DETAILS OF SCHEME OF STUDIES FOR BS ECONOMICS (4-YEARS / 8-SEMESTERS)

General: 33 Credit Hours (Minimum Requirement: 30 Credit Hours)

Interdisciplinary / Allied: 14 Credit Hours (Minimum Requirement: 12 Credit Hours)

Major: 93 Credit Hours (Minimum Requirement: 72 Credit Hours)

Total: 140 Credit Hours (Min. Requirement: 120 Credit Hours – Max. Requirement: 144 Credit Hours)

Breakdown of Courses (General Courses, Interdisciplinary / Allied and Major Courses)

Semester	Course Code	Course Title	Credit Hrs	Major Category
1st	ENG-321	Functional English	3(3-0)	**General** 33 Credit Hours (Minimum Requirement 30 Credit Hours)
1st	ISL-321/322	Islamic Studies/Ethics	2(2-0)	
1st	UHQ-I	Understanding of Holy Quran – I	1(1-0)	
3rd	UHQ-II	Understanding of Holy Quran – II	1(1-0)	
1st	QRT-421	Quantitative Reasoning – I	3(3-0)	
1st	ICT-321	Application of Information and Communication Technologies	3(2-1)	
1st	CCD-421	Civics and Community Development	2(2-0)	
2nd	ENG-322	Expository Writing	3(3-0)	
2nd	ICP-321	Ideology and Constitution of Pakistan	2(2-0)	
2nd	QRT-422	Quantitative Reasoning – II	3(3-0)	
2nd	GSC-321	The Science of Global Challenges	3(2-1)	
4th	BAM-422	Entrepreneurship	2(2-0)	
4th	GEO-305	Economic Geography	3(3-0)	
2nd	BPA-304	Introduction to Public Policy	3(3-0)	**Interdisciplinary / Allied** 14 Credit Hours (Minimum Requirement 12 Credit Hours)
3rd	STA-401	Statistical Inference	3(3-0)	
3rd	BAM-404	Human Resource Management	3(3-0)	
3rd	MGT-401	Principles of Management	3(3-0)	
3rd	PST-321	Pakistan Studies	2(2-0)	
1st	ECO-301	Principles of Microeconomics	3(3-0)	**Major**
2nd	ECO-302	Principles of Macroeconomics	3(3-0)	
3rd	ECO-401	Intermediate Micro Economics	3(3-0)	
3rd	ECO-403	Agricultural Economics	3(3-0)	
4th	ECO-402	Intermediate Macroeconomics	3(3-0)	
4th	ECO-404	World Economic History	3(3-0)	
4th	ECO-406	International Trade Theory	3(3-0)	
4th	ECO-408	Issues in Pakistan Economy	3(3-0)	
5th	ECO-501	Micro-Economic Theory	3(3-0)	
5th	ECO-503	Macroeconomic Theory	3(3-0)	
5th	ECO-505	Mathematical Economics I	3(3-0)	
5th	ECO-507	Population Economics	3(3-0)	
5th	ECO-509	International Finance	3(3-0)	
5th	ECO-511	Health Economics	3(3-0)	

6th	ECO-502	Development Economics	3(3-0)	93 Credit Hours (Minimum Requirement 72 Credit Hours)
6th	ECO-504	Econometrics I	3(3-0)	
6th	ECO-506	Mathematical Economics II	3(3-0)	
6th	ECO-508	Environmental and Natural Resource Economics	3(3-0)	
6th	ECO-510	General Equilibrium and Welfare Economics	3(3-0)	
6th	ECO-512	Managerial Economics	3(3-0)	
7th	ECO-601	Research Methodology	3(3-0)	
7th	ECO-603	Public Sector Economics	3(3-0)	
7th	ECO-605	Econometrics II	3(3-0)	
7th	ECO-607	Project Appraisal and Investment Analysis	3(3-0)	
7th	ECO-609	Labor Economics	3(3-0)	
7th	ECO-611	Energy Economics	3(3-0)	
8th	ECO-602	Institutional Economics	3(3-0)	
8th	ECO-604	Islamic Economics	3(3-0)	
8th	ECO-606	Monetary Economics	3(3-0)	
8th	INT-631	Internship	3(0-3)	Field Experience
8th	CAP-630	Capstone Project	3(0-3)	Capstone Project
	Total			**142**

