Model, Should Exchange Rates Be Floating or Fixed?, Pros and Cons of Different Exchange-Rate Systems, Speculative Attacks, Currency Boards, and Dollarization, The Impossible Trinity
 - From the Short Run to the Long Run: The Mundell–Fleming Model With a Changing Price Level

4. Macroeconomic Policy

- Alternative Perspectives on Stabilization Policy
 - Should Policy Be Active or Passive?; Lags in the Implementation and Effects of Policies, The Difficult Job of Economic Forecasting, Ignorance, Expectations, and the Lucas Critique, The Historical Record
 - Should Policy Be Conducted by Rule or by Discretion?, Distrust of Policymakers and the Political Process, The Time Inconsistency of Discretionary Policy, Rules for Monetary Policy
 - Government Debt and Budget Deficits
 - The Size of the Government Debt
 - Problems in Measurement; Measurement Problem 1: Inflation, Measurement Problem 2 Capital Assets, Measurement Problem 3: Uncounted Liabilities, Measurement Problem 4: The Business Cycle, Summing Up
 - The Traditional View of Government Debt
 - The Ricardian View of Government Debt; The Basic Logic of Ricardian Equivalence, Consumers and Future Taxes, Making a Choice
 - Other Perspectives on Government Debt, Balanced Budgets Versus Optimal Fiscal Policy, Fiscal Effects on Monetary Policy
 - The Financial System: Opportunities and Dangers
 - What Does the Financial System Do?; Financing Investment, Sharing Risk, Dealing With Asymmetric Information, Fostering Economic Growth
 - Financial Crises; The Anatomy of a Crisis, Policy Responses to a Crisis, Policies to Prevent Crises

TEACHING METHODOLOGY:

- Lectures
- Interactive learning
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXTS AND REFERENCE BOOKS

- Barro R., and X. Sala-i-Martin, *Economic Growth*, 2nd Edition., MIT Press, Cambridge, MA
- Richard T. Froyen, *Macroeconomics: Theories and Policies*, 10th Edition
- Romer D., *Advanced Macroeconomics*, 4th Edition, McGraw Hill Publishers,

- . Williamson, Stephen D. *Macroeconomics*.(latest Edition), Prentice Hall.
- . Willam M. Scarth , *Macroeconomics: An introduction to advanced Methods*, 2nd Edition

ECON 321: ECONOMETRICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 221: STATISTICS - II

COURSE DESCRIPTION

This course basically focuses on techniques for estimating linear regression models, problems commonly encountered in estimating these models, and on interpreting the estimates of models. As estimation and interpretation are marketable skills so this course will teach basics of econometric theory and practice to inculcate skills for estimation of econometric models with actual data.

COURSE OBJECTIVES

This course is designed to develop basic understanding in students about econometrics and provide working knowledge of its basic tools. After completion of this course, students

1. Can apply econometric tools for modeling, estimation, inference, and forecasting in the context of real-world economic problems.
2. Be capable to apply appropriate estimation techniques under different types of data/model problems
3. Can evaluate critically the results and conclusions of other researchers.
4. Have a foundation and understanding for advanced level course in econometrics.

COURSE LEARNING OUTCOMES

On successful completion of this course, students will be able to:

- APPLY knowledge of regression technique for analyzing economic data.
- INTERPRET and CRITICAL to evaluate the outcomes of empirical analysis
- USE elementary procedures for model validation in the single equation context.

COURSE CONTENTS

- 1: **An Introduction to Econometrics**
 - Why Study Econometrics?
 - Methodology of Econometrics
 - Types of Econometrics
 - Data types and its sources
2. **The Classical Linear Regression Model (CLRM)**
 - Simple Regression function
 - Population regression function
 - Linear regression function
 - Linearity in variables and linearity in parameters
 - Simple Regression Analysis
 - Estimation of regression equation using OLS
 - Statistical properties of OLS estimators (BLUE)

- Classical Linear Regression Model (CLRM) and its assumptions
- Estimation of the coefficient of determination
- 3. **The Multiple Linear Regression Model (MLRM)**
 - Multiple Regression Analysis
 - Difference between simple and multiple regression analysis
 - OLS estimation of multiple regression equation
 - Properties of OLS estimators
 - Coefficient of determination (R^2) and Adjusted R^2
 - Testing the significance of Regression coefficients (t-test)
 - Testing the overall significance (F-test) of the model
- 4. **Regression with Qualitative Explanatory Variables**
 - Regression with Single Qualitative Explanatory Variable
 - Regression with multiple Qualitative Explanatory Variables
 - Regression with both Quantitative and Qualitative Explanatory Variables
 - Other Uses of Qualitative Variables: Piecewise Linear Regression
 - Estimation of Seasonal Effects
 - Testing for Structural Change
- 5. **Matrix Approach of the Classical Linear Regression Model:**
 - The multiple regression (K-variable) model in matrix format
 - Assumptions of the model
 - The Least-Squares estimation procedure in matrix notation
 - Properties of the Ordinary Least Squares (OLS) estimators
 - Interpretation of the Beta coefficients ($\beta_1, \beta_2, \dots, \beta_k$)
 - Hypothesis testing using matrix approach
 - OLS estimation: variance-covariance matrix of estimators
 - Coefficient of determination
 - R^2 in matrix notations
 - Correlation matrix
- 6. **Econometric Modeling: Model Specification:**
 - Model selection criteria
 - Types of specification errors
 - Consequences of model specification errors
 - Tests of specification errors
 - Errors of measurement
 - Model selection criteria
 - Endogeneity and nature of Endogeneity
 - OLS estimation in presence of Endogeneity
 - Detection of Endogeneity
 - BLUE estimators in the presence of Endogeneity
 - Consequences of Endogeneity in OLS estimation
 - Remedial measures.

7. Deviation from the Classical Assumptions:

- Assumptions of the classical model and economic reality
 - Relaxation of the assumptions and estimation issues
 - Brief introduction to the nature of problems and alternatives.
- (i) **Multicollinearity**
- Nature and severity of the problem
 - OLS estimation of regression equation in the presence of perfect multicollinearity
 - Causes of multicollinearity
 - Distinction between perfect and partial multicollinearity
 - Detection and remedial measures.
- (ii) **Heteroscedasticity**
- The nature of the problem with reference to economic theory
 - Cross-section data and the problem of non-constant variances
 - Consequences for OLS estimators
 - Detection and remedial measures
 - Introduction to the Generalized Least-Squares model (GLS).
- (iii) **Autocorrelation**
- Autocorrelation and its causes
 - Time-series data and emergence of the problem with reference to economic theory
 - Serial correlation
 - Consequences of autocorrelation for OLS estimators
 - Detection and remedial measures

TEACHING METHODOLOGY

- Lectures
- Assignments
- Software Applications (optional)

ASSESSMENT

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXTS AND REFERENCE BOOKS

- Dougherty, C. *Introduction to Econometrics*, Oxford University Press.
- Gujarati, D. N. *Basic Econometrics*, McGraw-Hill Company.
- Hill, R.C., Griffiths, W.E. and C. Lim, G.C. *Principles of Econometrics*, John Wiley, New York.

- Stock H. J. and M. W. Watson. *Introduction to Econometrics*, Pearson Education.
- Wooldridge, J. M. *Introductory Econometrics: A Modern Approach*, South-Western College.

ECON 312: MONETARY ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 111: PRINCIPLES OF MACROECONOMICS

COURSE DESCRIPTION

This course is designed to provide a foundation for the monetary economics to the students. It will cover topics such as the definitions of money and its role, portfolio choice, financial markets and banks, exchange rate fluctuations, central banks, monetary policy, and the monetary transmission mechanism.

COURSE OBJECTIVES

1. To provide a thorough understanding of monetary policy and financial markets
2. To give the comprehension of money and interest rates in the economy
3. To make a comparison of monetary policy in closed and open economy
4. To analyze the Monetarists' and Keynesian views of inflation.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, the student will be able to:

- ACQUIRE the basic knowledge of money, money markets and financial markets
- UNDERSTAND the transmission mechanism of monetary policy
- ABILITY to develop and evaluate monetary policy models
- EVALUATE the monetary policies
- DEMONSTRATE the choices and objectives of monetary policy

COURSEOUTLINE

1. **Introduction and Development of Monetary Mechanism**
 - Evolution of Money and Payment System
 - Definition of Money, Function of Money and Measurement of Money
 - Demand for Money and Supply of Money
 - Classification of Money, M1, M2, M3, etc.
 - The Evolution of Monetary Thought, Quantity Theory of Money, Keynesian Tradition, Monetarism and Modern Quantity Theory, Rational Expectation Theory.
2. **Role of Money in the Economy**
 - Debate on neutrality and non-neutrality of Money
 - Classical Dichotomy and Keynesian Integration of Nominal and Real Sectors.
 - Role of Money in the IS-LM Framework
 - Money in Aggregate Demand and Aggregate Supply Analysis

- Keynesian vs Monetarist views of Equilibrium Output, Employment and Prices
- 3. Theory of Demand for Money**
- Quantity Theory of Money.
 - Transaction Theories of Demand for Money.
 - Portfolio Theories of Demand for Money.
 - Baumol – Tobin Model of Cash Management.
 - Friedman’s Restatement of Quantity Theory of Money
 - Empirical Evidence on the Demand for Money.
- 4. The Money Supply Process**
- Monetary Base
 - Keynesian Liquidity Preference Framework
 - Friedman’s Modern Quantity Theory of Money
 - Multiple Deposit Creation: Introducing the Money Supply Process. Determinants of the Money Supply: Exogenous and Endogenous.
 - Understanding Movements in the Monetary Base, Money Multiplier. Velocity of Money and its Variability.
 - Explaining Depositor and Bank Behaviour: the Complete Money Supply Model.
- 5. The Conduct of Monetary Policy: Central Bank**
- Structure and Functions of Central Bank.
 - Independence of Central Bank and its Role in Economic Growth.
 - Tools of Central Bank for Money Control.
 - The Conduct of Monetary Policy: Goals and Targets.
 - Tools of Monetary Policy and their Comparative Analysis
 - Impact Analysis of Monetary Policy Tools
 - Financial Intermediaries
 - Monetization of Public Debt
 - Ineffectiveness of Stabilization Policies.
 - Targeting interest rate and inflation.
- 6. Money and Interest Rates**
- Determinants of Interest Rates
 - Kinds of Interest Rates
 - Behavior of Interest Rates
 - Understanding and Measurement of Interest Rates
 - Real and Nominal Interest Rates
 - Theories of Interest Rate Determination
 - The Risk and Term Structure of Interest Rates
 - The Distinction Between Interest Rates and Returns
 - Maturity and Volatility of Bond Returns
 - Portfolio Choice: Theory of Asset Demand.

7. Money and Inflation

- Inflation, Kinds of Inflation and Causes of Inflation
- Demand – pull Inflation, Cost – push Inflation
- Stagflation and Hyperinflation.
- Inflation as a Monetary Phenomenon.
- The Philips Curve and Accelerating Inflation.
- Situation Analysis of Inflation in Pakistan: Historical Perspective
- Causes of Inflation in Pakistan
- Policies to Combat Inflation in Pakistan

8. Monetary Policy in International Framework

- Money Demand and Empirical Evidences
- Money in Growth Models
- Inflationary Spiral
- Monetary and Financial Sector Reforms
- Financial Sector Reforms in Pakistan
- Monetary Policy in Fixed and Flexible Exchange Rates
- Perfect Mobility of Capital and Money Control
- Impact of Reserves on Balance of Pakistan (BOP) and Exchange Rates
- Targeting Exchange Rate
- Managed Exchange Rate System and Monetary Policy
- Targeting Inflation, Exchange Rate and Balance of Payment

TEACHING METHODOLOGY

- Lectures
- Guest Speaker (if any)
- Group Discussion
- Written Assignments

ASSESSMENT

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXTS AND REFERENCE BOOKS

- Mishkin, Frederic S. *The Economics of Money, Banking and Financial Markets*. Pearson (11th edition)
- Cecchetti, Stephen and Kermit, Schoenholtz. *Money, Banking and Financial Markets*. McGraw-Hill.(4th edition).

- McCallum, Bennett T. *Monetary Economics, Theory and Policy*. McMillan. (Latest Edition).
- Laider, David E. W. *The Demand for Money: Theories, Evidence and Problems*. Pearson. (4th edition).
- Miller, R. L. and Van Hoose, D. *Money, Banking and Financial Markets*. Thomson South-Western (Latest edition).
- Patinkin, D. *Money, Interest, and Prices: An Integration of Monetary and Value Theory*. The MIT Press (Latest edition).
- Handa, J. *Monetary Economics*. Routledge. (Latest edition).

ECON 313: PUBLIC FINANCE

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This course is based on the economic analysis of public sector. The course involves theories of public expenditure and revenue (taxation), using concepts and tools in microeconomics and welfare economics. Furthermore, the role of government in efficiency and equity is also emphasized.

COURSE OBJECTIVES:

1. Provide arguments for the case of government intervention in a modern economy
2. Understanding the functioning of public finance
3. To explain the rationale and form of taxation

COURSE LEARNING OUTCOMES:

- ANALYZE the functioning of modern public finance
- IDENTIFY the types of public needs and the mechanisms of their financing
- UNDERSTAND the instruments and objectives of budgetary policy

COURSE CONTENTS:

1. **Introduction**
 - The State and the Economy
 - The Rationale for State Intervention
2. **Fundamentals of Welfare Economics**
 - Market Efficiency
 - Market Failure
 - Efficiency and Equity
3. **Analysis of Public Expenditure**
 - Public Goods
 - Public Choice
 - Public production and Bureaucracy
 - Externalities
 - Cost Benefit Analysis
4. **Expenditure Programmes**
 - The Analysis of Expenditure Policy
 - Cost Benefit Analysis
5. **The Theory of Taxation**
 - Introduction to Taxation
 - Tax Incidence
 - Taxation and Economic Efficiency
 - Optimal Taxation

6. Selective Topics

- Public Finance in a Federal System
- Deficit Finance

TEACHING METHODOLOGY

- Lectures
- Guest Speaker (if any)
- Group Discussion
- Documentaries (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXTS AND REFERENCE BOOKS

- Rosen Harvey S, *Public Finance*. McGraw Hill.
- Rosen Harvey S and Gayer Ted, *Public Finance*. McGraw Hill.
- Musgrave R. A and P. B. Musgrave, *Public Finance in Theory and Practice*
- Stiglitz J. S, *Economics of the Public Sector* Norton and Company.

ECON 341: MATHEMATICAL ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 241 INTERMEDIATE MATHEMATICS (if offered), otherwise ECON 141 BASIC MATHEMATICS

COURSE DESCRIPTION:

This course is about the use of basic mathematic tools that enables the study of economic theory at the undergraduate level, specifically the courses in microeconomic theory, macroeconomic theory, statistics and econometrics. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general.

COURSE OBJECTIVES:

The course is designed to enable the students to use the mathematical tools in clarifying their economic concepts and solving the problems accordingly. This is true because economic analysis requires extensive use of mathematical tools/ techniques in the present day world of complexity. Mere logical reasoning and diagrammatic approach is perhaps not sufficient. This is true for positive economics in order to learn/ apply mathematics along with their theoretical underpinnings.

COURSE CONTENTS:

1. The Nature of Mathematical Economics:

- Pure vs applied mathematics.
- The use of mathematical tools in social sciences particularly in economics
- Economic theory (logical argument) as description of some kind of relationship between variables
- Mathematical Support: Expression of theory in functional form
- Explaining properties of economic parameters like elasticity, propensity to consume etc.
- Verification of hypotheses and the use of mathematical models, Parameters and variables (dependent and independent), Linear and non-linear functions: quadratic, polynomial, circular, Types of functions: constant, rational, non algebraic, logarithms & exponential, Rules of logarithms and exponents
- Functions of more than two independent variables, Graphs of various functions
- The importance and limitations of mathematical models.

2. Equilibrium Analysis

- Equation of a straight line: Intercept and Slope parameters and their economic interpretation
- Partial and general equilibrium analysis, Single and Simultaneous equation models, Examples from market models: Demand and supply

equations, Determination of price and quantity, Calculation of elasticities at equilibrium,

3. Linear Models and Matrix Algebra

- Simultaneous equations models and the use of matrices, Types of matrices: Square, identity, null, idempotent, diagonal, transpose and their properties, Laws of matrix operations: addition/subtraction, scalar and vector multiplication, Conditions for non singularity of a matrix, Determinant & its properties, Minors and cofactors, Adjoint and inverse of a matrix, Properties of inverse of a matrix
- Solution of linear equations: Gaussian method, Cramer's rule and Inverse matrix method
- Economic applications: Solution of market models, national income models.

4. Differentiation

- The concept of derivative, Functions of one variable.
- Rules of differentiation: Sum-difference, product and quotient rules, chain rule, power function rule, inverse function rule, Implicit functions rule, Combinations of rules, differentiation of logarithmic & exponential functions
- Higher order derivatives, Concept of maxima & minima, First and second derivative tests, point of inflection
- Free and Constrained optimization
-

5. Economic Applications of Differential Calculus

- Analysis of Utility, Demand, Production, Cost and Supply functions, Lagrange function
- Profit maximization and cost minimization under perfect competition and monopoly
- Maximizing excise tax revenue in monopolistic competitive market
- Comparative- static analysis: Partial equilibrium market model, National Income model, Optimization of unconstrained functions and their economic applications, Profit maximization by a multi-product and multi-plant firms
- Price discrimination and monopoly, Optimization by using Cobb-Douglas, CES and Translog functions with interpretation of the results.

6. Linear Programming

- Ingredients of linear Programming, Graphical approach, Simplex method
- Economic application of linear programming
- Concept of primal & dual, Duality theorems, Solving of Primal via dual, Economic interpretation of a dual.

TEACHING METHODOLOGY

- Lectures
- In Class Discussion

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXTS AND REFERENCE BOOKS

- Chiang, A. C. *Fundamental Methods of Mathematical Economics*, 3rd Edition (1984) McGraw Hill Publishing Company.
- Frank, Budnick. *Applied Mathematics for Business, Economics and Social Sciences*, 4th Edition or latest - McGraw Hill Publishing Company.
- Dowling, E. T. *Mathematics for Economists, Schaum's Outline Series*, 3rd Edition McGraw Hill Publishing Company.
- George, Alvery et. al. *Essentials of Mathematics with Business Applications*, 5th Edition, McGraw Hill Publishing Company.
- Weber, E. Jean. *Mathematical Analysis: Business and Economic Applications*, Latest Edition, Harper and Row Publishers, New York.
- Colin, Glass. *An Introduction to Mathematical Methods in Economics*, Latest Edition, McGraw Hill Publishing Company.

ECON 351: INTERNATIONAL ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

The subject matter of international economics, consists of issues raised by the special problems of economic interactions among nations. The subject explains the gains from trade, the pattern of trade, protectionism, the balance of payments, exchange-rate determination, international policy coordination, and the international capital market.

COURSE OBJECTIVES:

The main objectives of the course are:

1. To apply the theoretical models of trade into practice
2. To introduce the students with alternative trade barriers or enabling the students to critically analyze the pros and cons of free trade vs restricted trade
3. To provide information regarding the overall economic development of the country.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- UNDERSTAND the existing patterns of international trade and what determines them, or the theories and practices of world trade
- RECOGNIZE the functioning of foreign exchange market and balance of payments
- ANALYZE the implications of international trade for the economies of the world both developing and developed.