Semester-wise details of Courses

Semester-I

Course No.	Subject	Credit Hours
ECO-301	Principles of Microeconomics	3(3-0)
ENG-321	Functional English	3(3-0)
ISL-321/322	Islamic Studies/Ethics	2(2-0)
UHQ-I	Understanding of Holy Quran – I	1(1-0)
QRT-421	Quantitative Reasoning – I	3(3-0)
ICT-321	Application of Information and Communication Technologies	3(2-1)
CCD-421	Civics and Community Development	2(2-0)
Total Credit Hours		17

Semester-II

Course No.	Subject	Credit Hours
ECO-302	Principles of Macroeconomics	3(3-0)
ENG-322	Expository Writing	3(3-0)
ICP-321	Ideology and Constitution of Pakistan	2(2-0)
QRT-422	Quantitative Reasoning – II	3(3-0)
GSC-321	The Science of Global Challenges	3(2-1)
BAM-301	Principles of Management	3(3-0)
Total Credit Hours		17

Semester-III

Course No.	Subject	Credit Hours
ECO-401	Intermediate Micro Economics	3(3-0)
ECO-403	Agricultural Economics	3(3-0)
PST-321	Pakistan Studies	2(2-0)
STA-401	Statistical Inference	3(3-0)
BAM-404	Human Resource Management	3(3-0)
BPA-304	Introduction to Public Policy	3(3-0)
UHQ-II	Understanding of Holy Quran – II	1(1-0)
Total Credit Hours		**18**

Semester-IV

Course No.	Subject	Credit Hours
GEO-305	Economic Geography	3(3-0)
ECO-402	Intermediate Macroeconomics	3(3-0)
ECO-404	World Economic History	3(3-0)
ECO-406	International Trade Theory	3(3-0)
ECO-408	Issues in Pakistan Economy	3(3-0)
BAM-422	Entrepreneurship	2(2-0)
Total Credit Hours		**17**

Note: Teaching of the Holy Quran will not be considered for GPA/CGPA calculation

Semester-V

Course No.	Subject	Credit Hours
ECO-501	Microeconomic Theory	3(3-0)
ECO-503	Macroeconomic Theory	3(3-0)
ECO-505	Mathematical Economics I	3(3-0)
ECO-507	Population Economics	3(3-0)
ECO-509	International Finance	3(3-0)
ECO-511	Health Economics	3(3-0)
THQ-III	Teaching of The Holy Quran – 1	1(1-0)
Total Credit Hours		**19**

Semester-VI

Course No.	Subject	Credit Hours
ECO-502	Development Economics	3(3-0)
ECO-504	Econometrics I	3(3-0)
ECO-506	Mathematical Economics II	3(3-0)
ECO-508	Environmental and Natural Resource Economics	3(3-0)
ECO-510	General Equilibrium and Welfare Economics	3(3-0)
ECO-512	Managerial Economics	3(3-0)
Total Credit Hours		18

Semester-VII

Course No.	Subject	Credit Hours
ECO-601	Research Methodology	3(3-0)
ECO-603	Public Sector Economics	3(3-0)
ECO-605	Econometrics II	3(3-0)
ECO-607	Project Appraisal and Investment Analysis	3(3-0)
ECO-609	Labor Economics	3(3-0)
ECO-611	Energy Economics	3(3-0)
THQ-IV	Teaching of The Holy Quran – 1	1(1-0)
Total Credit Hours		**19**

Semester-VIII

Course No.	Subject	Credit Hours
ECO-602	Institutional Economics	3(3-0)
ECO-604	Islamic Economics	3(3-0)
ECO-606	Monetary Economics	3(3-0)
CAP-630	Capstone Project	3(3-0)
INT-631	Internship	3(0-3)
Total Credit Hours		**15**