COURSE OUTLINE:

1. Introduction

- International Economics and Economic theory
- The subject matter of International Economics
- Importance of international trade in the changing world

2. Theories of International Trade

- History of International trade, Pre-classical theories of international trade-Mercantilism, and Physiocracy.
- Classical theories of International Trade - absolute advantage, comparative advantage and reciprocal demand
- Neo-Classical theories of international trade- Opportunity cost theory
- Modern Theory of International Trade- H-O Theory, H-O-S Hypothesis
- Leontief Paradox. Alternative theories of trade-Human Skills. Technology and product cycle theories. Use of indifference curves, offer curves and box diagrams for exposition of trade theory

3. **International trade Policies**
 - Free trade vs protected trade
 - Objectives of commercial policy
 - Instruments of trade policies- tariff barriers, non-tariff trade barriers
 - GATT, WTO
4. **Trade policies in Developing countries**
 - Import substituting Industrialization
 - Export oriented Industrialization
5. **Economic integration**
 - Types and reason of economic integration
 - The theory of customs union, static and dynamic effects of custom unions. Economic integration among the countries- EU and SAARC
- **The foreign Exchange Markets**
 - Definition and Functions
 - Hedging and Speculation
 - Types and determination of exchange rate
- **The Balance of Payments**
 - Balance of payments accounting
 - Features of balance of payments.
 - Components of balance of payments.
 - Measuring the deficit or surplus of balance of payment

TEACHING METHODOLOGY:

- Lectures
- Written Assignments
- Guest Speaker (if any)
- Class presentations

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Salvatore, D. *International Economics*, (latest edition).Wiley Global Education.
- Krugman, P. R. *International Economics: Theory and policy*, (latest edition), Pearson Education India.
- Francis Cheruniliam. *International Economics*, (latest edition), The McGraw-Hill Companies

ECON 361: DEVELOPMENT ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This course examines the process of economic development, including the determinants of underdevelopment, poverty and inequality. The course focuses on describing and understanding the many problems faced by developing countries and their citizens. Through the course, we discuss policy implications of the topics we explore. We begin with an overview of economic development and models economists use to understand the process of economic development. Afterward, we consider the impediments to development and how they can potentially be addressed. Both microeconomic issues such as, health, education, credit, etc., and macroeconomic issues such as land reforms, industrial policy, savings, trade, etc. will be addressed.

COURSE OBJECTIVES:

1. To introduce students to the basic theory of development economics and to the different economic concerns of developing countries.
2. To facilitate students to be able to engage with the development economic literature on their own with an intermediate level knowledge of current issues and policies.
3. To understand and analyze key development economic theories affecting a number of contemporary development issues.
4. Reflect on and critically examine the links between alternatives development economic theories and approaches.
5. Review the policy implications of these key development economic theories.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- **ACQUIRE** the UNDERSTANDING of various development theories and their policy outcomes.
- **UNDERSTAND** different concepts in relation to the development of the developing countries.
- **SOLVE** the critical development issues, such as poverty, human development, inequality etc.
- **EVALUATE** the available solutions and alternatives outcomes
- **DEMONSTRATE**, compare and Contrast alternative development theories and hypotheses

COURSE CONTENTS

1. An Overview of Development:

- Historical experiences of developing countries
- Broad conceptual explanation of underdevelopment
- Economic Growth versus economic development

- Comparative economic development
 - Emerging major issues of developing world
 - Basic theories of growth and development, and
 - Contemporary models of underdevelopment/development
- 2. Domestic Problems and Policies:**
- The nexus of poverty, inequality and underdevelopment
 - The distribution of wealth and resources
 - Poverty and nutrition
 - Demographic transition, population growth; its causes and consequences
 - Urbanization/rural-urban migrations; its causes and consequences
 - Human capital; education, health and development
 - Human Development Index
 - Agriculture and rural development
 - Land distribution
 - Environment and natural resources
 - Feudalism and Asiatic Mode of Production
 - Colonial Path and Asiatic Capitalism in South Asia
 - Agrarian class relations in Pakistan
 - Industrial relations in Pakistan
- 3. International Problems and Policies:**
- Trade/access to factor and product markets and development
 - Balance of payment problems
 - Debt, stabilization policies
 - International shocks, foreign finance
 - Foreign assistance and aids
 - International wars, conflicts and refugees
 - Migration and remittances
- 4. Markets and Development:**
- The role of markets in development,
 - Credit, financing, SME's, industrial and trade policies, land, labor and agriculture and livestock
 - Market failure and government intervention
 - Property rights and investment incentives
 - Technology adoption and learning
 - Stabilization policies
- 5. Institutions and Development:**
- What are the institutions?
 - Political institutions Versus economic institutions
 - The Role of Institutions in Development
 - The political economy and corruption
 - Democracy Versus dictatorship
 - Decentralization and federalism
 - Various tiers of government

- Good governance, corruption
 - Rent seeking
 - Ethnic conflict
 - Gender inequality
 - Voting and lobbying
 - The role of civil society
 - The role of state for economic development
 - The Informal institutions and development
 - Social network and social capital
 - Various tiers of government
6. **Alternative Theories of Economic Development**
- Culture Hypothesis
 - Geography Hypothesis
 - Institutions Hypothesis

TEACHING METHODOLOGY

- Lectures
- Written Assignments
- Guest Speakers (if any)
- Group Discussion
- Field Visits
- Report Writing/Case Studies
- Presentations

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Todaro, M. P. and S. C. Smith. (2011). *Economic Development*, 11th edition, Palgrave.
- Debraj Ray (1998). *Development Economics*, Princeton University Press.
- Daron Acemoglu and James Robinson (2012). *Why Nations Fail: The Origins of Power, Prosperity and Poverty*, Crown Publishing Group.
- Banerjee and E. Duflo (2012). *Poor Economics*, Public Affairs
- Taimur Rahman.(2012). *The Class Structure of Pakistan*, Oxford University Press.
- Vaqar Ahmed (2017). *Pakistan's Agenda for Economic Reform*, Oxford University Press

ECON 371: FINANCIAL ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This course is designed to provide an overview of financial economics as a specialized field of economics. It is a foundation course for studying courses like international finance. It includes discussion of the efficient markets theory, and presents an overview of quantitative methods in finance. Further the course covers the new developments in financial economics.

COURSE OBJECTIVES:

- To introduce the fundamentals of financial economics
- To understand financial system
- To explain the financial decision-making process, essential for understanding various financial contracts, such as stocks, bonds, and derivatives contracts

COURSE LEARNING OUTCOMES:

At the end of the course, students should be able to

- UNDERSTAND the primary functions of the Financial System
- RECOGNIZE the structure of the Financial Markets
- IDENTIFY the Financial Market Instruments and understand the causes of financial instability
- CLARIFY the role of central banking

COURSE CONTENTS:

1. **An Introduction to Financial Economics**
2. **Risk and Risk Aversion**
3. **The Capital Allocation Decision**
4. **Optimal Risky Portfolios**
5. **The Capital Asset Pricing Model and some of its limitations**
6. **Multi-Factor Models (Arbitrage Pricing Theory)**
 - Factor model
 - Arbitrage opportunity
 - APT
 - Fama-French three factor model
7. **Efficient Markets Hypothesis**
 - Random walk
 - Autoregressive (AR) process
 - Unit root process
 - Predictability
8. **Rise of Behavioural Finance**
9. **Bond Yields and Interest Rate Risk**

10. **The Term Structure of Interest Rates**
11. **Minsky's Financial Instability Hypothesis and Financial Crises**

TEACHING METHODOLOGY:

- Lectures
- Guest Speaker
- Class Presentations

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Fredric S. Mishkin, *The Economics of Money, Banking and Financial Markets*, (latest edition), The Pearson Series in Economics.
- Stephen F. LeRoy and Jan Werner, *Principles of Financial Economics*, (latest edition), Cambridge University Press

ECON 381: RESEARCH METHODOLOGY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 212: STATISTICS-II

COURSE DESCRIPTION:

This course is designed to enable the students to understand the basics of research and its process adopted in field of economics, which include the research fundamentals, research design, literature review, data sciences, sampling, data analysis and thesis/ report writing

COURSE OBJECTIVES:

By the end of this course following Bloom's Taxonomy the students shall be able:

1. To understand the research process followed in economics.
2. To apply research techniques for analysis of economic problems.
3. To familiarize the students to identify the researchable issues in the economy.
4. To equip the students with basic research techniques of data collection, analysis, writing and presentation.

COURSE LEARNING OUTCOMES:

By studying this course the students shall be able to:

- IDENTIFY economic problems and analyze them by using scientific process of empirical inquiry in economics discipline.
- ACQUIRE UNDERSTANDING about conducting research in economics based on certain economic issue.
- DESCRIBE the research question; explore the strengths of various methods, and techniques to address the stated problem.
- APPLY different computational techniques to analyze the data.

COURSE CONTENTS:

1. Introduction

- Basic Concepts, Definitions, Terminologies

2. Research types and designs

- Research Types; Advantages and disadvantages of different research types
- Research designs; Advantages and disadvantages of different designs

3. Literature review

- Formats, Finding research journals, journals by ranking, themes etc.
- Review styles; Summary of each paper vs. review of many papers under one theme [thematic review]
- Gap finding

4. Sampling

- Types of sampling
- Methods of sampling

- Determining the sample size
 - Handling the issues
5. **Data Sciences**
- Data types: primary and secondary, Qualitative and Quantitative, Cross sectional, Time Series and panel data
6. **Data analysis**
- Descriptive analysis, Regression, Data Visualization
7. **Thesis /Report writings**
- Elements of thesis / report; Abstract, Introduction, Review of Literature, Framework of Analysis, Estimation, Results and discussion, and Conclusion.
 - References; APA, AMA,MLA and other formats
 - Plagiarism and its outcomes to researchers.

TEACHING METHODOLOGY:

- Lectures
- Practical assignments based on applied issues in economics in the region.
- Class Presentations

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Kothari,C.R. *Research Methodology: Methods and Techniques*, New Delhi, Wiley Eastern Limited. Latest Edition.
- Dawson, Catherine *Practical Research Methods*, New Delhi, UBS Publishers, Latest Edition.
- Kumar, Ranjit. *Research Methodology: A Step by Guide for Beginners*, Second Edition, Singapore, Pearson Education. Latest Edition.
- Etheridge Don E. *Research Methodology in Applied Economics: Organizing, planning and Conducting Economic Research*, 2nd Edition. Blackwell Publishing

ECON 401: GENERAL EQUILIBRIUM AND WELFARE ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 201 INTERMEDIATE MICROECONOMICS

COURSE DESCRIPTION:

In this course, we extend the partial equilibrium analysis, studied in the basic microeconomics, to general equilibrium. Alternatively, here we study the equilibrium and their welfare consequences in case of many markets where the allocation of resources results from the interaction of several economic agents (consumers and producers). The basic structure is based the competitive forces with no externality and no information asymmetry accompanied by rational individuals (utility maximization of consumers and profit maximization of producers). The maximization behaviour of individual economic agents occur in such a way that all markets clear in a simultaneous way. Second, the course includes the theory of social choice and welfare ranging from the measurement of welfare to the fundamental theorems of welfare. After the completion of course, the student should be able to understand the framework of general equilibrium and its welfare characteristics.

COURSE OBJECTIVES:

1. To Provide an Overview to Students how the Overall Economic System Works
2. To Introduce the Basic Concepts and Techniques related to the Equilibrium in the Overall Economy
3. To show the Welfare Characteristics of Overall Economy
4. To Show the Students some Applications of General Equilibrium Theory

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the students will be able :

- UNDERSTAND the aggregation of individual Preferences into Aggregate Preferences?
- IDENTIFY the interaction of Several Markets at the Same Time Work
- To APPLY the theory of General Equilibrium in Alternative Economic Structures

COURSE CONTENTS

1. Introduction to General Equilibrium

- Complete Markets, Spot Market vs Forward Market, Partial versus general equilibrium, the Walrasian System, Exchange Economy, Production Economy

1. Exchange Economy

- General equilibrium of Pure Exchange Economy, The Edgeworth Box Diagram, Offer Curves, Existence, Uniqueness and Stability of Equilibrium, Mathematical and Graphical Representation of General Equilibrium, Pareto Efficiency in Exchange Economy, Contract Curve,

Core in Exchange Economy, Interaction between Equilibrium, Pareto Efficiency and Core

2. **Production Economy**

- General equilibrium of production and consumption; A Robinson Crusoe Economy: One Consumer and One Producer Economy, Equation of Contract Curve, Production Possibility Frontier, ISO Welfare Line, Pareto Efficiency in Robinson Crusoe Economy; General equilibrium in the two-sector model; The Production Economy in Edgeworth Box: 2x2 Model, Pareto Efficiency in 2x2x2 economy, general equilibrium and allocation of resources, Extension of the simple general equilibrium model to any number of Consumers, producers and factors

3. **Application of General Equilibrium Theory**

- some applications like Heckscher-Ohlin Theory of Trade, Stolper-Samuelson Theorems, Problems of the general equilibrium model

4. **Welfare Economics**

- Meaning of welfare, measurement of social welfare, Utility Possibility Set, Social Welfare Function, Pareto Optimality, Theory of Social Choice, the Majority Rules, Condorcet's Paradox, Borda Count, Arrow's Impossibility Theorem, Maximization of social welfare, Welfare maximization and perfect competition, the First Fundamental Theorem of Welfare, the Second Fundamental Theorem of Welfare, Monopoly, Externalities, imperfect information, public goods, Some Criticism, Extension and Policy implication

TEACHING METHODOLOGY

- Lectures
- In Class discussion

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- James C Moore, *General Equilibrium and Welfare Economics: An Introduction* (latest edition), Springer.
- Layard, P.R.G and Walters, A.A *Microeconomic Theory*, Latest Edition.
- Mas-Colell, Andreu, Michael D. Whinston, and Jerry R. Green. *Microeconomic Theory*
- Eugene Silberberg and Wing Suen. *The Structure of Economics: A Mathematical Analysis*.

ECON 421: ECONOMETRICS OF TIME SERIES AND PANEL DATA

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 321: ECONOMETRICS

COURSE DESCRIPTION

Econometricians use econometric tools to forecast future developments in the economy. They can measure past relationships among variables such as consumer spending, household income, tax rates, interest rates, employment, etc., in order to forecast how changes in some variables will affect the future outcomes of others. This course is designed to develop an understanding among students about non-linear estimation techniques, simultaneous equation models, panel data models, dummy dependent variable models and time series analysis.

COURSE OBJECTIVES

This course is designed to teach the model building approach, and students will learn methods to conduct independent analysis of real world economic data. After completion of this course, students would be able to

1. Estimate and interpret the non-linear regression models.
2. Understand the issues related to the estimation of limited dependent variable and time series models.
3. Identify appropriate simultaneous equations technique for estimation.
4. Appraise econometric analysis with respect to choice of model, estimation method and interpretation

COURSE LEARNING OUTCOMES

Upon successful completion of the course, student will be able to:

- APPLY appropriate tools for analyzing economic data.
- INTERPRET and CRITICIZE the estimates of the outcomes of empirical analysis.
- VALIDATE models using elementary procedures.

COURSE OUTLINE

1. **Nonlinear Regression Models**
 - Intrinsically linear and intrinsically nonlinear Regression models
 - Estimation of nonlinear Regression models
2. **Qualitative Response Regression Models**
 - The nature of qualitative response models
 - The linear probability model
 - Applications of linear probability model
 - The logit model
 - Estimation of the Logit model
 - The grouped Logit model
 - The Logit model for ungrouped or individual data
 - The Probit model, Probit estimation with grouped data

- The Probit model for ungrouped or individual data
 - Logit and Probit Models
 - The Tobit model
- 3. Pool and Panel Data**
- Why panel data regression models
 - Estimation of pool data regression models
 - Common intercept method
 - Fixed-effects model
 - Least Squares Dummy Variables Approach
 - Random-effects model
 - Generalized Least Squares Approach
 - Fixed-effects model Vs. Random-effects model
 - Hausman Specification Test
- 4. Simultaneous Equation Models and Estimation Methods**
- Simultaneous equation models
 - Nature of simultaneous equations
 - Examples of simultaneous equation models from economic theory
 - Inconsistency of OLS estimators
 - Identification problem
 - Unidentified, exactly identified and over identified
 - Rules for identification
 - Simultaneous equations approach to estimation
 - Indirect least squares
 - Two-stage least squares
 - Instrumental Variables
 - Seemingly unrelated regression (SUR)
 - Nature of SUR equations
 - Method of Generalized Least Squares
- 5. Time-Series Econometrics**
- Stationarity
 - Tests for Stationarity
 - Transforming Non-stationary Time Series
 - ARMA and ARIMA Models
 - Comparison of forecast based on ARIMA and regression models,
 - Cointegration and Error Correction Models (ECM)
 - ARCH and GARCH models

TEACHING METHODOLOGY

- Lectures
- Assignments
- Presentations
- Use of Software (Eviews, STATA, Minitab, etc)

ASSESSMENT

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Dimitrios, A. and Hall, S.G. *Applied Econometrics: A Modern Approach using Eviews and Microfit*, Palgrave, Macmillan
- Gujarati, D. N. *Basic Econometrics* McGraw-Hill Company.
- Hill, R.C., Griffiths, W.E. and Lim, G.C. *Principles of Econometrics*, John Wiley, New York.
- Stock H. J. and M. W. Watson *Introduction to Econometrics*, Pearson Education.
- Wooldridge J. M. *Econometric Analysis of Cross Section and Panel Data*, The MIT Press, Latest edition

ECON 441: DYNAMIC OPTIMIZATION

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 341: MATHEMATICAL ECONOMICS

COURSE DESCRIPTION:

The Mathematical Economics II is an extension of course “Mathematical Economics I”. This course includes various applications of mathematical techniques to economics, particularly economic theory. The absolute knowledge of mathematics is essential to understand almost all areas of economics. In this course, we will discuss the application of linear algebra, differential calculus and optimization techniques to the economics models used in microeconomics and macroeconomics.

COURSE OBJECTIVES :

Objectives of the course are:

1. To confront the students to advanced mathematical techniques.
2. To formulate, analyze and apply mathematical models.
3. To learn how to frame economic ideas/ theories in mathematical form.
4. To enable the students to handle economic models, interpret the results and solve complex problems.
5. To use basic mathematical tools to analyze economic models, especially optimization models, both univariate and multivariate.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- **ACQUIRE** the basic knowledge to solve economic issues with calculus and linear algebra.
- **UNDERSTAND** the general framework of mathematical research; an understanding of the role of axioms, assumptions, theorems and
- **SOLVE** economic problems by using the mathematical methods described in the subject.
- **EVALUATE** the standard economic problems by applying mathematical techniques (the consumption decision, the production decision, cost minimization, simple multi-period decision making).
- **DEMONSTRATE** the basic computational methods in calculus, algebra, and differential equations.