Scheme of Studies of BS Bridging Economics (Evening), Session 2023-25 & 2024-26

Course Code	Semester & Subjects	Enrolled Sessions
Spring Semester, 2024		
STA-322	Introduction to Statistical Theory – I	Session 2023-25 Session 2024-26
ECO-401	Intermediate Microeconomics	
ECO-402	Intermediate Macroeconomics	
ECO-502	Development Economics	
ECO-508	Environmental and Natural Resource Economics	
ECO-510	General Equilibrium and Welfare Economics	
Summer 2024		
ECO-512	Managerial Economics	Session 2023-25 Session 2024-26
STA-323	Introduction to Statistical Theory – II	
ECO-505	Mathematical Economics I	Session 2024-26 students only
Fall Semester, 2024-25		
ECO-504	Econometrics I	Session 2023-25 Session 2024-26
ECO-506	Mathematical Economics II	
ECO-602	Institutional Economics	
ECO-607	Project Appraisal and Investment Analysis	
ECO-609	Labor Economics	
ECO-611	Energy Economics	
Spring Semester, 2025		
ECO-408	Issues in Pakistan Economy	Session 2023-25 Session 2024-26
ECO-601	Research Methodology	
ECO-603	Public Sector Economics	
ECO-604	Islamic Economics	
ECO-605	Econometrics II	
ECO-606	Monetary Economics	
ECO-630	Project	Session 2023-25
Summer Semester, 2025		
CSI-321	Introduction to Computing Applications	Session 2023-25 Session 2024-26
Fall Semester, 2025-26		
ECO-501	Micro-Economic Theory	Session 2024-26
ECO-503	Macro-Economic Theory	
ECO-509	International Finance	
ECO-511	Health Economics	
ECO-630	Project	

Revision of Course codes and Curriculum for MPhil and PhD

Course Code	Course Title	Revised By
*ECO-701	Microeconomic Analysis	Dr. M. Rizwan Yaseen
*ECO-702	Macroeconomic Analysis	Dr. Asia Naseem
*ECO-703	Econometrics: Theory and Practices	Dr. Abdul Quddoos
*ECO-704	Research Methodology	Dr. M. Sohail Amjad Makhdum
ECO-705	Applied Econometrics	Dr. Abdul Quddoos
ECO-706	Policy Analysis	Dr. Syed Asif Ali Naqvi
ECO-707	International Trade	Dr. Asia Naseem
ECO-708	Production Economics	Dr. Abdul Majeed Nadeem
ECO-709	Development Economics	Dr. Imran Qiaser
ECO-710	Monetary Economics	Dr. Umer Farooq
ECO-711	Resource and Environmental Economics	Dr. Syed Asif Ali Naqvi
ECO-712	Economic Analysis and Evaluation of Development Projects	Dr. M. Sohail Amjad Makhdum
ECO-713	Computer Application for Social Sciences	Dr. Sadia Ali
ECO-714	Welfare Economics	Dr. M. Rizwan Yaseen
ECO-715	Labor Economics	Dr. Fraz Riaz
ECO-716	Mathematical Economics	Dr. Sadia Ali
**ECO-717	Advanced Microeconomic Theory	Dr. M. Rizwan Yaseen
**ECO-718	Advanced Macroeconomic Theory	Dr. Asia Naseem
ECO-719	Advanced Econometrics	Dr. Abdul Quddoos
ECO-720	Advanced Research Methodology	Dr. M. Sohail Amjad Makhdum
ECO-721	Advanced Policy Analysis	Dr. Syed Asif Ali Naqvi
ECO-722	Advanced Production Economics	Dr. Abdul Majeed Nadeem
ECO-723	Advanced Development Economics	Dr. Imran Qiaser
ECO-724	Advanced Resource and Environmental Economics	Dr. Syed Asif Ali Naqvi
ECO-725	Advanced Welfare Economics	Dr. M. Rizwan Yaseen
ECO-726	Advanced Labor Economics	Dr. Fraz Riaz
*M.Phil		
ECO-728	Seminar (General)	
ECO-729	Seminar (Research)	
ECO-730	Research Thesis	
**Ph.D		
ECO-758	Seminar (General)	
ECO-759	Seminar (Research)	
ECO-760	Research Thesis	