COURSE OUTLINES:

1. **Complex Number and Circular Functions:**
 - Imaginary and Complex Numbers,
 - Complex Roots, Circular Functions,
2. **Integral Calculus:**
 - Comparative Dynamics and Integration,
 - The Nature of Indefinite Integrals,

- Rules of Integrations and Operation: Substitution Rule, Integration by parts.
 - Definite integrals and their properties, Definite Integrals and Area under a curve,
 - Improper integrals, Economic Applications of Integrals: Finding total functions from marginal functions, Investment & capital formation, Present value (PV) of cash flow, P.V. of a Perpetual Flow, The Domar growth model.
- 3. First Order differential equation:**
- Meaning and Definition; Homogenous & non-Homogenous cases,
 - Solution of first order linear differential equations: with constant coefficient & constant term, with variable coefficient and variable terms,
 - Qualitative approach: Concept of phase diagrams, types of time paths and the dynamic stability of equilibrium,
 - Exact differential equations: Solution and Verification, Bernoulli Equation, Separable Variables, Economic Application: Dynamics of market models, Solow growth model.
- 4. Higher Order Differential Equations:**
- Solution and Verification of second order linear differential equations with constant coefficients and constant terms,
 - Dynamic stability of equilibrium, Economic applications: Market models with price expectations,
 - The Interaction of inflation and unemployment in continuous time,
- 5. First Order Difference Equations:**
- Meaning and definition, First order linear difference equations:
 - Solution and verification of results, Conditions for dynamic stability of equilibrium,
 - Types of time paths, Economic applications: The Cobweb model, Market model with inventory,
 - Model with price ceiling, Nonlinear difference equations, The qualitative/graphic approach and phase diagrams.
- 6. Higher Order Difference Equations:**
- Solution and verification of second-order linear difference equations with constant coefficients and constant terms,
 - Real and imaginary roots,
 - Distinct, repeated and complex roots.
 - The convergence and divergence of the time paths. Economic applications: Models of business cycles,
 - The Multiplier-Acceleration interaction model, inflation-unemployment model in discrete time,
 - Convergence and the Schur's theorem, Solution of simultaneous difference equations.

7. **Non-Linear Programming:**

- The nature of non-linear programming,
- Non-linearities in Economics, Kuhn-Tucker conditions and their interpretation,
- The Kuhn-Tucker Sufficiency theorem: Concave programming,
- The Arrow-Enthoven Sufficiency theorem: Quasi-concave programming,
- Economic applications: Utility maximization, Least-cost combination,

TEACHING METHODOLOGY

- Lectures
- In class activities

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Chiang, A.C. and Kevin Wainwright. *Fundamental Methods of Mathematical Economics*, 4th Edition, McGraw Hill Publishing Company.
- Gandolfo, G. *Economic Dynamics: Methods and Models*, Latest Edition, North Holland Publishing Company
- Weber E. Jean, *Mathematical Analysis, Business and Economic Application*, Latest edition, Harper and Row Publishers, Netherlands.
- Hoy M., Livermois J, Rees R, Stengos T. *Mathematic for Economics*, Addison & Wesley Publishers.

ECON 461: ECONOMIC GROWTH

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This course explores theoretical developments in the analysis of economic growth and introduces current debates on evidence and policy relevant to the growth performance of both developed and developing economies.

COURSE OBJECTIVES

1. To introduce the theories of economic growth
2. To understand the issues and on-going debates on development economics.
3. To understand the mechanism of economic success and failures

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- UNDERSTAND the insight of economic growth process
- SOLVE and MANIPULATE a variety of simple models in economic growth
- IDENTIFY applications and limitations of the various growth models

COURSE OUTLINES:

5. Introduction

- The Growth Game
- The economics of Growth: Capital, Labor and Technology
- The Historical Record: Kuznets Characteristics of Modern Economic Growth
- The Limited Value of Historical Growth Experience: Differing Initial Conditions

2. Concepts and Methods of Growth Theory and Growth Accounting

- Introduction
- The Variables and Aggregation
- Saving and Investment
- Technology and the Economy
- Rates of Growth
- Steady Growth
- A Brief History of modern Growth Theory

3. The Harrod-Domer Model of Economic Growth

- Introduction
- The Harrod Model
- The First Harrod Problem
- The Harrod Stability Condition
- Domer's Model of Growth
- Harrod and Domer: Some Comparisons

4. **The Neoclassical/Solow-Swan Growth Model**
 - Introduction
 - The Assumptions
 - The Fundamental Equation of Neoclassical Economic Growth
 - Fundamental Propositions of Neoclassical Economic Growth
5. **Two Sector Models of Economic Growth**
 - Uzawa's Two Sector Growth Model
 - The Fel'dman Model of Growth
6. **The Cambridge Critics**
 - The Capital Controversy
 - The Kaldor Model
 - The Pasitti Model
7. **Optimal Growth, Dynamic Efficiency and Welfare**
 - The Golden Rule of Accumulation
 - Optimal Growth: Concepts and Problems
 - The Keynes-Ramsey Rule
8. **Theory and Models of Endogenous Growth**
 - Human Capital Model
 - Research and Development Model

TEACHING METHODOLOGY

- Lectures
- In class activities
- Term paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Jones, Hywel: *An Introduction to Modern Theories of Economic Growth*, Van Nostrand Reinhold (UK) Co. Ltd. (Southampton)
- Romer, D. (2006): *Advanced Macroeconomics*, McGraw-Hill (Boston)
- Robert J. Barro and Xavier Sala-i-Martin: *Economic Growth*, The MIT Press Cambridge, Massachusetts London, England.

ECON 462: ISSUES IN PAKISTAN ECONOMY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

This course gives an overview of economic issues of Pakistan. Starting from national income accounts, it carries a detail description of all sectors of the economy. Moreover it also highlights the main problems like poverty, inflation and unemployment. The last section of this course describes the recent challenges to the economy of Pakistan.

COURSE OBJECTIVES

The major objective of the course is to give the students the complete comprehension o socioeconomic issues of Pakistan economy. The students will be able:

1. To have the familiarity with key features of socioeconomic problems and their solutions in Pakistan
2. To understand the process of emerging issues in Pakistan economy
3. To analyze the programs dealing with issues in Pakistan economy

LEARNING OUTCOMES

Upon Successful Completion, the Students Should be able to:

- IDENTIFY the challenges to the economy of Pakistan
- UNDERSTAND the problems to the economy of Pakistan
- HAVE knowledge about the state of economy.

COURSE CONTENTS

1. **Quick Review of National Income Accounts**
 - GDP (Nominal and Real) and GNP
 - Measure of Inflation and Employment
 - Measures of Social Welfare
 - Beyond GDP
 - Basic Needs Approach
 - HDI Approach
2. **Review of Alternative Models of Economic Management**
 - Markets or Liberal Capitalism
 - Socialism or State Capitalism
 - Social Democracy or Mixed Economy
 - Islamic Economics or Islamic Capitalism
 - Pakistan's Models of Economic Management
3. **Agricultural Sector of Pakistan**
 - 1947-58: The Neglected Agriculture Sector
 - The Green Revolution and its Impacts

- Evaluation of Green Revolution as Development Strategy
 - Critical Analysis of Land Reforms in Pakistan
 - Pakistan's Agricultural Sector: Historical Perspectives and Implications
- 4. Industrial Sector of Pakistan**
- Composition of Manufacturing Sector
 - Process of Industrialization from 1947-58
 - The Development Decade of Ayub—1958-68
 - The Experimental Regime of Bhutto—1972-77
 - Zia Regime and back to the Basics—1977-88
 - Industry after Structural Adjustment Program—1988-onwards
 - Industrial Development in Pakistan: Factors and Development Programs
- 5. Fiscal and Monetary Policies and Inflation in Pakistan**
- Fiscal Developments
 - Structure and Trends in Revenue
 - Structure of Expenditures and Trends of Fiscal Deficit
 - Financing of Fiscal Deficit
 - New NFC Award and Medium-Term Budgetary Framework
 - Monetary Policy Management and Inflation in Pakistan
 - Understanding Monetary Data
 - Monetary Management
 - Financial Sector Reforms
 - Salient Features of Banking Sector
 - Inflation and its Causes in Pakistan
- 6. Public and External Debts in Pakistan**
- Difference between the two Debts
 - Is Debt Creation Always Bad?
 - Concerns Regarding Pakistan's Fiscal Deficit
 - Reforms to Bring Debt under Control
- 7. Structural Adjustment Program (SAP) and Pakistan**
- Globalization and Export of Development Thinking
 - Composition of SAP
 - Implementation of SAP in Pakistan
 - Evaluation of the Results of SAP
 - Did Pakistan Need to Go for SAP?
 - Why Does Pakistan Adopt IMF Program
- 8. Performance of Pakistan on Foreign Economic Front**
- Understanding BOP accounts
 - Trends in BOP
 - Composition of Exports and Imports
 - Historical Directions of Pakistan's Trade Policy Regimes
 - Impacts of Structural Adjustment Program on Trade Policy
 - Dealing with Globalization and WTO

- Impacts of Globalization on Poverty and other Socioeconomic Indicators in Pakistan
 - Exchange Rate Regimes in Pakistan
 - The Weakening Currency of Pakistan
 - Why can't Muslims Adopt a Common Currency?
- 9. Social Sector in Pakistan**
- Health Sector and its Issues
 - Education and its Issues
 - Gender Inequality
 - Regional Inequalities
 - Structure of Population
 - Population: Asset or Liability?
 - Urbanization and Housing Problems
 - Infrastructure Development
 - Poverty and Income Distribution
 - Measurement Issues of Poverty and Income Inequality
 - Trends in Poverty and Income Distribution
 - The Implications of Poverty and Income Disparity
 - Growth and Poverty?
 - Analysis of Poverty Alleviation Strategies
- 10. Recent Challenges Facing Pakistan Economy**
- Law and Order Situation
 - Energy Crises
 - Rising Circular Debt

TEACHING METHODOLOGY

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Zaidi, Akbar. *Issues in Pakistan's Economy*, Oxford University Press, Karachi. (Latest edition).

- Ahmed, Vaqar (2017) *Pakistan's Agenda for Economic Reform*, Oxford University Press.
- Hussain, Ishrat (2007) *Pakistan: The Economy of an Elite State*, Oxford University Press, Karachi.
- Saeed, Khawaja Amjed. *Economy of Pakistan*. Oxford University Press, Karachi. (Latest edition).
- *Economic Survey of Pakistan* (various issues) Federal Bureau of Statistics, Government of Pakistan.
- Rashid, Amjed and Barki, Shahid Javed (2016) *Pakistan Moving the Economy Forward*. Oxford University Press, Karachi.

ECON 491: ISLAMIC ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

The objective of studying social sciences is to help in achieving human wellbeing. However, framework in conventional economics is secular. Hence, the objective of every member in a society is to maximize his/her own material well-being. According to neo-classical paradigm individuals maximize the welfare of a society while maximizing private self-interest. In other words there exist no fallacies of composition. That is, whatever is in the self-interest of an individual, is also in the interest of a society as a whole. Hence, there is no need to motivate economics agent for behaving in line with the interest of society. Keynesians though believe on the clash between self and social interest and admit the existence of fallacies of composition such as 'paradox of thrift' and 'liquidity trap' however, they believe that such anomalies can be resolved by appropriate government intervention and not by changing the fundamental objective of individuals. Still we are observing many economic issues in the world. In this subject we will discuss how Islam provides a better alternative.

COURSE OBJECTIVE:

The objectives of this course are:

1. To provide an introduction to the basic concepts and principles of Islamic economics.
2. A enable the students for comparative analysis of different economic systems.
3. To enable the students to understand the role of values in economy
4. To explain the theories and concepts of the Sharia'h compliant financial system in an Islamic economy.
5. To appraise the efforts undertaken in Pakistan and other Islamic countries at the state level as well as in private sector to revamp overall economy on the universal principles of Shariah.
6. To outline the challenges faced in transformation of contemporary interest based economy into interest free economy.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- DIFFERENTIATE between the major characteristics of the dominant conventional economic systems (capitalism and Communism/socialism) and one based on the fundamental principles of Islam
- UNDERSTAND the conditions that should be met for a just, well-balanced, stable, and growing economy under Islamic perspective.
- UNDERSTAND the Islamic principles governing Islamic financial system

COURSE CONTENTS:

1. Definitions and Basics

- Definitions, concepts and terminologies,
- Brief History of Islamic Economics,
- Rationale for Islamic Economics,
- Islamic Economic System,
- Sources of Islamic Laws,
- The Holy Qur'an, Sunnah & Hadith, Ijma Ijtihad/Qiyas/Reason

2. Islam and other Economic Systems

- Introduction,
- Capitalism, Socialism, Communism, Mixed Economic System, Comparison and contrast

3. Islamic Economics

- Defining Islamic Economics,
- Principles of Islamic Economics,
- Consumer behavior, Basic values of Islamic economic system,
- Philanthropic and other-regarding behavior

4. Factors of Production

- Land as a Factor of Production,
- Land Tenure System in Islam,
- Place of Capital in Islamic Socio-Economic set-up,
 - Labour-Capital Relationship and Islam,
 - Rent and Wages in Islam, Islamic Values and work life

5. Interest, its Prohibitions and Classifications

- Riba /interest definitions and its types,
- Riba in Quran, Riba in Hadith,
- Commercial Interest and Usury,
- The implications of interest

6. Islamic Financial System

- Islamic Contracts,
- Islamic Modes of Financing, Banking in Islam

7. Financial system in Islamic Economy

- Applications of Islamic Financing,
- Project Financing,
- Working Capital Financing,
- Import Financing, Export Financing

8. Islamization of Economy

- Pre-modern Muslim thought on economics,
- Development of "Islamic economics" as an academic discipline,
- Achievements, Challenges,
- Islamization of financial institutions in Pakistan: Achievements, Problems and prospects.

9. Case Studies

- Islamic Financial Institutions (Bank/ Insurance),

- Islamization of economy [at least any two countries]
- 10. Emerging Trends and Recent Developments**

TEACHING METHODOLOGY

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Asad Zaman *Islamic Economics; A Survey of the Literature*, IRI publications, IIUI, Islamabad (available online)
- Syed Nawab Haider Naqvi, *Perspectives on Morality and Human Well-being*, Leicester (UK): Islamic Foundation, 2003.
- M.A. Mannan, *Islamic Economics, Theory and Practice* (Latest Edition), Sh. Muhammad Ashraf Publisher, Lahore, Pakistan.
- Abdul Hameed Dar and Muhammad Akram, *Islamic Economics*, Ilmikitab Khana, Urdu Bazaar, Lahore
- Abbas Mirakhor, Zamir Iqbal, Hossein Askari , *Introduction to Islamic Economics: Theory and Application*, John Wiley & Sons

OPTIONAL COURSES FOR BS. ECONOMICS

Course Code	Course Title
ECON 402	Game Theory
ECON 403	Industrial Organization
ECON 404	Behavioral Economics
ECON 405	Experimental Economics
ECON 411	Monetary Policy
ECON 412	Fiscal Policy
ECON 413	Cost-Benefit Analysis
ECON 414	Economics of Regulations and Competitive Economy
ECON 451	Trade and Development
ECON 452	International Finance
ECON 463	Development Policy
ECON 464	Poverty and Income Distribution
ECON 465	Political Economy
ECON 466	History of Economic Thought
ECON 467	World Economic History
ECON 468	Economics of Happiness and Wellbeing
ECON 471	Economics of Education
ECON 472	Urban Economics
ECON 473	Transport Economics
ECON 475	Institutional Economics
ECON 476	Real Estate Economics
ECON 477	Economics of Terrorism, War and Conflict
ECON 482	Labour Economics
ECON 483	Population Economics
ECON 484	Natural Resource Economics
ECON 485	Environmental Economics
ECON 486	Energy Economics
ECON 487	Economics of Climate Change
ECON 492	Islamic Banking: Theory and Practice
ECON 493	Islamic Finance
ECON 494	Divine Economics
ECON 495	Comparative Economic System
ECON 496	Economy, Ethics and Universal Values

ECON 402: GAME THEORY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 201: INTERMEDIATE MICROECONOMICS

COURSE DESCRIPTION:

How individuals take decisions in a situation where his/her interests depend not only on own actions but also on the actions of other people as well. Game theory provides the analysis of such strategic interactions. This subject is an introduction to the economic study of game theory. A main aim of this subject is to show how tools and techniques from game theory can be applied to interesting and relevant problems in economics and everyday life.

COURSE OBJECTIVES:

- To provide the students a glimpse of how the traditional decision making differ from strategic interaction
- To introduce the basic concepts and techniques related to the strategic interaction
- To show some applications of game theory like Bargaining, Auctions, and Mechanism Design etc.

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to Understand:

- HOW to transform a strategic interaction into a Game?
- How to FIND Equilibrium Outcomes in Strategic Interactions?
- How to APPLY the concepts of game theory into real life strategic interactions?

COURSE CONTENTS:

1. Principles and Basic Concepts of Game Theory

- Introduction: Basic Concepts
- Static Games of Complete Information,
 - Strategic Game: Simultaneous games with pure and discrete strategies, Pure strategy Nash Equilibrium, Pure Versus Behavioral Strategies, Common Knowledge of Rationality,
 - Dominate and dominated strategy,
 - Iterative elimination of dominated strategy
 - Correlated Equilibrium
 - Multiple Nash Equilibria, Pareto Optimality, Existence of Nash Equilibrium
- Static Games of complete but imperfect information
 - Simultaneous games with continuous and mixed strategies, Non-Existence of a Pure Strategy Equilibrium,
 - Mixed Strategy Nash Equilibrium
- Dynamic games of complete information

- Sequential Games: Extensive form representation of game
- Theory of Backward Induction, Sequential Rationality and Backward Induction, Sub Game Perfect Nash Equilibrium (SPE), Critique of Backward Induction and Sub game Perfection
- Dynamic games of complete but imperfect information
 - Sub-games, Sub-game perfect Nash Equilibrium
- 2. Advanced Concepts of Game Theory**
 - Static Games of Incomplete Information,
 - Static Bayesian Games and Bayesian Nash Equilibrium, Examples of Bayesian Equilibrium,
 - Dynamic Games of Incomplete information,
 - Perfect Bayesian Equilibrium,
 - Signaling Games
 - Repeated games:
 - Finitely Repeated Games with Several Static Equilibria
 - Infinitely Repeated Games, Infinite Horizon Equilibria,
 - Folk Theorem
- 3. Applications of Game Theory**
 - Industrial organization:
 - Cournot Model of Duopoly
 - Cournot Competition Under Asymmetric Information
 - Providing a Public Good under Incomplete Information
 - Bertrand Model of Duopoly, the Problem of Commons
 - Stackelberg Model of Duopoly
 - Bargaining:
 - Rubinstein Model of Bargaining, Uniqueness of Infinite Horizon Equilibria, comparative Statics
 - Auctions:
 - Theory of Auctions and Competitive Bidding

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Mas-Colell, Whinston and Green. *Microeconomic Theory*
- H. R. Varian , *Microeconomic Analysis*
- Martin J. Osborne, *An Introduction to Game Theory*
- Robert Gibbons , *Game Theory for Applied Economists*
- Osborne and Rubinstein , *A Course in Game Theory*

ECON 403: INDUSTRIAL ORGANIZATION

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 201: INTERMEDIATE MICROECONOMICS

COURSE DESCRIPTION:

This is a course of applied microeconomics. It is concerned with the behaviour of firms in markets, with a focus on strategic interactions. We will study the determinants of market structure, the pricing decisions of firms, the strategic interactions among firms, and the effects of structure and on price and non-price dimensions.

COURSE OBJECTIVES:

1. To describe the basic models of the interacting firms
2. Solve analytically problems relating to industrial organization.
3. To study the rationale of Government intervention in markets

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- APPLY strategic concepts to analyze firms' and market behaviour
- IDENTIFY various strategic environments and discuss their welfare implications
- ANALYZE basic antitrust and regulatory policy issues
- EXECUTE a research based project.

COURSE CONTENTS:

1. **Monopoly Power and Practice**
 - Price discrimination
 - Product variety and quality
2. **Game Theory and Oligopoly Markets**
 - Static games and Cournot competition
 - Dynamic games and first and second movers
3. **Anticompetitive Strategies**
 - Limit pricing and entry deterrence
 - Price-fixing and repeated games
4. **Contractual Relations between Firms**
 - Horizontal mergers
 - Vertical and conglomerate mergers
5. **Non-price Competition**
 - Advertising, market power, and information
 - Research and Development
6. **New Developments in Industrial Organization**
 - Network issues
 - Auctions and Auction Markets

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Lynne Pepall, Daniel J. Richards and George Norman, *Industrial Organization: Contemporary Theory and Practice*, (latest edition), South-Western College Publishing
- Tirole, J , *The Theory of Industrial Organization*, (latest edition), MIT Press

ECON 404: BEHAVIORAL ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 201: INTERMEDIATE MICROECONOMICS

COURSE DESCRIPTION:

Behavioural economics extends traditional economics by incorporating insights into human behaviour derived from psychology, sociology and neuroscience. The behavioural patterns studied in this subject include judgment biases, framing effect, loss aversion, anchoring, preference reversals, fairness, negative reciprocity and social preferences. Applications of behavioural economics to both microeconomic and macroeconomic topics will be considered, such as self-control and saving, self-serving bias and bargaining impasse, wage rigidity and involuntary unemployment and the equity premium puzzle. Research techniques emphasized in behavioural economics, such as experimental methods, will be discussed.

COURSE OBJECTIVES:

To learn how behavioral economics extends traditional economics by incorporating insights into human behavior derived from psychology, sociology and neuroscience.

COURSE LEARNING OUTCOMES:

By studying this subject students should be able to:

- EXPLAIN the behavioural patterns uncovered in behavioural economics;
- explain some of the techniques used by behavioural economics to

CREATE KNOWLEDGE;

- EVALUATE the contribution of behavioural economics to economic knowledge;
- SYNTHESIZE and contrast some of the recently created knowledge in behavioural economics with traditional economics;

COURSE CONTENTS:

1. Introduction
2. The endowment effect
3. Prospect theory, loss aversion and mental accounting
4. The equity premium puzzle
5. Choosing the reference standard
6. Visceral influences
7. Neuroeconomics
8. Present biases
9. Inequity aversion
10. Self serving bias and bargaining impasse
11. Identity
12. Reciprocity and wage rigidity
13. Happiness

14. Incentives, punishment and behaviour
15. Conclusion

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Thaler, R.H., and Sunstein, C.R. *Improving decision about Health, Wealth and Happiness*, Yale University Press, New Haven and London.
- Colin Camerer , *Behavioral Game Theory*, Princeton University Press. (2003)

ECON 405: EXPERIMENTAL ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 201: INTERMEDIATE MICROECONOMICS

COURSE DESCRIPTION:

The course will introduce students to experimental methods as applied in Economics and will present key findings from laboratory experiments. The first lecture of each week will be devoted to running experiments where students will experience different economic situations. The second lecture will present the theories underlying the experimental games and will use the experimental data from the first lecture (as well as other experimental data) as a vehicle for discussion. By comparing actual individual behavior to the theoretical predictions, the course aims to provide a deep understanding of behavior in a variety of markets

COURSE OBJECTIVES:

Following are the objective of this course:

1. To introduce experimental methods as applied in Economics
2. To analyze the divergence between theory and actual behavior, if any
3. To understand the importance of data generated through experiments

COURSE LEARNING OUTCOME:

By the end of this course, student is expected to:

- UNDERSTAND the link between theory and actual behavior
- BE ABLE to design experiments for testing theories
- KNOWLEDGE of data generated through experiments

COURSE OUTLINE:

1. Introduction to Experimental Economics
2. Markets Institutions and Invisible hand theory
3. Market Experiments
4. Asset Markets and Price Bubbles
5. Market Failure due to Unraveling: Lemons and Matching Markets
6. Bargaining and Behavioral Labor Economics
7. Public Goods & Enforcement of Cooperation
8. Designing an Experiment
9. Behavioral Game Theory
10. Auctions
11. Decision Making & Risk

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Experiments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- The main textbook will be Charlie Holt's (2007) "Markets, Games, and Strategic Behavior", Pearson Education Inc.
- Colin Camerer (2003), *Behavioral Game Theory*, Princeton University Press.
- Douglas Davis and Charlie Holt (1993), *Experimental Economics*, Princeton University Press.
- John Kagel and Alvin Roth (1995), *Handbook of Experimental Economics*, Princeton University Press.

ECON 411: MONETARY POLICY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 211: INTERMEDIATE MACROECONOMICS

COURSE DESCRIPTION:

The course begins by considering the goals of monetary policy, in the context of developed and developing countries. Contemporary macroeconomic theory is used to define what is achievable through monetary policy. The course then considers the instruments available to the monetary authorities to achieve these aims, and assesses the relative merits of these approaches to the implementation of monetary policy.

COURSE OBJECTIVES:

1. Outline the goals of monetary policy;
2. Review the instruments available to central banks for the achievement of these goals;
3. Give an overview of the implementation of monetary policy in practice;

COURSE LEARNING OUTCOMES:

By the end of this course, students should be able to:-

- Outline and give a detailed JUSTIFICATION of the main goals of monetary policy;
- EVALUATE the ability of different monetary policy instruments to achieve these goals;
- REVIEW and assess the experience of a range of economies in conducting monetary policy;
- EXPLAIN the difficulties in designing optimal monetary policy and assess alternative solutions to these problems.

COURSE CONTENTS:

1. Introduction
2. Rules versus Discretion
3. Evolution of Monetary Policy
4. Goals of Monetary Policy
5. Monetary Policy Targets; intermediate and operational
6. Tools of Monetary Policy
7. Transmission Mechanism
8. Overview of Monetary Policy in Pakistan (present and past)

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)

- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Mishkin, Frederic (2013), *The Economics of Money, Banking and Financial Markets*, 10th Edition, Pearson, London, UK.
- Abel, Andrew, Bernanke, Ben and Croushore, Dean, *Macroeconomics*, 9th Edition, Pearson, London, UK.

ECON 412: FISCAL POLICY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 313: PUBLIC FINANCE

COURSE DESCRIPTION:

The course is intended to equip students with theoretical and analytical issues of Fiscal Policy. Starting with basic topology of Fiscal interventions and its impact on macro variables. Then gradually moving towards Public Choice models and concluding at the fiscal deficit issues. Then we will move towards the stand alone topics such as fiscal federalism, Fiscal Policy in an Islamic Economy and collaboration of monetary and fiscal policy etc.

COURSE OBJECTIVES:

1. To understand the rationale of government interventions
2. To equip students with issues of fiscal policy

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- UNDERSTAND scope of fiscal policy issues
- ACQUIRE knowledge of analytical details in gauging the policy impacts
- UNDERSTAND fiscal policy mechanism of Pakistan

COURSE CONTENTS:

1. Fiscal Policy in Equilibrium Models
2. Goals of Macro-Economic Policy
3. Political Economy of Budget Deficits
4. Tax Smoothing
5. Fiscal policy instruments as Automatic Stabilizers
6. Deficits and Interest Rate
7. Government Budget Constraint
8. Ricardian Approach to Budget Deficits
9. Fiscal Sustainability
10. Fiscal Decentralization
11. Third World Debt Crisis
12. Fiscal Policy and Long run Economic Growth
13. Fiscal Policy in Pakistan
14. Fiscal Policy and Resource Allocation in Islam

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Froyen, Richard T., *Macroeconomics: Theories and Policies*, (latest edition) , Prentice Hall International
- Romer David, *Advance Macroeconomics*, (latest edition) Edition, McGraw-Hill Irwin
- Brown C.V. & Jackson P.M., *Public Sector Economics*, (latest edition), Basil Blackwell,

ECON 413: COST BENEFIT ANALYSIS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This course explains the phases of project cycle. It explains the cash and benefits flow from point of view of society as a whole and emphasis on the importance of economic analysis rather than merely conducting financial analysis of a project.

COURSE OBJECTIVES:

1. To equip students with an understanding of the principles of Cost Benefit Analysis (CBA) and project appraisal, with special emphasis on Economic analysis.
2. To provide introductory material for those seeking to undertake appraisal exercises by their own.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the students would be able to:

- UNDERSTAND the rationale of CBA
- DIFFERENTIATE between the Financial and Economic Analysis.
- CONDUCT the cost and benefit analysis of project.

COURSE CONTENTS:

1. **Introduction**
Rationale of a project and its Cost Benefit Analysis
2. **Project Cycle**
Phases of Project Cycle: Identification, Feasibility Report, Preparation, Appraisal, Implementation and Evaluation
3. **Project Identification**
Sources of Project Identification, Steps of Project Identification
4. **Feasibility Report & Project Planning**
Dimensions of a Feasibility Study, Problems in Project Preparation, Linking Projects to Resources
5. **Project Appraisal**
Purpose of Project Appraisal, Aspects of Project Appraisal: Technical, Managerial, Commercial, Financial and Economic. Economic analysis in detail with pricing of inputs and output, identification and discounting of costs and benefits. Techniques of project appraisal; undiscounted and discounted techniques. Sensitivity analysis
6. **Project Approval**
Rules of project approval
7. **Project Implementation**
Monitoring Indicators, Kinds of monitoring. Monitoring and reviewing techniques

8. Project Evaluation

Significance & Purpose, Types and indicators of evaluation

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments
- Project

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The proportion of mid-term evaluation and final examination can be of 40:60 or 60:40, or approved by statutory bodies of University.

TEXT AND REFERENCE BOOKS:

- Broadman *et al.* *Cost Benefit Analysis: Concepts and Practices*, Prentice Hall International (latest edition)
- *Manual for Development Projects*, Project Wing, Planning & Development Division, Islamabad. (latest edition)

ECON 414: ECONOMICS OF REGULATIONS AND COMPETITIVE POLICY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

Economics is the central discipline underpinning competition law. It is therefore essential that those practising in this field, e.g., as business managers, competition authority staff, or compliance professionals have a solid grounding in the economic theories, concepts and techniques that underpin the policy, law and enforcement in the field of competition.

Competition law is among those important laws that govern business and impact the operation of all firms. These laws play a crucial role in the growth, or stagnation, of the economies of individual nations and the world.

COURSE OBJECTIVES:

This course will help the students develop a critical awareness of competition law and may help them to choose a career path in the field. People with a background in competition law and economics find employment in law firms, in global corporations (especially in legal and compliance departments) as well as regulatory bodies. And given the relative similarity of competition law (and economic) principles the world over, these skills are truly global.

COURSE LEARNING OUTCOMES:

After the completion of this course student is expected to:

- UNDERSTAND the basic principles of competition law and their use to analyse anti-competitive behaviour and regulate markets.
- DEVELOP important foundational knowledge about the historical origins and development of competition systems, the policy objectives of the law, and the role of economics in the design and application of competition law;
- COGNITIVE AND TECHNICAL SKILLS to independently and critically analyse and apply economic concepts and theories relevant to competition law; and
- USE the knowledge and skills gained in a way that demonstrates effective autonomy, judgement, and the need for competition law compliance as an expert learner in the field of competition and consumer protection law.

COURSE CONTENTS:

- 1. Introduction to Economic Regulation**
- 2. Rationale for Regulation and competition policies**
- 3. History of Competition in Pakistan**
Moving from the Monopolies & Restrictive Trade Practices (MRTPO) Ordinance, 1970 to the Competition Act, 2010.
- 4. Market power, Theory and Regulation of Natural Monopoly**
- 5. Abuse of dominant position**

Limiting production, sales, unreasonable increase in price (reference to Urea-Fertiliser case), Unfair trading conditions, price discrimination, Tie-ins, predatory pricing, boycotting or excluding undertakings from the production, distribution or sale of goods.

6. **Assessing existence of dominant position:**
Defining relevant market, Assessing market shares
7. **Cartel Agreements:**
Types of markets prone to cartelisation. Typical features of a cartel agreement;
Price fixing, Prosecuting cartels: tools available to CCP under CA, 2010, Leniency and Reward Payment Regulations;
8. **Mergers**
Horizontal mergers, Vertical mergers, Conglomerate mergers, Anti-competitive effects of each type of merger, Merger Review Process.
9. **Distinguishing between pro-competitive and anti-competitive agreements**
10. **Regulation of potentially competitive markets**
11. **Franchise Bidding**
12. **Public Enterprise**
13. **Deceptive Marketing**
14. **Compliance with Competition Law – A look at international trends.**
15. **Contemporary Issues in competition policy – extending the frontiers of competition**

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

1. Motta, M. (2004), *Competition policy: Theory and Practice*. Cambridge University Press (Motta)
2. Viscusi, W. et al. (2005), *Economics of Regulation and Antitrust*, MIT Press (VVH)

3. Michael D. Whinston (2008), *Lectures on Antitrust Economics*. The MIT Press (Whinston)
4. Whish and Bailey, *Competition Law*, 8th Edition, Oxford, 2016. (WB)
5. Hovenkamp, H, *Principles of Antitrust*, Concise Hornbooks, 2017
6. Van Der Bergh, R, *Comparative Competition Law and Economics*, Elgar Publishers, 2017

ECON 451: TRADE AND DEVELOPMENT

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 351: INTERNATIONAL ECONOMICS

COURSE DESCRIPTION:

This course covers the major issues facing developing economies in a global environment. This course exposes students to current policy debates underlying the issues of trade and development.

COURSE OBJECTIVES:

1. To study the linkage between trade and development
2. To understand current policy debates underlying the issue of trade and development.
3. To understand the regulatory framework governing international trade.

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- UNDERSTAND linkage between trade and development
- UNDERSTAND major issues of trade and development.
- UNDERSTAND international context of trade and development

COURSE CONTENTS:

1. Comparative advantage, trade and protection
2. Trade in goods and technology transfer
3. Pathways to growth and role of trade
4. Global economic crises and impact on trade and development
5. Private Foreign Direct Investment in developing countries
6. Trade in goods and services and financial development
7. Role of Intellectual Property Rights in trade development
8. The political economy of outward dependency and impact of trade on poverty
9. Welfare effect of trade surplus and trade deficit
10. Role of WTO and UNCTAD in trade and development

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Stiglitz, J., *Fair Trade for All: How Trade can Promote Development*. Oxford University Press, 2007.
- Chang, H., *Rethinking Development Economics*, Anthem Press, 2003
- Basu, K., *Analytical Development Economics: The Less Developed Economy Revisited*. (latest edition), MIT press.
- Gervais, D., *Intellectual Property, Trade and Development*, Oxford University Press, 2014
- Hoekman, B., *World Trade Organization: Law, Economics, and Politics*, Routledge, 2015

ECON 452: INTERNATIONAL FINANCE

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 351: INTERNATIONAL ECONOMICS

COURSE DESCRIPTION:

The subject matter of international finance consists of issues raised by the special problems of economic interaction among sovereign states. This course will introduce the main concepts and theories of international finance and illustrates them with applications on the real world issues. Course will address a wide range of issues, including the introduction and foundations of international finance, balance of payments, exchange rates, exchange rate market and its determination's models, open economy macroeconomics and policy adjustment, role of monetary and fiscal policies in open economies.

COURSE OBJECTIVES:

This course examines and analyzes important and related macroeconomics issues in open economies. The objectives of the course are

1. To understand three important and related macroeconomics issues: exchange rates, capital flows and balance of payments
2. To introduce and critically evaluate the main relevant economic theories, models and empirical works in the key areas of International Finance
3. To apply these analytical tools to build an understanding of relevant economic developments and policy issues in the preface of global economy.

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- UNDERSTAND basic international finance terminologies/concepts such as Balance of Payments, Exchange rates and Exchange rate market, etc.
- ILLUSTRATE and EXPLAIN the working of foreign exchange markets; spot market and forward market.
- ANALYZE the exchange rate / balance of payments basic theories: modern and traditional theories.
- EVALUATE the open economy models used to remove internal and external disequilibrium simultaneously: Swan model, Mundell-Fleming model.
- CRITICALLY EVALUATE the claims of politicians and other policymakers regarding the welfare effects of their financial proposals.

COURSE CONTENTS:

1. Introduction to international finance concepts: balance of payments, foreign exchange rate and market, arbitrage, hedging, foreign bonds, Euro-bonds, speculation, etc.

2. Description of balance of payments and its various accounts; current, capital and official reserve accounts
3. Illustration of foreign exchange markets: spot and forward markets, forward premium and discount
4. Interest arbitrage and efficiency of foreign exchange markets: covered & uncovered interest arbitrage, Covered interest arbitrage parity line & margin.
5. Theories of exchange rate/balance of payments determination: modern theories (Purchasing Power Parity, monetary approach to BOP, Portfolio balance model)
6. Traditional theories of BOP: price adjustment mechanism (elasticity approach to BOP) and income adjustment mechanism (Absorption approach to BOP).
7. Adjustment policies in open economy to remove internal & external disequilibrium: Swan model, Mundell-Fleming model (perfect and imperfect capital mobility) and policy and price changes.
8. Prices and output in an open economy: aggregate demand and aggregate supply model under fixed exchange rate and flexible exchange rate systems.
9. Economic Shocks (real & nominal) and aggregate demand in open economy in long run
10. Role of fiscal and monetary policies in aggregate demand in open economy.
11. Role of macroeconomic policies to stimulate growth and adjust to supply shocks in open economy.
12. Introduction to European Monetary System (1979-1998), Exchange rates bands: adjustable pegs, crawling pegs and managed floating

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

1. Salvatore, D. *International Economics*, Wiley.
2. Suranovic, S. S. *International Finance: Theory and Policy*, Saylor Foundation.
3. Madura, J. *International Financial Management*, Cengage Learning.

ECON 463: DEVELOPMENT POLICY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 361: Development Economics

COURSE DESCRIPTION

This course will provide a review of development theories and empirical evidences on the major drivers of economic development including growth, geography, institutional quality, resource abundance and culture. The focus here is to spell out various policy options and to evaluate their effectiveness in dealing with the developmental issues of developing countries.

COURSE OBJECTIVES

1. To explore and debate development issues and policies
2. To present an overview of the existing evidence in designing policies for developing countries

COURSE LEARNING OUTCOMES

Upon Successful Completion, the students should be able to:

- UNDERSTAND and critically assess the mainstream economic literature relating economic development
- ASSESS and formulate development policies and develop critical thinking
- DEMONSTRATE the empirical approaches to understand the process of development

COURSE CONTENTS

1. **What is Development?**
 - Describing and analyzing the development landscape of developing countries
 - Evolving thinking on development
 - Endogenous and exogenous theories of growth, convergence
 - Inclusive growth, human development
 - Why some countries are rich and others poor?
 - East Asian miracles and China
2. **Growth and Development**
 - Millennium Development Goals (MDGs)
 - Sustainable Development Goals (SDGs)
 - Human Development paradigm for development: Beyond growth in income
 - Pakistan's progress, Dimensions of development, Development policy beyond MDGs
3. **Development policy and Governance**
 - Role of Institutions in Development
 - Governance and Corruption

- Globalisation and Changing Role of State
- 4. **Global Influences on Development Policy**
 - Policy debate on foreign aid, Pros and cons, and channels of foreign aid
 - Trade and International Finance,
 - World Trade Organisation (WTO)
- 5. **Poverty and Inequality**
 - Defining and measuring poverty, inequality
 - Policies to manage poverty
 - Income distribution and social welfare
 - Middle-income trap,
 - Vulnerability, trickledown effect
 - Employment and Income Distribution
 - Social Entrepreneurship, Role of Microfinance in poverty alleviation
- 6. **Education and Healthcare**
 - The role of primary, secondary, tertiary and vocational education in development
 - Human Capital Accumulation and Human Development Index
- 7. **Environment and Sustainable Development**
 - Food security
 - Agricultural Market Interventions and Reforms
 - Agricultural Research and Extension
 - Water Scarcity and Management
 - Mineral Resources and their Exploitations
- 8. **Migration, Urbanization, Issues facing Megacities**

TEACHING METHODOLOGY

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Zaidi, S. Akbar, (2015). *Issues in Economy of Pakistan*. Karachi: Oxford University Press
- Ahmed, Vaqar, (2017). *Pakistan's Agenda for Economic Reform*. Oxford University Press

ECON 464: POVERTY AND INCOME DISTRIBUTION

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

Poverty and income inequality has always been issues of concern for economists. Their empirical analysis is of great significance. This course describes the technical issues related with the empirical analysis of poverty and income inequality.