*Compulsory courses for M. Phil ** Compulsory courses for Ph.D

Revised Course contents, course codes, and recommended books for BS Economics

ECO-301 Principles of Microeconomics 3 Cr. Hrs.
Pre-requisite
F.A., F.Sc., or equivalent

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 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.

Objectives
The course is designed for beginners with either no formal background or very little acquaintance with economics. The objective is to give the students a clear understanding of the basic concepts, tools of analysis, and terminologies used in microeconomics. Emphasis will be placed on the use of graphs, diagrams, and numerical tables/schedules for exposition. The teacher is expected to draw examples from the surrounding world to clarify the concepts.
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 answer basic microeconomic problems
- To give a broader implication of microeconomics principles and their applications

Relevancy to Sustainable Development Goals (SDGs)

- The subject aligns with the UN's Sustainable Development Goals (SDGs) by equipping learners with tools to address global challenges like poverty, inequality, and environmental sustainability. Concepts like demand, supply, and elasticity are essential for designing policies that promote responsible consumption and production (SDG- 12) and affordable clean energy (SDG-7). Theories of production and cost highlight strategies for sustainable industrial practices (Goal 9) and climate action (SDG-13), while market structure analysis informs regulations to reduce inequalities (SDG-10) and foster economic growth (SDG-8). By understanding economic decision-making and resource allocation, the course fosters innovative solutions for sustainable development.

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 Contents
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 the 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

Recommended Book

- Samuelson and Nordrons - Economics –18th Edition (2004)- McGraw Hill.
- McConnel and Bruce - Principles of Economics -17th Edition (2006)- McGraw Hill.Economics: Principles, Problems, and Policies – 18th Edition
- Lipsey and Goerant-Principles of Economics-10th Edition (2003)- Oxford University Press
- 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

ECO-302 Principles of Macroeconomics 3 Cr. Hrs.

Pre-requisite
F.A., F.Sc., or equivalent.

Course Description

Objectives
The course is specially designed for beginners with 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 of the behavior and performance of the economy as a whole. The objective is to give the students a clear understanding of the basic concepts, tools of analysis, and terminologies used in macroeconomics. Emphasis will be placed on the use of graphs, diagrams, and numerical tables/schedules for exposition. The teacher is expected to draw examples from the surrounding world to clarify the concepts. 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.

Relevancy to Sustainable Development Goals (SDGs)

The subject of macroeconomics closely aligns with several UN Sustainable Development Goals (SDGs) by addressing critical economic issues like growth, inequality, and employment. The study of national income and aggregate demand directly supports **SDG- 8** (Decent Work and Economic Growth) by fostering understanding of economic performance and job creation. Concepts of inflation and unemployment related to **SDG-1** (No Poverty) and **SDG- 10** (Reduced Inequalities) by analyzing their causes and social costs, which are essential for designing policies to promote economic stability and social welfare. Moreover, the exploration of macroeconomic variables, business cycles, and macro-models contributes to sustainable economic planning, addressing challenges linked to inequality and fostering inclusive development

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 business decision-making.
- 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 Contents
Introduction
The economy in aggregate, Complexities of the world of business, Scope of macroeconomics, Brief account of the development of macroeconomics after World War II, Concept of business cycles: Boom and Depression, Concepts of Inflation and Unemployment, Macroeconomic variables and their mutual relationship, Macro-models as an abstraction from the real economy.
National Income
Definition and concept of national income, Measures of national income: Gross Domestic Product (GDP) and Gross National Product (GNP), GDP at factor cost and market prices, 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.
Components of Aggregate Demand
The concepts of open and closed economy models, aggregate markets, product, money, labor, and capital markets, and components of aggregate demand are consumption, investment and government spending, and income and expenditure identities.
Inflation: It Causes, Effects, and Social Costs
Inflation and its causes
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

Recommended Books

- Mankiw, G–Principles of Economics-2ndEdition (2001)- South-West Publishers.
- Samuelson and Nordrons - Economics –18th Edition (2004)- McGraw Hill. Inc.
- Parkin, Michael - Macroeconomics, 7th Edition (2004)- Prentice Hall.
- Miller, R.L.– Economics Today -14th Edition (2005) - Addison Wesley.