COURSE OBJECTIVES:

1. To explain the distributional aspects of national income
2. To familiarize students with the effects of poverty and income inequality
3. To understand the technical issues in the measurement of poverty and inequality

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- UNDERSTAND the importance of income distribution in economic growth
- ANALYSE and INTERPRET the poverty and inequality estimates
- IDENTIFY sources and causes of poverty and inequality
- CONDUCT independent research on poverty and inequality

COURSE CONTENTS:

1. **Introduction:**
 - The concept of poverty, inequality & well-being
 - Correlation between inequality & poverty
 - Consequences of inequality & poverty
 - Determinants / sources of poverty and inequality
2. **Issues in the Measurement of Poverty & Inequality:**
 - Unit of well being
 - Unit of measurement
 - Sampling procedure
 - Problems of grouped and survey data
 - Issue of relative purchasing power
3. **Empirical Analysis of Poverty:**
 - Defining and estimating poverty Lines
 - Poverty measures
 - Desirable qualities of good poverty measure
 - Rigid and adjustable measures
 - Sub group poverty analysis
 - Welfare Interpretation of poverty measures
 - Multidimensional Poverty (concept and measurement)
4. **Empirical Analysis of Inequality**

- Approaches to measure inequality
 - Desirable qualities of good inequality measure
 - Classification of inequality measures and details
 - Decomposition of inequality
- 5. Empirical Analysis of Welfare**
- Approaches to measure welfare
 - Desirable qualities of good welfare measure
 - Classification of welfare measures and details
 - Decomposition of welfare
- 6. Issues in Poverty and Inequality:**
- Migration, inequality and poverty
 - Fiscal measures, inequality and poverty
 - Economic development, Inequality and poverty
 - Globalization, inequality and poverty
- 7. Poverty and Inequality in Pakistan:**
- Time series Analysis of inequality, welfare and poverty
 - International comparison

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Cowell F.A. *Measurement of Inequality*, STICERD, London School of Economics and Political Science, London (2000)
- Anand S. *Inequality and Poverty in Malaysia, Measurement and Decomposition*, A World bank Research Publication, Oxford University Press. (1983)
- Kakwani, N. *Income Inequality and Poverty: Methods of Estimation and Policy: Applications*, A World bank Research Publication, Oxford University Press. (1980)

ECON 465: POLITICAL ECONOMY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: NIL

COURSE DESCRIPTION

This course is expected to provide an overview of political dimensions of an economy. The course will develop basic understanding of the relationship between politics and economy. This course will help to differentiate between political efficiencies and inefficiencies..

COURSE OBJECTIVES

This course is aimed to meet the following objectives:

1. Definition(s) and basic concepts of political economy
2. To summarise the evolution of political economy
3. Economic and Political Interests in shaping the economic behaviours
4. Explain the political economy from an individual and societal point of view

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the students will be able to:

- **ACQUIRE** the fundamental notions of political economy
- **SOLVE** human responses to incentives based on cost-benefit analysis versus norm-based behaviour imbedded in their respective culture
- **EVALUATE** politically efficient and inefficient decisions
- **DEMONSTRATE** the ability to differentiate efficient and inefficient institutions from the perspective of political economy

COURSE OUTLINE

1. Introduction
 - Meanings, Definitions and brief Introduction of basic Concepts of Political Economy
 - Economic and Political Integration. Policy Reforms and Popular Organizations, key Social and Economic indicators, Political and Economic Institutions and their role in decision-makings
 - Linkages of Politics and Economics, Conceptualizing the Changing Global Order.
 - **Political Economy and the World Order**
 - Problem of Power and Knowledge: New Millennium, Knowledge, Politics and Neo-Liberal Political Economy
 - New Voices in the Globalization Debate: Green Perspective, Regional Phenomena and State Order, New State Actors, Theory of Economic and Political Exclusion
2. **Regional Dynamics**

- Regionalism and Globalization, The Political Economy of European Integration: European Union and Brexit
 - Regionalism in the Asia-Pacific Political Globalization and the Competition State. Economic Blocks and Political Blocks: ASEAN, Shanghai Cooperation Organisation; SARC, GCC, OPEC etc.
- 3. Political Economy of Economic Development**
- International Politics and Transfer of Technology, Sector-Specific Development Limitation.
 - Agriculture and Industry, Political Slogans and their Implementation, International challenge of poverty,
 - The Political Economy of food grain prices, Rural Development. Regional Exporting Blocks and their Markets.
 - Political Economy of Foreign Aid, Foreign Private Investments and Foreign Trades
- 4. Political Economy of Pakistan**
- The Economics of Patronage and Elite Capture of the Resources
 - The Political Economy of Land Reforms, Nationalization and Privatization
 - The Elitist Economic Model. Strategies for self-preservation.
 - Civil-Military Relationships
 - Different Political Regimes and Economic Growth and Development Strategies
 - Centre, Provincial and Local Government Relationships
 - The Political Economy of Resource Distributions: NFC Awards, PFC Awards

TEACHING METHODOLOGY

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Azhar, H. Nadeem(2012).*Pakistan: The Political Economy of Lawlessness*. Karachi: Oxford University Press.

- Ahmed, Vaqar (2017). *Pakistan's Agenda for Economic Reform*. Karachi: Oxford University Press.
- Gupta, S. Dev (1997). *The Political Economy of Globalization*: Kluwer Academic Publishers.
- Hagen Everett E., (1980) *The Economics of Development*, Richard D. Irwin, Inc.
- Kardar Shahid (1987) *The Political Economy of Pakistan*. Lahore: Progressive Publishers, Pakistan.

ECON 466: HISTORY OF ECONOMIC THOUGHT

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

The course gives an overview of the history of Economic Thought. It touches the development of economic theories and ideas from earliest times to the present. The emphasis is on 'thought' rather than on 'history'. It provides a survey of economic thoughts from Adam Smith.

COURSE OBJECTIVES:

1. To give a historical consciousness of economic ideas
2. To give an overview of developments in economics

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- Understand key models and concepts of the history of economic thought
- Understand scholarly articles concerned the history of economic thought
- Have a historical consciousness of economic ideas

COURSE CONTENTS:

1) Classical Economics

- Adam Smith; The framework of Classical Economics
- Thomas Robert Matus; Elaborations and Cleavages within the Classical system
- John Stuart Mill; Postscript to Classical Economists

2) Marxian Economics

- Karl Marx and the Economics of Das Kapital; Post script to Marxian Economics

3) Neo-Classical Economics

- Alfred Marshall; Framework of Neo Classical Economics
- Pre 1914 variations to Neo-Classical Themes; Post script to Neo-Classical Economics

4) Keynesian Economics

- The Economics of Keyes general Theory
- Post Script to Keynesian Economics

5) Post Keynesian Economics

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)

- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- William J. Barber, *A History of Economic Thought, (latest edition)*, Wesleyan University Press, Middletown.
- Sandmo, A., *Economics Evolving: A History of Economic Thought*, (latest edition), Princeton University Press,
- Medema, S. G., and Samuels, W. J., *A History of Economic Thought: The LSE Lectures* (1998), Princeton University Press

ECON 467: WORLD ECONOMIC HISTORY

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: ECON 231: ISSUES IN WORLD ECONOMY

COURSE DESCRIPTION

This course foundation is based on chronological order of historical events which have shaped the modern economic system. Starting with historical survey of early foundations of modern economic system through the colonial expansion starting with the navigation revolution. The course intends to build students' knowledge on historical events which provided impetus to the rise of imperialism and the colonial expansion into North America, Latin America, Asia and Africa. While emphasis is placed on social, political and economic developments within the European nations which prompted colonial expansion, the primary focus is on how the actual colonies were acquired and the subsequent changes that took place.

The course attempts to provide an essential background to understanding the historical processes by which modern developed nations became developed, and how the underdeveloped "Third World" originated as part of the same historical process.

COURSE OBJECTIVES

- Students will become familiar with historical events in economic history which have shaped today's modern economic system
- Student will learn about the economic system leaping forward from Agriculture economy to industrial economic system through industrial revolution taking place in England
- Students will develop an understanding regarding colonial system and sub-continent trade and developments under colonial power
- Students will learn the causes of the Great Depression and about the birth of modern macroeconomics and how world economies managed to come out of the crisis
- Students learn about the production system during First and the Second World War and reconstruction through new economic order with creation of World Bank and IMF.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, the student will be able to:

- **ACQUIRE** the basic background knowledge of world economic system evaluation
- **UNDERSTAND** the colonial economic systems exploitative methods
- **SOLVE** the complex analysis to understand the future dimensions of economic realities
- **EVALUATE** the future role of their nation to improve participation in global economic system

- **DEMONSTRATE** ability to lead the economic system to prevent any future economic crisis if any may happen in future

COURSE OUTLINE

1. European Navigation and the discovery of the Americas, Asia and Africa to the rise of Industrial capitalist system (1492-1770).
2. Origins of the Slave Trade and the Industrial Revolution in England.
3. European trade in the Sub-Continent with special focus on the existing provinces of Pakistan (English and Portuguese trade with Sindh coast.)
4. Colonial expansion in the Sub-Continent and Asia Minor. The East India Company and the Bengal Famine (1770).
5. Rise of labor unions. The coal miners industrial action in America and England. Hay Market and May day (1886) in the United States of America.
6. The Meiji Revolution in Japan (1868-1912).
7. Monopoly Capitalism and colonial expansion leading to the First World War and the Second World War.
8. The Russian political and economic Developments, emergence of Socialism as major economic system in the world.
9. The Great Depression in USA (1929-30).
10. The South East Asia rising as modern Economic Systems. The Financial Crisis 2007-2008. Chinese Rapid growth and expansion. Globalization and its discontents.

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Stiglitz, J. (2002). *Globalization and its Discontents*. New York, NY: W.W. Norton.
- Stiglitz, J. (2006). *Making Globalization Work*. New York, NY: W.W. Norton.
- Stiglitz, J. (2010). *Free Fall*. New York, NY: W.W. Norton.
- Stavrianos, L. S. (1981). *Global Rift*. New York, NY: William Morrow and Co.
- Beckert, S. (2014). *Empire of Cotton*. New York, NY: Knopf.

ECON 468: ECONOMICS OF HAPPINESS AND WELLBEING

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

Happiness is the fundamental goal of all human beings. In this course students will be taught different topics related to human happiness. We will describe various measure of happiness. It will be discussed that what contributes to individual well-being, what are the consequences of happiness on behavior, and whether happiness is a cause or an effect. Further relationship between income and happiness shall also be discussed.

COURSE OBJECTIVES:

1. To uncover the role of socio-economic factors in determining well-being and happiness of an individual
2. To understand that why people facing same socio-economic factors are not equally happy

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- UNDERSTAND the perspectives of economics of happiness
- ANALYZE the economic indicators of happiness
- DESCRIBE the issues to measure progress and to link with happiness

COURSE CONTENTS:

1. Introduction to Happiness, understanding the nature of happiness
2. Happiness and Utility
3. Measuring Happiness
4. Determinants of happiness
5. Income and Happiness
6. Work and happiness
7. Creativity and Happiness
8. Economic growth and happiness
9. Poverty, Inequality, unemployment and happiness
10. Happiness and institutions
11. International Comparisons

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Written Assignments
- Guest Lectures

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Frey, B. &Stutzer, A (2002) *Happiness and Economics*, Princeton University Press
- Thaler, R.H, & Sunstein, C.R. (2008), *Nudge: Improving decisions about health, wealth and happiness*, Yale University Press
- Van Praag, B.M. &Ferrer-I-Carbonell, A (2004), *Happiness quantified: a satisfaction calculus*

ECON 471: ECONOMICS OF EDUCATION

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This course gives an overview of the importance of education in economic development. Education is the fundamental tool to enhance the skills of labor. In this course students will be taught about importance of education by emphasizing on returns from education and linking education with productivity. Finally the role of state in disseminating education will also be discussed.

COURSE OBJECTIVES:

1. To analyze the ways through which the education is organized and delivered to achieve economic growth in the most efficient ways.
2. To understand the efficacy of reforms pertaining to teacher salaries, student teacher ratio and charter schools.
3. To develop an understanding of the importance of education in economic growth of a country.

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- IDENTIFY the role of education and human development in economic growth
- UNDERSTAND the role of education in enhancing labor productivity, earnings and distribution of income.
- ANALYZE the relation between education, inequality and poverty prevailing in the developing economies of the world.

COURSE CONTENTS:

1. Introduction : Defining economics and educational problem
2. Importance of Schooling
3. Econometrics overview, empirical research methods in the economics of education
4. Human Capital theory: The basic economic perspective on education
5. Education as a Signal: Signaling in the labour market
6. Returns to education in developing countries, with special reference to Pakistan, social rate of returns to education
7. Educational Production
8. Education and health
9. Education and inequality
10. School Accountability and Standards
11. Technology and Education
12. Role of state in education
13. Educational privatization

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

1. Dominic J. Brewer, Patrick J. McEwan, *Economics of Education*, (latest edition) Elsevier,
2. Geraint Johnes, Jill Johnes, T. Agasisti and Laura, *Contemporary Education Economics*, (latest edition), Edward Elgar Publishing
3. Franklin G. Mixon, Richard J. Cebula *New Developments in Economic Education*, (latest edition), Edward Elgar Publishing

ECON 472: URBAN ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This course is an introduction to urban economics. The focus will be on the main economic forces that lead to the existence of cities and regional clusters. It covers a variety of topics including urbanization, housing, pollution, urban poverty and crime.

COURSE OBJECTIVES:

The basic objectives of this course are:

1. To analyze the economic forces that lead to the existence of cities and regional clusters,
2. To study the factors of local selection for firms and workers,
3. To study the economics of urban problems such as crime, poverty and insufficient housing,

COURSE LEARNING OUTCOMES:

Upon successful completion, the students should be able to:

- UNDERSTAND the mechanism of the emergence of cities and regional clusters
- IDENTIFY the root cause of regional disparities
- KNOWLEDGE on role of local government in provision of public goods

COURSE CONTENTS:

1. **Introduction**
 - Emergence and existence of cities
 - Clustering of firms and workers
 - Expansion and growth of cities
2. **Land Rent and Land Use Patterns**
 - Urban land rent
 - Land use patterns
 - Neighbourhood choice
3. **Urban Size and Growth**
 - Population growth
 - Life expectancy rate
 - Mortality rate
4. **Policy Topics**
 - Education and crime
 - Transportation
 - Housing
 - Local Government
 - The role of local government

- Local government revenue

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

1. Aurthor O'Sullivan, *Urban Economics*, (latest edition), McGraw Hill Education.
2. John F. McDonald , *Fundamentals of Urban Economics* (latest edition), Prentice Hall

ECON 473: TRANSPORT ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This module provides a critical awareness of how economics can be used to overcome current problems in the transport sector, such as congestion, inadequate service (in terms of both quantity and quality) and high prices. It will give you a systematic and comprehensive understanding of the key concepts in transport economics and the graphical and numerical analytical techniques used by transport economists.

COURSE OBJECTIVES:

Objectives of the course are:

- To provide a critical awareness of the principles of transport economics and how these principles are applied in practice in transport policy.
- To enhance the ability to analyze service levels to users, operating costs based on environmental and social aspects.
- To make a conclusion based on theories and practices, and selecting the best solution regarding transportation.

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- **EVALUATE** the economic impacts of transport schemes using cost benefit analysis and alternative methods
- **ASSESS** issues relating to transport funding, road pricing and the pricing of public transport.
- **PREPARE** and **PRESENT** a critique of the key economic issues in transport policy.
- **IDENTIFY** the key issues in transport economics and economic appraisal.

COURSE CONTENTS:

1. Introduction to transport economics
2. Mathematics for transport economists
3. Demand for transport: Theory and Practice
4. Supply of Transport: Theory and Practice
5. Pricing of Transport: Theory and Practice
6. Transport Appraisal and Evaluation: Theory
7. Cost benefit analysis and transport investment in developed countries
8. Cost benefit analysis and transport investment in developing countries
9. Road user charging and public transport pricing
10. Transport and the location of economic activity
11. Transport and the level of economic activity

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

1. Mallard, G. and Glaister, S (2008). *Transport Economics. Theory, Application and Policy*.
2. Cowie, J. (2010). *The Economics of Transport: A theoretical and applied perspective*.
3. Nash, C. (Ed) (2015). *Handbook of Research Methods and Applications in Transport Economics and Policy*.

ECON 475: INSTITUTIONAL ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

Today, mainstream economics is investigating which economic factors and human behavior determine economic growth. Alongside these factors, other factors—historical, cultural etc.—also influence choices and behavior—such factors are called institutional factors. This course investigates how “institutions”—broadly construed—determine various social, political and economic outcomes. The course will cover both Original Institutional Economics (OIE) as well as New Institutional Economics (NIE) literature, thereby looking at both formal and informal institutions, causes and possibilities of institutional change as well as on institutional effects on economic growth.

COURSE OBJECTIVES

The course has three basic aims;

1. To familiarize students with basic instruments of microeconomic choice theory
2. To widen perspective of students pertaining to formal and informal constraints that determine behavior.
3. To explain relationship between institutions and economic growth.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, the student will be able to:

- ACQUIRE basic instruments of microeconomic choice theory.
- UNDERSTAND the formal and informal constraints that determine behavior.
- SOLVE the institutional issues through application of modern microeconomic theory through informed understanding.
- EVALUATE and explain relationship between institutional characteristics and economic growth.
- DEMONSTRATE critical analysis of formal and informal institutions, causes and possibilities of institutional change and institutional effects to economic growth.

COURSE OUTLINE

1. **Introduction to institutional economics.**
 - Historical overview of the original (Veblen, Commons, Foster) and new institutionalists (Coase, North).
2. **Formal Institutions**
 - Institutional constraints in the economy. Legal system as an institution. Property rights, enforcement of the contracts and laws is also under surveillance. Impact of common and civil law to the behavior of markets and economic development.

- Political regulation and other forms of market intervention through institutional theory. The key words of this lecture are regulation, control and politics. Central Bank and Fiscal authorities and their impact on economic growth.
- 3. Informal Institutions**
- Introduction to historical and cultural overview of religious development. Religion as an informal constraint. Max Weber idea of Protestant ethic as a source and basis of today's Western world order.
 - Introduction of issues related to inequality: social classes and their impact to economic growth, discrimination and the economic consequences. idea of welfare state and issues related to gender and gender segregation.
- 4. International Institutions:**
- How international institutions like EU, WTO and NATO will affect the institutional framework of nation states. What are the economic consequences of membership and non-membership?
- 5. Institutional Change**
- Development of informal institutions and their change is path dependent and incremental. But what about the change of formal institutions? Who are interested bodies of changing formal institutions? Of course, we have "good" examples of revolutions, reforms, wars and transformation, but how they influence the development path of institutions?
- 6. Rent Seeking and Rent Avoidance.**
- Who changes formal institutions? Under democratic system the interest of majority does? Is this really so and how pressure groups emerge? What is the difference of rent seeking and profit seeking? What is the Social Cost of Rent seeking?
- 8. Coase versus Pigou**
- What to do in the cases or market failures? Is "the traditional" state intervention through Pigouvian taxes and subsidies optimal choice for markets? We are introducing Coase criticism of Pigouvian assumptions and Coase theorem.
- 9. New Political Economy**
- We go further from Coase criticism to Pigou and develop critical view over welfare economics. Introducing also rational politicians and the public sector failure, theories provided by Tullock and Buchanan.

TEACHING METHODOLOGY

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

1. Veblen, T. B.(1904). *The theory of business enterprise*. New York, NY: C. Scribner's Sons.
2. Olson, M. (1982).*The Rise and decline of nations*, New Haven, CT: Yale University Press.
3. North, D. C. (1991).*Institutions, institutional change and economic performance*. Cambridge/New York: Cambridge University Press.
4. Stigler, G. (1997).*Chicago studies in political economy*. Chicago, Il: The University of Chicago Press.
5. Krugman, P. (1998).*Pop Internationalism*. Cambridge, MA: MIT Press.
6. Acemoglu, D.,& Robinson, J. (2012). *Why nations fail: The origins of power, prosperity and poverty*. New York: Crown.
7. Tauheed, L. (2013). A critical institutionalist reconciliation of contradictory institutionalist institutions: What is an institution? *Journal of Economic Issues*, 47(1), 1–21.
8. Afzal, A. (2017). Revisiting the Glorious Revolution: Property Rights, Economic Institutions and the Developing World. *International Journal for Pluralism and Economics Education*. 8(4), 378–388.

ECON 476: REAL ESTATE ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

The real estate sector represents a significant share of the economy. This course provides microeconomic perspective on markets and policy related to the real estate sector. In this course theories related to land markets, housing markets, the spatial development of cities, economic development, and the migration of labour and capital will be discussed. The course will also focus the policy implications of transportation sector and local governments in shaping urban location patterns, and the effects of macroeconomic policy in the context of the interrelationship between property and business cycles.

COURSE OBJECTIVES:

The objective of the course is to extend the knowledge of the basic microeconomic principles that will provide the foundation for future studies in economics.

1. The course is aimed to distinguish among the types of properties in the residential, commercial, agricultural, and special purpose markets.
2. The course is aimed to give an insight into the phases and turning points of business cycles and a real estate cycle
3. The course is aimed to differentiate among types of real estate investors, the investment criteria, and the characteristics of investments.
4. The course is aimed to analyse critically the role of free markets, the possible reasons behind market failure and the effects of government intervention in the market.
5. The course is aimed to obtain basic knowledge of the issues that may arise when market information is asymmetric. Identify the various types of income and expenses that investment properties generate.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- **ACQUIRE** a comprehensive understanding of the economic factors and policies which influence real estate markets.
- **UNDERSTAND** the sectors, market players and stakeholders as well as fields of activities in the real estate industry and understands the real estate management concepts.
- **EXPLAINS** the assumptions of standard economic models and their application to property markets and public policy issues.
- **DEMONSTRATE AND APPLY** analytical and empirical tools to interpret and analyse the impact of changes in supply/demand factors and public policy on real estate markets.
- **CRITICALLY ANALYSE** real estate market fundamentals, forecasting supply and demand, and choosing locations.

- **DEVELOP CREATIVE SOLUTIONS** to the real estate pricing factors and factors related to investment in real estate market, using logical, analytical skills and mathematical modeling.

COURSE CONTENT:

1. Introduction

- The real estate sector: the capital and property markets
- Comparative statics: predicting changes in real estate markets
- Real state life-cycles and business cycles.

2. Residential Land Markets and Development: Prices and Land Use

- Location and rents: the indifference principle
- Submarkets and land use segregation
- Urban growth, rents, and prices.
- The highest use for residential development
- Location, land use, and density
- Transition between land uses

3. Industrial Location

- Historical development and changing technology
- Transportation and shipping costs
- Tax and public policy effects

4. Office Location

- The office market and the labor market
- Theories of multiple centered cities
- Agglomeration and clustering
- The commercial land market

5. Retail Development

- Retail travel patterns and the distribution of stores
- Pricing and spatial competition
- Shopping centers and store clustering

6. Local Government and Land Markets

- Property taxes, public expenditure, and local services
- Community choice, "capitalization", and income segregation
- The fiscal incentives for land use regulation
- Congestion, transportation infrastructure, planning regional development

7. Macroeconomic Analysis of Housing

- Units, households, and tenure choice
- Demographic, economic influences
- Housing appreciation, mortgages, and the cost of owning
- Moving, vacancy, and sales: the demand for housing quality

8. Macroeconomic Analysis of Non-residential Property

- The operation of non-residential markets
- Vacancy, absorption, market frictions
- Leasing, term structures

- Long-term trends in space usage and demand
- 9. **Time Series Analysis of Real Estate Markets**
 - The time-series properties of housing and commercial space markets
 - Special features of real estate as an asset
 - Stock-flow theory and real estate cycles
 - Expectations, information, "efficient markets"
 - The issue: Can markets be forecast?
- 10. **Regional Growth and Real Estate Markets**
 - The determinants of metropolitan growth
 - Export demand and industrial development
 - Birth rates, migration, and wages
 - A model analyzing metropolitan growth
 - Demand and supply shocks, real estate, and the cost of living

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- DiPasquale, Denise, and William Wheaton. *Urban Economics and Real Estate Markets*. Upper Saddle River, NJ: Prentice Hall, 1995. ISBN: 9780132252447.
- Brueckner, J. (2011) *Lectures in Urban Economics*, MIT Press
- Dennis J. McKenzie, Richard M. Betts and Carol A. Jensen. *Essentials of Real Estate Economics* 6th Edition, Cengage Learning, 2011, ISBN-13: 9780538739696

ECON 477: ECONOMICS OF TERRORISM, WAR AND CONFLICTS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

The course aims to cover three interrelated topics; terrorism, war and internal conflicts. It would begin with terrorism. It will analyze the facts and patterns of terrorist activities including suicide attacks and terror cycle. The course will also analyse the defensive and offensive counter-terrorism measures that work under different scenarios. In addition, the course will cover the wars, the economics of war and its economic consequences. Moreover, the course will cover internal conflicts that include civil war, distributional distress and its impact on crime and corruption, and the relationship between ethnic diversity and conflicts. At the end of the course the students would understand the economic rationales of terrorism, war and conflicts, using various economic tools.

COURSE OBJECTIVES

The main objectives of the course are:

1. To apply the concepts of economic theory in the study of terrorism, war and conflicts
2. Critically evaluate the current global terrorism issues

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the students will be able to:

- UNDERSTAND the economic thinking pertaining to terrorism, war and conflicts
- LEARN and APPLY the economic techniques to understand the political economy behind war, terrorism and conflicts
- EDUCATE students in designing counter terrorism economic policies dealing with war and internal conflicts.

COURSE OUTLINE:

1. **Introduction to Terrorism**
 - Definition of terrorism
 - The history of terrorism
 - Types of terrorism
 - Behaviour and motivations of terrorists
 - Economic theories of terrorism, war and conflicts
2. **Causes of Terrorism**
 - Socioeconomic conditions
 - Geopolitical factors
 - Religious motivations
 - Economic rationales

3. **Consequences of Terrorism**
 - Consequences of terrorism at micro level
 - Consequences of terrorism at macro level
 - Consequences of terrorism on regional and global economic imbalance
4. **Globalization and Terrorism**
 - The definition and description of globalization
 - Globalization and terrorism
5. **Global Terrorist Groups and their Economic conditions**
 - The LTTE
 - The ISIS
 - The Al-Qaida
 - The Taliban
 - The Boko-Haram
 - Other Groups declared terrorists by UNO
6. **Conflicts and Development**
 - Violent conflicts and conflict risks
 - The causes of armed conflicts and risk factors for conflicts
 - The consequences of armed conflicts
 - The resolution and prevention of armed conflicts
7. **Causes of Civil War**
 - The political economy of civil war
 - Internal regional autonomy
 - Territorial disputes
 - Resource distributions

TEACHING METHODOLOGY

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments/Presentation, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Robert A. Papa (2003). *Dying to win*. New York: Random House.

- Todaro, M. P. and S. C. Smith. (2011). *Economic Development*, 11th edition: Palgrave.
- Pape, R. A. (2003). The Strategic Logic of Suicide Terrorism. *American Political Science Review*, 97(3), 343-36.
- Global Terrorism Index (2016). Available at <http://www.start.umd.edu/gtd/>.
- Walter Enders and Todd Sandler (2005). *The Political Economy of Terrorism*. Cambridge: Cambridge University Press.

ECON 482: LABOUR ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

This course is aiming to provide an exposure of the functioning of labour market. This course is expected to impart the skills essentially needed to understand the topics like labour demand and supply, wage determination, labor migration, unemployment, and the role of labor unions.

COURSE OBJECTIVES:

1. To understand the dynamics of labour market.
2. To understand the employment decisions initiated by the firm.
3. To understand the mechanism of wage determination.
4. To analyze the causes of unemployment for potential policy interventions.

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the student must be able to:

- UNDERSTAND that how firms make decisions about their need for workers, how workers make labour supply decisions and how wages and other benefits are determined
- IDENTIFY role of migration and labour unions
- Acquire KNOWLEDGE of relevant public policies, such as minimum wage.

COURSE CONTENTS

1. **Introduction**
 - Introduction of the labour market
 - Important actors of the labour market
 - Importance of the understanding of the labour market.
2. **Labour Supply**
 - Defining and measuring the labour force
 - Factors behind labour supply
 - Understanding the worker's preferences
 - Derivation of labour supply curve
 - Measuring the elasticity of labour supply
3. **Labour Demand**
 - The production function
 - Employment decisions by the firm and factors related to these decisions
 - Cost adjustment and labour demand
 - The effect of minimum wage on labour demand
4. **Labour Market Equilibrium**
 - Labour market equilibrium in a competitive environment

- Competitive equilibrium across labour markets
 - Economic impact of labour force migration
 - The cobweb model in labour market
 - Non-competitive labour markets
- 5. Compensating Wage Differentials**
- The Market for risky jobs
 - Hedonic wage estimation
 - Safety and health regulations
 - Compensating wage differentials
 - Health insurance and labor market
- 6. Human Capital**
- Education and labour market
 - Present value of education
 - The schooling model
 - Education and earning
 - On-job trainings
- 7. The Wage Structure**
- The earnings distribution
 - Explanation of wage inequality
 - Family migration
 - The job match
 - Job turnover and retention policies
- 8. Labour Market Discrimination**
- Race and gender based discrimination in labor market
 - Estimation of the coefficient for discrimination
 - Employer discrimination
 - Employee discrimination
 - Discrimination among other groups
- 9. Labour Unions and Collective Bargaining**
- Labour union: background and facts
 - Determinants of union membership
 - Unions and monopoly
 - Efficient bargaining
 - Strikes
 - Wage and non-wage effects of union
- 10. Unemployment**
- Types of unemployment
 - Mismatching and unemployment
 - Unemployment compensation
 - Intervention in labour markets and unemployment

TEACHING METHODOLOGY:

- Lectures
- In Class Activities

- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Borjas, George J. (2008). *Labor Economics*. McGraw-Hill/Irwin.
- McConnell et al. *Contemporary Labor Economics*, (latest edition), McGraw-Hill/Irwin.
- R. Ehrenberg and R. Smith. *Modern Labor Economics*, (latest edition), Addison Wesley.

ECON 483: POPULATION ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

This course familiarize the students with the basic concepts of demography. The course aims to establish initial understanding of the important demographic issues for instance, demographic processes, demographics theories, population characteristics, methods of demographic analysis, and the demographic transitions. In the latter part of the course the focus will be on the issues such as urbanization, family change, population aging, and health related issues.

COURSE OBJECTIVES:

1. To provide the initial exposure of the important demographic issues.
2. To enable the students to establish the linkages between economic and demographic factors.

COURSE LEARNING OUTCOMES:

Upon Successful Completion, the Students Should be able to:

- UNDERSTAND the importance of demography
- IDENTIFY the factors related to population policies
- Acquire KNOWLEDGE of the population dynamics of Pakistan.

COURSE CONTENTS:

1. Introduction

- Understanding Demography
- Importance of Demography
- Sources of Demographic Data
- Processes of Demography

2. Theories of Population

- Mercantilist Perspective
- Malthusian Theory of Population
- The Marxist Perspective
- John Stuart Mill
- Lujo Brentano's Theory
- Emile Durkheim's Perspective
- The Theory of Demographic Transition
- Theory of Relative Income

3. Fertility

- Understanding the Concept
- Measuring Fertility
- Period Measures of Fertility
- Cohort Measures of Fertility

- Fertility Trends
- Fertility & Population Growth in Pakistan
- 4. **Mortality**
 - Components of Mortality
 - Measuring Mortality
 - Differentials in Mortality
 - Estimates of Mortality in Pakistan
- 5. **Migration**
 - Definition & Measurement
 - Causes of Migration
 - Internal Vs International Migration
 - Individual & Social Consequences of Migration
 - Migration Trends in Pakistan: Causes & Consequences
- 6. **Population Composition: Age & Sex Composition**
 - Measuring the Age Composition
 - Measuring the Sex Composition
 - Impact of Population Processes on the Age Composition
 - Impact of Age Composition on Population Processes
 - The Dynamics of Age/Sex Compositions; Age-Stratification Theory
- 7. **Population Growth & Ageing**
 - Demographic Composition of the Elderly
 - Dynamic Scenarios, Biological & Social Aspects of Aging
 - Implications for the Society
- 8. **Urbanization**
 - Demographic Components of Urbanization
 - Internal Rural-to-Urban Migration
 - Impact of Population Processes and Urbanization in Pakistan
- 9. **Population Policy**
 - Need of Population Policy
 - Influencing Population Processes
 - Case Studies of Pakistan

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

RECOMMENDED BOOKS:

- Weeks J. R, Population. *An Introduction to Concepts and Issues*(latest edition). Wadsworth Publishing Company, USA.
- Poston D. L.& L. F. Bouvier. *Population and Society: An Introduction to Demography*, (latest edition), Cambridge University Press, UK.

ECON 484: NATURAL RESOURCE ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

This course explores the use of natural resources from an economic perspective. The course presents the theories of efficient utilization of natural resources and discusses issues related to current practices of use of natural resources. The course introduces students to the principles, reasoning, and techniques required to solve allocation problems under different social objectives. This subject also discusses issues of sustainability, conservation and preservation of natural resources.

COURSE OBJECTIVES

1. To understand economics and management of natural resources
2. To acquaint students with the various categories of natural resources and the economic theory associated with their optimal use.

COURSE LEARNING OUTCOMES

Upon Successful Completion, the Students Should be able to:

- **RECOGNIZE** and **EXPLAIN** the key categories of natural resources;
- **UNDERSTAND** the optimal use/depletion of natural resources

COURSE CONTENTS

1. **Introduction**
 - An introduction to natural resource economics
 - Economy–environment interdependence
 - Natural resource economics: overview
2. **Reasons of Studying Natural Resource Economics**
 - Property rights, open access resources, tragedy of the commons
 - Market failures, externalities and environmental problems
 - Dynamic decisions and irreversible consequences
 - Fundamental issues in the economic approach to natural resource economics
3. **Imperfect Competition in Natural Resource Markets**
 - Review of basic concepts, perfect competition and imperfect competition
 - Economic approach and Economic Efficiency
 - Social decision making and socially efficient level
 - Economic Methods: Strengths and Weaknesses
4. **Natural Resources: Types, Classification and Scarcity**
 - Classifications of Natural Resources, renewable and nonrenewable
 - Measuring resource scarcity
 - Natural Resource use and conflicts

5. **Fundamentals of Renewable Resources**
 - Open-access resources and steady-state harvests
 - Socially efficient resource harvesting
 - The dynamics of renewable resource harvesting
6. **Economics of Non-Renewable Resources**
 - Resource taxonomy (current reserves, potential reserves, resource endowment)
 - Price and size of reserves, theory of efficient extraction:
 - Hotelling rule, mathematical and graphical explanations
7. **Optimal Allocation of Scarce Natural Resources**
 - The efficient and optimal use of natural resources
 - Resource scarcity and economic growth
 - The social welfare function and an optimal allocation of natural resources
 - Economic efficiency, allocation of resources and equity
8. **Economic Valuation and Evaluation**
 - Concepts and measurement of value for decision making
 - Direct method of valuation and indirect method of valuation
 - Contributions of nature and Non-market valuation methods
 - Hedonic models
9. **Sustainability, Conservation and Preservation**
 - The origins of the sustainability problem
 - The pursuit of sustainable development
 - Sustainability, Conservation, and Preservation
10. **Population Growth and Natural Resources**
 - Impact of population growth on economic development
 - Poverty, population and natural Resources
 - Poverty, inequality and natural Resources
11. **Input-Output Analysis, Technology and Environment**
 - Origin, derivation and usefulness of the model
12. **Computable General Equilibrium Models and Natural Resources Accounting**

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Tietenberg, T.H, and Lewis, L. (2012). *Environmental and Natural Resource Economics*, (9th Edition), Pearson Addison Wesley.
- Perman, R., Yue M., Common M., Maddison, D., and Mcgilvray, J. (2011). *Natural Resource and Environmental Economics*, (4th Edition), Pearson Addison Wesley.
- Nick Hanley, N., Jason, F. S., and White, B. *Environmental Economics in Theory and Practice*, (2nd edition), Palgrave Macmillan.

ECON 485: ENVIRONMENTAL ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

Environmental economics is a course in applied welfare economics and considers the efficient and equitable use of society's scarce environmental resources. The course explains the interdependencies between the environment and the economy. The course focuses on market failure particularly externalities and common property resources and studies the economic valuation of environmental amenities such as clean air and ecological systems. It also discusses issues of sustainability, conservation and preservation of natural resources.

COURSE OBJECTIVES

1. To demonstrate how environmental problems such as global warming, ozone depletion, air and water pollution are threats to global economy.
2. To understand how environmental problems can be approached and analyzed using economic theory.

COURSE LEARNING OUTCOMES

Upon Successful Completion, the Students Should be able to:

- **EXPLAIN** how economics can be used to address important environmental problems.
- **DEMONSTRATE** how the economy and environment are related
- **EXAMINE** techniques for quantifying the benefits and costs of improving environmental quality

COURSE CONTENTS

1. **Introduction**
 - An introduction to environmental economics
 - Economy–environment interdependence
 - Main environmental problems
 - Environmental economics: An overview
2. **Reasons of Studying Environmental Economics**
 - Market failures, externalities
 - Imperfect competition
 - Dynamic decisions and irreversible consequences
 - Public vs. private goods
 - Property rights and open access resources
3. **Economic Efficiency and Social Efficiency**
 - Review of basic concepts
 - Economic approach and economic efficiency
 - Social decision making and socially efficient level

4. **Externalities**
 - Private costs and benefits
 - Social costs and benefits
 - External costs and benefits
 - Partial welfare analysis of external effects
 - Benefits and costs of environmental resources
 - Regulation of external effects
5. **Environmental Pollution and Control Mechanisms**
 - Pollution control: targets
 - Pollution flows and stocks
 - Privately and socially efficient level of pollution
 - Pollution control: Instruments
6. **Command and control instruments**
 - Economic (market based) instruments
 - Institutional instruments
 - Instruments: taxes, subsidies, tradable permits
 - Pigouvian taxation
7. **Criteria for evaluating environmental policies**
 - Cost efficiency and cost effectiveness
8. **Economic Valuation**
 - Concepts and measurement of value for decision making
 - Direct method of valuation and indirect method of valuation
 - Contributions of non-market valuation methods
 - Hedonic models
9. **Sustainability and Development**
 - Limits to growth
 - The origins of the sustainability problem
 - The pursuit of sustainable development
10. **Population Growth and Natural Resources**
 - Impact of population growth on economic development
 - Poverty, population and natural Resources
 - Poverty, inequality and natural Resources
11. **Input-Output Analysis, Technology and Environment**
 - Origin, derivation and usefulness of the model
12. **Global Environmental Problems**
 - Global environmental problems
 - Role of international environmental treaties in control of global pollution

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Nick Hanley, Jason F. Shogren and Ben White. *Environmental Economics in Theory and Practice*, (2nd edition), Palgrave Macmillan.
- Perman, R., Yue M., Common M., Maddison, D., and Mcgilvray, J. (2011). *Natural Resource and Environmental Economics*, (4th Edition), Pearson Addison Wesley.
- Field, B. and Field, M. (2002). *Environmental Economics: An Introduction*, Boston, McGraw Hill.
- Tietenberg, T.H., and Lewis, L. (2012). *Environmental and Natural Resource Economics*, (9th Edition), Pearson Addison Wesley.

ECON 486: ENERGY ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

This Energy Economics course explores the economics and structure of markets for different energy sources (such as oil, coal, natural gas), with a focus on electricity, industry structure and regulatory framework. It will also try to examine current policy issues arising from electrical energy production and use the relationship with economic growth and the environment

COURSE OBJECTIVES

- 1) To provide a better understanding and analysis Global energy trends and current situation and
- 2) To enable the students to combine the economic tools with the goals of energy policy.

COURSE LEARNING OUTCOMES

Upon the completion of the course the students would be able to:

- **DESCRIBE** the oil, natural gas and coal production background history and markets.
- **EXPLAIN** the regulatory framework of the electric utility industry.
- **SUMMARIZE** and explain the major public policy issues regarding energy efficiency and carbon emissions.
- **ANALYZE** energy-related policy issues using standard economic tools.

COURSE CONTENTS

1. Introduction and Background
 - Global energy trends and current situation
 - Energy and the economy – biophysical foundations
2. Oil industry, history and market structure.
 - Oil, gas, and coal resources – geology, discovery, development, production, refining etc.
 - World distribution of oil resources and production
 - Non-renewable resource scarcity theory
 - Oil markets, market structure, and pricing
 - Oil price shocks and the economy
3. Natural Gas, Nuclear and Coal Industry
 - World distribution of coal, gas, and uranium resources and production
 - Nuclear Energy
4. Supply and Demand for Electricity in the US, Pakistan and rest of the world.
5. State Regulatory Model
6. Economics of electric power production, linear programming and marginal costs

7. Topics in electric tariff design
8. Electric Industry Restructuring
9. Renewable Resources and Portfolio Standards
 - Innovation and learning curve – analysis of alternative energy technologies
 - Renewable energy – wind, solar, geothermal etc.
 - Energy storage

TEACHING METHODOLOGY

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS

- Bhattacharyya, S. C. (2011). *Energy Economics Concepts, Issues, Markets and Governance*, Springer-Verlag.
- Fouquet, R. (2013). *Handbook on Energy and Climate Change*, Edward Elgar Publishing, Cheltenham.
- Zweifel, P., Praktiknjo, A.J., and Erdmann, G. (2017). *Energy Economics: Theory and Applications*. Springer Publisher. ISBN: 978-3-662-53020-7

ECON 487: ECONOMICS OF CLIMATE CHANGE

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

Climate change is a natural phenomenon associated with human livelihoods. The effects of climate change on different sectors of the economy particularly agriculture and other natural resources may vary across the diverse ecological regions. The major human induced factors causing environmental degradation are: mismanagement / over exploitation of natural resources, deforestation and unsustainable agricultural practices. Timely preparation to climate change is needed to reduce the adverse impacts of climate change in all sectors of the economy in general and agriculture, livestock, forest and water resources in particular.

COURSE OBJECTIVES:

Main objectives of this course are:

1. To impart basic understanding of the concepts of the climate change and its adaptation and mitigation measures.
2. To increase knowledge about the risks and vulnerabilities posed by climate change and its potential impacts for economic development and poverty.
3. To provide an up-to-date economic interpretation of climate change.
4. To discuss and compare the theoretical economic solutions to combating climate change.
5. To outline possible future climate policy issues and their solutions.

COURSE LEARNING OUTCOMES:

It is expected that a successful teaching of the course will result in the following outcomes:

- CLARIFICATION of the concept of climate change, its causes and consequences.
- UNDERSTAND the pertinent threats from the climate change to the global and local economy.
- RECOGNIZE the potential measures needed to minimize adverse impact of climate change to the economy.
- UNDERSTAND the ways and means of addressing climate change related research.
- ABILITY TO contribute in policy and development related dialogue pertaining to climate change.

COURSE CONTENTS

1. Introduction

- Climate Change
- Climate Change Factors

- Global Warming
- 2. **Causes and Consequences of Climate Change**
 - Green House Gas Effect
 - Trends in Global Carbon Emissions
 - Trends and Projections for Global Climate
- 3. **Economic Analysis of Climate Change**
 - Cost-Benefit Studies of Global Climate Change
 - Climate Change and Inequality
- 4. **Policy Responses to Climate Change**
 - Adaptation and Mitigation
 - Climate Change Adaptation Studies
 - Climate Change Mitigation: Economic Policy Options
 - Carbon Taxes
 - Tradable Permits
 - Carbon Taxes or Cap and Trade
 - Other Policy Tools such as Subsidies, Standards, R&D, and Technology Transfer
 - The Technical Challenge
- 5. **Climate Change Policy in Practice**
 - The Paris Agreement of 2015
 - How adequate or inadequate are the commitments
 - Regional, National and Local Actions
 - Water, Forests and Soils

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)
- Field Exposure (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)

- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

1. Frank, A., & Elizabeth, A. S. (2008). *The Cost of Climate Change*, Natural Resource Defense Council. www.nrdc.org/globalwarming/cost/cost.pdf.

2. Boden, T.A., Marland,G.,&Andres.R. J. (2016). *Global, Regional, and National Fossil-Fuel CO2 Emissions*, Carbon Dioxide Information Analysis Center (CDIAC), Oak Ridge National Laboratory.
3. Jeremy,C.,& Fedor,D. (2016). *Tracking Global Carbon Revenues: A Survey of Carbon Taxes versus Cap-and-trade in the Real World*. *Energy Policy* **96**: 50-77.
4. Simon, D.,& Nicholas S.(2014). *Endogenous Growth, Convexity of Damages and Climate Risk: How Nordhaus' Framework Supports Deep Cuts in Carbon Emissions*, Grantham Research Institute on Climate Change and the Environment, Working paper No. 159, June.

ECON 492: ISLAMIC BANKING: THEORY AND PRACTICE

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

The course covers the topics on Islamic banking system with emphases on chronological development of Islamic banking system, Shariah compliant financial structures, and on Islamic retail, cooperate and treasury products.

COURSE OBJECTIVES:

The prime objectives of this course are;

1. To know the features, evolution, growth and development of the Islamic banking system in different periods,
2. To know the origin, legitimacy, Shariah principles, structure, mechanism and flows of different types of Islamic finance structures,
3. To know the Islamic retail, corporate and treasury products,
4. To know the various forms of an Islamic investment funds. Sukuk and Takaful.

COURSE LEARNING OUTCOMES:

After completion of this course students are expected to;

1. DEFEND Islamic banking practices on Shariah grounds and REMOVE misconceptions about similar functioning of dual banking systems,
2. RECOGNISE and IDENTIFY the cooperate and investment banking products,
3. APPLY various Islamic Finance structures to design Islamic retail products,
4. Practically CALCULATE the financials such as return, profit and installment for each of the Islamic retail products, for Islamic cooperate and investment, treasury product, Sukuk and Takaful.
5. UNDERSTAND the key features, mechanism, operations and required documentations for Sukuk and Takaful (insurance).

COURSE OUTLINES:

1. Introduction to Islamic Banking

- Salient features of Islamic Finance/Banking based on Shariah&Fiqh;
- Prohibition of Riba,
- Prohibition of Gharar,
- Prohibition of Mayser,
- Prohibition of dealing in unlawful goods and services,
- Desire for justice and equity based on business Ethics.
- History and Development of Islamic Banking;
- During 650 AD – 750 AD,
- During 750 AD – 1900 AD,
- During 1900 AD – 2000 AD,

- 2000 AD till date.
 - Difference between Islamic and conventional banking.
- 2. Islamic Retail Products**
- Islamic finance structures used for Home Finance,
 - Islamic finance structures used for Vehicle Finance,
 - Islamic finance structures used for Personal Finance,
 - Islamic finance structures used for Good Finance,
 - Ujrah based Credit Card,
 - Islamic Bank Accounts (current, saving and investment accounts).
- 3. Islamic Coperate Products**
- Islamic Bank Guarantee,
 - Islamic finance structures based Letter of Credit,
 - Coperate finance based on various Islamic finance structures,
 - Working Capital finance based on various Islamic finance structures,
 - Syndicate finance based on various Islamic finance structures,
 - Current Account based on various Islamic finance structures.
- 4. Islamic Treasury Products for Liquidity Management**
- Commodity Instruments based on various Islamic finance structures,
 - Tawarruq Instruments based on various Islamic finance structures,
 - Islamic Agency Instruments,
 - Sukuk Instruments (Asset based Sukuk and Debt-based Sukuk).
- 5. Islamic Treasury Products for Risk Management**
- Introduction to Risk Management,
 - Islamic Profit Rate Swap,
 - Currency Swap based on various Islamic finance structures,
 - Mechanism of Islamic Options based on various Islamic finance structures.
- 6. Conventional Insurance Policy versus Islamic Takaful**
- Takaful Models,
 - Contractual Relationship,
 - Takaful account,
 - Takaful Indemnity,
 - Takaful Surplus,
 - Expiry of Takaful Policy,
 - Difference between Insurance and Takaful.
- 7. Zakat Calculation in case of Islamic Banks**
- Legitimacy of Zakat,
 - Zakat on fixed and on liquid/current assets,
 - Zakat on liabilities, provisions and reserves.

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion

- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

1. Arif, M., and M. Iqbal. *Foundations of Islamic Banking: The Theory, Practice and Education*, Cheltenham, United Kingdom: Edward Elgar Publishing Ltd, 2011.
2. Ayub, M. *Understanding Islamic Finance*, John Wiley and Sons Ltd., The Atrium, Southern Gate, Chichester, West Sussex, England, 2007.
3. Hanif, M. *Islamic Banking Theory and Practice*, Ingram International Inc. ISBN 10: 1475233981 and ISBN 13: 9781475233988, 2012.

ECON 493: ISLAMIC FINANCE

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

The course covers the topics on Islamic finance. Main focus will be on the features of Islamic financial system, and Shariah compliant financial structures.

COURSE OBJECTIVES:

The prime objectives of this course are;

1. To explain the fundamental principles of Islamic Finance,
2. To know the evolution, growth and development of the Islamic finance in different periods,
3. To know the origin, legitimacy, Shariah principles, structure, mechanism and flows of different types of Islamic finance structures.

COURSE LEARNING OUTCOMES:

After completion of this course students are expected to;

1. UNDERSTAND the salient features of Islamic Financial system,
2. RECOGNISE and IDENTIFY the differences between Islamic and conventional finance,
3. APPLY Islamic Finance structures in the monetary and capital institutions of an Islamic state.

COURSE CONTENTS:

1. **Definition of Islamic Finance based on Shariah and Fiqh,**
2. **Features of Islamic finance;**
 - Prohibition of Riba,
 - Prohibition of Gharar,
 - Prohibition of Mayser,
 - Prohibition of dealing in unlawful goods and services,
 - Desire for justice and equity based on business Ethics.
3. **History and Development of Islamic Finance;**
 - During 650 AD – 750 AD,
 - During 750 AD – 1900 AD,
 - During 1900 AD – 2000 AD,
 - 2000 AD till date.
4. **Shariah Compliant Islamic Finance Structures;**
 - Barter Trading (Bay al-Muqayada),
 - General Sale (Bay al-Mutlaq),
 - Exchange Sale (Bay al-Sarf) ,
 - Markup-Sale (Murabaha),
 - Deferred Payment Sale (Bay' BithamanAjjil),

- Monetization (Tawarruq),
- Ena Contract,
- Salam Sale (Bai Salam),
- Manufacturing Finance (Istisna),
- Partnership (Musharaka),
- Venture Capital (Mudaraba),
- Islamic Lease (Ijara),
- Pledge (Rahn),
- Guarantee (Kafala),
- Wakala,
- Hawala,
- Wadia,
- Muqassa,
- Urboun,
- Waad (Promise),
- Qard.

5. Difference between Islamic finance and conventional finance.

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

1. Ahmad, K. *Studies in Islamic Economics*, Leicester, The Islamic Foundation, United Kingdom, 1980.
2. Ayub, M. *Understanding Islamic Finance*, John Wiley and Sons Ltd., The Atrium, Southern Gate, Chichester, West Sussex, England, 2007.
3. Maududi, Sayyid Abul Ala. *First Principles of Islamic Economics*, Islamic Foundation, Markfield, United Kingdom, 2011.
4. Usmani, M. Taqi. *Islamic Finance*, Maktaba Maariful Quran, Pakistan, 2005.

ECON 494: INTRODUCTION TO DIVINE ECONOMICS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

Divine economics is relatively new branch of economics. In first part of the course we will study the similarities and differences Islamic Economics, conventional economics, and Economics of Religion developed by western economists. Finally we will introduce and explain the mechanism of Devine economics

COURSE OBJECTIVES:

- 1- To study the basic concepts, terms and definitions of Divine Economics.
- 2- To introduce the similarities and differences Islamic Economics, conventional economics, and Economics of Religion developed by western economists)
- 3- To empirically analyze the effects of non-economic factors [faith, spirituality, ethics, and values] on economic allocation decisions and vice versa.

COURSE LEARNING OUTCOMES:

Upon the successful completion of this course the student shall be able to:-

- **UNDERSTAND** the fundamentals of Divine Economics.
- **DIFFERENTIATE** between Islamic Economics, conventional economics, and Economics of Religion developed by western economists)
- **ANALYZE** the interrelationships among economic and non-economic variables

COURSE CONTENTS:

1. Background

- Introduction: Introduction to conventional economics, basic assumptions and implications, critical appraisal of conventional economics, the need for the “Divine Economics”
- Historical Perspective: Economy before “Economics”.
- Recent developments: The Islamic economics, Christian economics, social economics, human economics and neo-home economics, new-economics

2. The Divine Economics

- The Point of Departure from convention: the concept of life after death,
- The concept of rationality,
- The concept of two lives and the life-cycle in religious perspective,
- The concept of utility.

3. General Divine Economics Model:

- Recognizing both the body and the soul.
- The divine requirements of an economic behavior.
- Consumer problem, objective and constraint; and econometric framework.

4. **The Empirical Testing of Divine Economics:**
 - Identifying and defining the socio-economic,
 - demographic cultural, environmental and religious variables,
 - developing research tools, conducting faith-based economic surveys.
 - Use of qualitative data /mixed methods
5. **Measuring Religiosity**
 - The categories of population according to religiosity.
 - Developing the religiosity scales, problems and limitations of religiosity scales.
6. **Interpreting the results of faith-based economics:**
 - The Descriptive analysis, The regression analysis,
 - Data visualization
 - Empirical results of Divine Economics require knowledge of religions
7. **Recent empirical findings**
 - Role of religiosity in Labor supply decisions,
 - Religiosity and charity,
 - Leisure,
 - Voluntary work,
 - Religious activities,
 - Home production activities,
 - Spirituality and economic behavior,
 - Values and economic behavior

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- Syed Nisar Hussain Hamdani, *Introduction to Divine Economics*, Teacher's Course Manual, KIE, University of Azad Jammu & Kashmir
- *"Religious Orientation as a Factor in time Allocation"*, PhD Dissertation, Quaid-e-Azam University Islamabad.
- *Towards Divine Economics*, LWP Harvard University, 2008

- *Disaster, Faith & Rehabilitation*, LWP Harvard University/University of AJ&K, 2007
- *Role of Values in Economy*, Research Report of UAJK Project assisted by Higher Education Commission, available at www.divine-economics.org
- Syed Nisar HussainHamdani, Eatzaz Ahmad (2002), Towards Divine Economics: Some Testable Propositions, *The Pakistan Development Review*, Vol. 41, No. 4, pp. 609-626 available at JStore and <http://www.pide.org.pk/pdf/psde%2018AGM/Towards%20Divine%20Economics.pdf>
- Shah, AkhtarHussain, Social and Religious Capital, [PhD Dissertation in Divine Economics], PIDE, 2008

ECON 495: COMPARATIVE ECONOMIC SYSTEMS

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION

The course examines major economic systems of the world, both in theory and practice. The approach will generally focus on encouraging a general understanding of how economic systems work and how economic theory interacts with government policy, history, and culture to explain economic performance. The course will examine some advanced capitalist economies (e.g., the U.S., Japan, France, Sweden, and Germany), the former socialist economies (e.g., the former Soviet Union, Poland, and China), and other East Asian economies (e.g., South Korea and North Korea). The course will also consider Iran as an example of an Islamic-based economy, and India as an example of an isolationist country that is now beginning to join the global economy.

COURSE OBJECTIVES

The course has three basic aims;

1. Understanding of major economic systems;
2. How economic systems work? Moreover, how economic theory interacts with government policy, history, and culture to explain economic performance;
3. In-depth understanding of advanced market capitalist countries in comparison with socialist, translational, emerging, etc.

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

- **ACQUIRE** knowledge of the economic concepts important to understanding how economies perform.
- **UNDERSTAND** how government policies can affect economic performance. Moreover, to understand major economic events in the major economies of the world, and how those events and associated government policies in those countries affected their economic performance.
- **SOLVE** the institutional issues through application of modern microeconomic theory through informed understanding.
- **EVALUATE** how those events and associated government policies in those countries affected their economic performance.
- **DEMONSTRATE** an understanding of major economic events in the major economies of the world, and how those events and associated government policies in those countries affected their economic performance. Moreover, ability to collect, analyze and present data on economic performance in the world's major economies.

COURSE OUTLINE:

- 1. Economic Growth and Performance**
 - Measuring Economic Growth and Performance
 - Markets and Government
 - What Makes Economies Grow?
 - Selected Studies of Economic Growth and Performance
- 2. Capitalism and its Alternatives**
 - The Developing World Economy
 - Economic Development and Policy in Western Europe: the United Kingdom, France, Germany, Ireland and Sweden
 - The United States and Western Offshoots
 - East Asian Capitalism: Japan, Singapore, South Korea and Taiwan
 - Selected Research Papers on Capitalism and its Alternatives
- 3. The Socialist Experiment**
 - The Soviet Union and Eastern Europe
 - Reform and Transition After the Collapse
 - China's Development Experience
 - Selected Research Papers on Socialism
- 4. Economic Performance in the Rest of the World**
- 5. Exceptions of mainstream economic systems**
- 6. Transitional and Emerging Economies**
- 7. Selected Research Papers on Socialism**

Teaching Methodology

- Lectures
- In Class Activities
- Group Discussion
- Guest Lectures (optional)
- Term Paper (optional)

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments/Presentation, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

Text and Reference books:

1. Heilbroner, R.L., & W. Milberg (2007), *The Making of Economic Society*, 12th edition (Prentice Hall, paperback). ISBN 0131704257.
2. Helpman, E. (2004), *The Mystery of Economic Growth*. Belknap Press, paperback, required.

3. Baumol, W.J., R.E. Litan & C.J. Schramm (2009), *Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity*. Yale University Press, paperback, recommended.

ECON 496: ECONOMY, ETHICS AND UNIVERSAL VALUES

Contact Hours: 48

Credit Hours: 3.0

Prerequisite: Nil

COURSE DESCRIPTION:

The course introduces basic ethics, theories, and their applications in daily life. The course enables the students to improve and transform their daily life behaviors in ethical manner and apply the same in economic performance.

COURSE OBJECTIVES:

- 1- To understand the basics of ethics in general and Islamic ethics in particular.
- 2- To Identify and comprehend ethical issues and values having important implications for individual, local or global economy
- 3- To find out their practical remedies of economic problems caused by ethical issues
- 4- To apply universal values and ethical principles [for example 'Golden Rule'] for improving human wellbeing.

COURSE LEARNING OUTCOMES:

By the end of course, student should be able to

- KNOW and APPLY ethical principles in their daily life in perspective of universal values /Islamic principles

COURSE OUTLINE:

1. Introduction

- Ethics
- Universal values
- Basic concepts
- Terms, definitions and philosophy
- Difference in ethics, values, norms, principles, codes, standards, etiquettes, and laws

2. Importance of ethics and values in economy

- Human domain: Self, family, society, nation, world, environment and perceived ultimate reality
- Implications of ethics for economic decision making

3. Philosophy of ethics Aristotle, Naraq, Ghazali, ShahwaliAllah, Adam Smith, Kant, Bentham, Rawls, Amartya Sen

- Ethical Theories and evolution of Economics
- Egoism, Utilitarianism, Right theory, Deontology, Divine Command theory etc.

4. Islamic philosophy of ethics

- Human nature
- The body, soul and self
- Types and levels of soul and self

- Soul purification and adornment
- 5. **Science of Economics and Islamic philosophy of Ethics**
- 6. **Powers of soul**
 - Power of Anger,
 - Power of Intellect,
 - Power of Imagination,
 - Power of Passion
- 7. **Universal values**
 - Nature, type and classification of values
 - Conventional approaches about universal values
 - Divine Economics approach about universal values
 - Universal values and religions
 - Alternative lists of universal values
- 8. **Workshop on theory and practice of ethics**
 - Emerging Trends and Recent Developments
 - Student presentations
- 9. **Introduction to contemporary values survey**
 - World Values Survey
 - European Social Survey
 - American Values Survey
 - Universal Values Survey

TEACHING METHODOLOGY:

- Lectures
- In Class Activities
- Written Assignments

ASSESSMENT:

- **Mid Term Evaluation: 50%**
(Sessional Examination, Quizzes, Assignments, In-Class Activities)
- **Final Examination: 50%**

Note: The major share in mid-term evaluation will be of sessional examination. The share of mid-term evaluation and final examination can be 40:60 or 60:40, as approved by statutory bodies of university.

TEXT AND REFERENCE BOOKS:

- On Ethics and Economics By Amartya Sen
- Jamia us Saa'dat by Naraqji, Translated by Gul M. Naqvi.
- The Nicomachean Ethics: English Translation, Ross (1980)
- An Economic Approach to Human Behaviour. G S Becker (1976) Chicago University
- A Divine Economics Approach to Universal Values (2015) by Syed Nisar Hussain Hamdani (2015)

- <http://www.al-islam.org/library/ethics>
- <http://www.europeanvaluesstudy.eu/>
- <http://www.people-press.org/values/>
- <http://www.worldvaluessurvey.org/wvs.jsp>
- <http://www.divine-economics.org>

**COMPULSORY COURSES IN ENGLISH FOR BS
(4 YEAR) IN BASIC & SOCIAL SCIENCES**

English I (Functional English)

Objectives: Enhance language skills and develop critical thinking.

Course Contents:

Basics of Grammar
Parts of speech and use of articles
Sentence structure, active and passive voice
Practice in unified sentence
Analysis of phrase, clause and sentence structure
Transitive and intransitive verbs
Punctuation and spelling

Comprehension

Answers to questions on a given text

Discussion

General topics and every-day conversation (topics for discussion to be at the discretion of the teacher keeping in view the level of students)

Listening

To be improved by showing documentaries/films carefully selected by subject teachers

Translation skills

Urdu to English

Paragraph writing

Topics to be chosen at the discretion of the teacher

Presentation skills

Introduction

Note: Extensive reading is required for vocabulary building

Recommended Books:

1. **Functional English**
 - a) Grammar

1. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN 0194313492
 2. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press. 1997. ISBN 0194313506
- b) Writing
1. Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41.
- c) Reading/Comprehension
1. Reading. Upper Intermediate. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2.
- d) Speaking

English II (Communication Skills)

Objectives: Enable the students to meet their real life communication needs.

Course Contents:

Paragraph writing

Practice in writing a good, unified and coherent paragraph

Essay writing

Introduction

CV and job application

Translation skills

Urdu to English

Study skills

Skimming and scanning, intensive and extensive, and speed reading, summary and précis writing and comprehension

Academic skills

Letter/memo writing, minutes of meetings, use of library and internet

Presentation skills

Personality development (emphasis on content, style and pronunciation)

Note: documentaries to be shown for discussion and review

Recommended Books:

Communication Skills

- a) Grammar
 - 1. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 431350 6.

- b) Writing
 - 1. Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 019 435405 7 Pages 45-53 (note taking).
 - 2. Writing. Upper-Intermediate by Rob Nolasco. Oxford Supplementary Skills. Fourth Impression 1992. ISBN 0 19 435406 5 (particularly good for writing memos, introduction to presentations, descriptive and argumentative writing).

- c) Reading
 - 1. Reading. Advanced. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 453403 0.
 - 2. Reading and Study Skills by John Langan
 - 3. Study Skills by Richard York.

English III (Technical Writing and Presentation Skills)

Objectives: Enhance language skills and develop critical thinking

Course Contents:

Presentation skills

Essay writing

Descriptive, narrative, discursive, argumentative

Academic writing

How to write a proposal for research paper/term paper

How to write a research paper/term paper (emphasis on style, content, language, form, clarity, consistency)

Technical Report writing

Progress report writing

Note: Extensive reading is required for vocabulary building

Recommended Books:

Technical Writing and Presentation Skills

- a) Essay Writing and Academic Writing
 - 1. Writing. Advanced by Ron White. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 435407 3 (particularly suitable for discursive, descriptive, argumentative and report writing).
 - 2. College Writing Skills by John Langan. McGraw-Hill Higher Education. 2004.
 - 3. Patterns of College Writing (4th edition) by Laurie G. Kirszner and Stephen R. Mandell. St. Martin's Press.
- b) Presentation Skills
- c) Reading
 - The Mercury Reader. A Custom Publication. Compiled by northern Illinois University. General Editors: Janice Neulib; Kathleen Shine Cain; Stephen Ruffus and Maurice Scharon. (A reader which will give students exposure to the best of twentieth century literature, without taxing the taste of engineering students).

Pakistan Studies (Compulsory)

Introduction/Objectives:

- Develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

Course Outline:

1. **Historical Perspective**
 - a. Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-i-Azam Muhammad Ali Jinnah.
 - b. Factors leading to Muslim separatism
 - c. People and Land
 - i. Indus Civilization
 - ii. Muslim advent
 - iii. Location and geo-physical features.
2. **Government and Politics in Pakistan**

Political and constitutional phases:

 - a. 1947-58
 - b. 1958-71
 - c. 1971-77
 - d. 1977-88
 - e. 1988-99
 - f. 1999 onward
3. **Contemporary Pakistan**
 - a. Economic institutions and issues
 - b. Society and social structure
 - c. Ethnicity
 - d. Foreign policy of Pakistan and challenges
 - e. Futuristic outlook of Pakistan

Recommended Books:

1. Burki, Shahid Javed. *State & Society in Pakistan*, The Macmillan Press Ltd 1980.
2. Akbar, S. Zaidi. *Issue in Pakistan's Economy*. Karachi: Oxford University Press, 2000.
3. S.M. Burke and Lawrence Ziring. *Pakistan's Foreign Policy: An Historical analysis*. Karachi: Oxford University Press, 1993.
4. Mehmood, Safdar. *Pakistan Political Roots & Development*. Lahore, 1994.
5. Wilcox, Wayne. *The Emergence of Bangladesh.*, Washington: American Enterprise, Institute of Public Policy Research, 1972.

6. Mehmood, Safdar. *Pakistan Kayyun Toota*, Lahore: Idara-e-Saqafat-e-Islamia, Club Road, nd.
7. Amin, Tahir. *Ethno - National Movement in Pakistan*, Islamabad: Institute of Policy Studies, Islamabad.
8. Ziring, Lawrence. *Enigma of Political Development*. Kent England: WmDawson & sons Ltd, 1980.
9. Zahid, Ansar. *History & Culture of Sindh*. Karachi: Royal Book Company, 1980.
10. Afzal, M. Rafique. *Political Parties in Pakistan*, Vol. I, II & III. Islamabad: National Institute of Historical and cultural Research, 1998.
11. Sayeed, Khalid Bin. *The Political System of Pakistan*. Boston: Houghton Mifflin, 1967.
12. Aziz, K.K. *Party, Politics in Pakistan*, Islamabad: National Commission on Historical and Cultural Research, 1976.
13. Muhammad Waseem, *Pakistan Under Martial Law*, Lahore: Vanguard, 1987.
14. Haq, Noor ul. *Making of Pakistan: The Military Perspective*. Islamabad: National Commission on Historical and Cultural Research, 1993.

ISLAMIC STUDIES (Compulsory)

Objectives:

This course is aimed at:

- 1 To provide Basic information about Islamic Studies
- 2 To enhance understanding of the students regarding Islamic Civilization
- 3 To improve Students skill to perform prayers and other worships
- 4 To enhance the skill of the students for understanding of issues related to faith and religious life.

Detail of Courses:

Introduction to Quran Studies

- 1) Basic Concepts of Quran
- 2) History of Quran
- 3) Uloom-ul -Quran

Study of Selected Text of Holly Quran

- 1) Verses of Surah Al-Baqra Related to Faith (Verse No-284-286)
- 2) Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No-1-18)
- 3) Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11)
- 4) Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77)
- 5) Verses of Surah Al-Inam Related to Ihkam(Verse No-152-154)

Study of Selected Text of Holly Quran

- 1) Verses of Surah Al-Ihzab Related to Adab al-Nabi (Verse No.6,21,40,56,57,58.)
- 2) Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment
- 3) Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No-1,14)

Seerat of Holy Prophet (S.A.W) I

- 1) Life of Muhammad Bin Abdullah (Before Prophet Hood)
- 2) Life of Holy Prophet (S.A.W) in Makkah
- 3) Important Lessons Derived from the life of Holy Prophet in Makkah

Seerat of Holy Prophet (S.A.W) II

- 1) Life of Holy Prophet (S.A.W) in Madina
- 2) Important Events of Life Holy Prophet in Madina
- 3) Important Lessons Derived from the life of Holy Prophet in Madina

Introduction To Sunnah

- 1) Basic Concepts of Hadith

- 2) History of Hadith
- 3) Kinds of Hadith
- 4) Uloom-ul-Hadith
- 5) Sunnah & Hadith
- 6) Legal Position of Sunnah

Selected Study from Text of Hadith

Introduction To Islamic Law & Jurisprudence

- 1) Basic Concepts of Islamic Law & Jurisprudence
- 2) History & Importance of Islamic Law & Jurisprudence
- 3) Sources of Islamic Law & Jurisprudence
- 4) Nature of Differences in Islamic Law
- 5) Islam and Sectarianism

Islamic Culture & Civilization

- 1) Basic Concepts of Islamic Culture & Civilization
- 2) Historical Development of Islamic Culture & Civilization
- 3) Characteristics of Islamic Culture & Civilization
- 4) Islamic Culture & Civilization and Contemporary Issues

Islam & Science

- 1) Basic Concepts of Islam & Science
- 2) Contributions of Muslims in the Development of Science
- 3) Quran & Science

Islamic Economic System

- 1) Basic Concepts of Islamic Economic System
- 2) Means of Distribution of wealth in Islamic Economics
- 3) Islamic Concept of Riba
- 4) Islamic Ways of Trade & Commerce

Political System of Islam

- 1) Basic Concepts of Islamic Political System
- 2) Islamic Concept of Sovereignty
- 3) Basic Institutions of Govt. in Islam

Islamic History

- 1) Period of Khlaft-E-Rashida
- 2) Period of Ummayyads
- 3) Period of Abbasids

Social System of Islam

- 1) Basic Concepts Of Social System Of Islam
- 2) Elements Of Family
- 3) Ethical Values Of Islam

Reference Books:

- 1) Hameed ullah Muhammad, "Emergence of Islam", IRI, Islamabad
- 2) Hameed ullah Muhammad, "Muslim Conduct of State"
- 3) Hameed ullah Muhammad, 'Introduction to Islam
- 4) Mulana Muhammad Yousaf Islahi,"
- 5) Hussain Hamid Hassan, "An Introduction to the Study of Islamic Law" leaf Publication Islamabad, Pakistan.
- 6) Ahmad Hasan, "Principles of Islamic Jurisprudence" Islamic Research Institute, International Islamic University, Islamabad (1993)
- 7) Mir Waliullah, "Muslim Jurisprudence and the Quranic Law of Crimes" Islamic Book Service (1982)
- 8) H.S. Bhatia, "Studies in Islamic Law, Religion and Society" Deep & Deep Publications New Delhi (1989)
- 9) Dr. Muhammad Zia-ul-Haq, "Introduction to Al Sharia Al Islamia" Allama Iqbal Open University, Islamabad (2001)

**COMPULSORY MATHEMATICS
COURSES FOR BS (4 YEAR)**

**(FOR STUDENTS NOT MAJORING IN
MATHEMATICS)**

1. MATHEMATICS I (ALGEBRA)

Prerequisite(s): Mathematics at secondary level

Credit Hours: 3 + 0

Specific Objectives of the Course: To prepare the students, not majoring in mathematics, with the essential tools of algebra to apply the concepts and the techniques in their respective disciplines.

Course Outline:

Preliminaries: Real-number system, complex numbers, introduction to sets, set operations, functions, types of functions.

Matrices: Introduction to matrices, types, matrix inverse, determinants, system of linear equations, Cramer’s rule.

Quadratic Equations: Solution of quadratic equations, qualitative analysis of roots of a quadratic equations, equations reducible to quadratic equations, cube roots of unity, relation between roots and coefficients of quadratic equations.

Sequences and Series: Arithmetic progression, geometric progression, harmonic progression.

Binomial Theorem: Introduction to mathematical induction, binomial theorem with rational and irrational indices.

Trigonometry: Fundamentals of trigonometry, trigonometric identities.

Recommended Books:

Dolciani MP, Wooton W, Beckenback EF, Sharron S, *Algebra 2 and Trigonometry*, 1978, Houghton & Mifflin, Boston (suggested text)

Kaufmann JE, *College Algebra and Trigonometry*, 1987, PWS-Kent Company, Boston

Swokowski EW, *Fundamentals of Algebra and Trigonometry* (6th edition), 1986, PWS-Kent Company, Boston

**Statistics-I
Credit 3 (2-1)**

Definition and importance of Statistics in Agriculture, Data Different types of data and variables

Classification and Tabulation of data, Frequency distribution, stem-and-Leaf diagram, Graphical representation of data Histogram, frequency polygon, frequency curve.

Measure of Central tendency, Definition and calculation of Arithmetic mean, Geometric mean, Harmonic mean, Median quantiles and Mode in grouped and ungrouped data.

Measure of Dispersion, Definition and Calculation of Range, quartile deviation, Mean deviation, Standard deviation and variance, coefficient of variation.

Practical:

- a. Frequency Distribution
- b. Stem-and-Leaf diagram
- c. Various types of Graphs
- d. Mean, Geometric mean Harmonic Mean,
- e. Median, Quartiles Deviation, mean Deviation.
- f. Standard Deviation, Variance, Coefficient of variation,
- g. Skewness and kenosis

Recommended Books:

1. Introduction to Statistical Theory Part- I by Sher Muhammad and Dr. Shahid Kamal (Latest Edition)
2. Statistical Methods and Data Analysis by Dr. Faquir Muhammad
3. A. Concise Course in A. Level Statistic with world examples by J. Crashaw and J. Chambers (1994)
4. Basic Statistics an Inferential Approach 2nd Ed. (1986) Fran II. Dietrich-II and Thomas J. Keans

Statistics-II

Credit 3 (2-1)

Sampling Probability and non-Probability Sampling, Simple random sampling stratified random sampling Systematic sampling error, Sampling distribution of mean and difference between two means. Inference Theory: Estimation and testing of hypothesis, Type—I and type-II error, Testing of hypothesis about mean and difference between two means using Z-test and t-test, Paired t-test, Test of association of attributes using χ^2 (chi-square) Testing hypothesis about variance.

Practical:

- a. Sampling random sampling
- b. Stratified random sampling.
- c. Sampling distribution of mean
- d. Testing of hypotheses regarding population mean
- e. Testing of hypotheses about the difference between population means
- f. Chi-square test
- g. Testing of Correlation Coefficient
- h. Fitting of simple linear regression
- i. One-way ANOVA
- j. Two-way ANOVA

Recommended Books:

1. Introduction to Statistical Theory Part-II by Sher Muhammad and Dr. Shahid Kamal (Latest Edition)
2. Statistical Methods and Data Analysis by Dr. Faquir Muhammad
3. Principles and Procedures of Statistics A Bio-material approach, 2nd Edition, 1980 by R. G. D Steal and James H. Tarric
4. Statistical Procedures for Agricultural Research 2nd Edition (1980) by K. A. Gomez and A. A. Gomez

Introduction to Information and Communication Technologies

Course Structure: Lectures: 2 Labs: 1 **Credit Hours:** 3

Pre-requisite: **None** **Semester:** 1

Course Description:

This is an introductory course on Information and Communication Technologies. Topics include ICT terminologies, hardware and software components, the internet and World Wide Web, and ICT based applications.

After completing this course, a student will be able to:

- Understand different terms associated with ICT
- Identify various components of a computer system
- Identify the various categories of software and their usage
- Define the basic terms associated with communications and networking
- Understand different terms associated with the Internet and World Wide Web.
- Use various web tools including Web Browsers, E-mail clients and search utilities.
- Use text processing, spreadsheets and presentation tools
- Understand the enabling/pervasive features of ICT

Course Contents:

Basic Definitions & Concepts

Hardware: Computer Systems & Components

Storage Devices, Number Systems

Software: Operating Systems, Programming and Application Software

Introduction to Programming, Databases and Information Systems

Networks

Data Communication

The Internet, Browsers and Search Engines

The Internet: Email, Collaborative Computing and Social Networking

The Internet: E-Commerce

IT Security and other issues

Project Week

Review Week

Text Books/Reference Books:

1. Introduction to Computers by Peter Norton, 6th International Edition, McGraw-Hill
2. Using Information Technology: A Practical Introduction to Computer & Communications by Williams Sawyer, 6th Edition, McGraw-Hill

3. Computers, Communications & information: A user's introduction by Sarah E. Hutchinson, Stacey C. Swayer
4. Fundamentals of Information Technology by Alexis Leon, Mathews Leon, Leon Press.