ECO-401 Intermediate Microeconomics 3 Cr. Hrs.

Pre-requisite

ECO-301 Principles of Microeconomics

Course Description

Objectives

The objective of the course is to clarify and extend further the microeconomic concepts to develop analytical skills and solve petty problems. In addition to the diagrammatic approach, the students ought to get accustomed to simple mathematics and numerical tools. The teacher is expected to draw examples from the surroundings for exposition.

The students may be given assignments to collect information from the markets and analyze the data. They may have tours to the industrial units and observe the process of production and problems in supply and demand.

Relevancy to Sustainable Development Goals (SDGs)

This microeconomics course aligns with the UN Sustainable Development Goals (SDGs) by equipping learners with tools to analyze resource allocation, market behavior, and decision-making. Consumer and producer theories help promote SDG- 12 (Responsible Consumption and Production) by encouraging efficiency and sustainability in consumption and production. Demand and supply analysis supports SDG- 8 (Decent Work and Economic Growth) by fostering understanding of market equilibria and economic growth mechanisms. Additionally, the study of market structures and pricing strategies equipp in addressing inequalities and fostering fair competition, contributing to SDG- 10 (Reduced Inequalities). These insights are critical for shaping policies that balance economic growth with social equity and sustainability.

Course Contents

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
    - Stackelberg Model
    - Sweezy's Kinked Demand Model

Recommended Books

- Pindyck and Rubinfled with Mehta- Microeconomics- Latest Edition - Pearson Education, Singapore
- Koutsoyiannis, A.- Modern Microeconomics- 2nd edition (1979)- Palgrave, London Macmillan.
- Varian Hall R.- Intermediate Microeconomics: Modern Approach- 6th edition (2002)- W. W. Norton Publishing Company, New York.
- Walter Nicholson and Christopher M. Snyder, Intermediate Microeconomics and Its Application, 11th Edition, Thomson South-Western, ISBN13: 9781133189022

ECO-403 Agricultural Economics 3 Cr. Hrs.

Course Description:

This course introduces students to the fundamental concepts and theories of agricultural economics with a particular focus on the agricultural sector of Pakistan. The course will examine agricultural practices, production, productivity, and their role in the economy. It will also explore issues such as food security, rural development, agricultural policies, and trade in the context of Pakistan's agriculture.

Course Objectives:

- To understand the role and importance of agriculture in Pakistan's economy.
- To study the economic principles underlying agricultural production, resource allocation, and marketing.
- To analyze the impact of government policies on agriculture in Pakistan.
- To explore the challenges related to food security, land reforms, rural development, and environmental sustainability.
- To evaluate the role of agricultural trade in Pakistan's economy.

Relevancy to Sustainable Development Goals (SDGs)

This course on agricultural economics aligns closely with the UN Sustainable Development Goals (SDGs) by addressing key areas critical to sustainable development. It supports SDG-2 (Zero Hunger) through its focus on food security, agricultural productivity, and policies to enhance crop production. By exploring sustainable agricultural practices, water resource management, and environmental impacts, it contributes to SDG- 12 (Responsible Consumption and Production) and SDG- 13 (Climate Action). The course's emphasis on rural development, poverty alleviation, and land reforms ties to SDG- 1 (No Poverty) and SDG- 8 (Decent Work and Economic Growth). Additionally, the examination of agricultural trade and market structures supports SDG- 17 (Partnerships for the Goals), emphasizing global collaboration for sustainable agricultural development. These connections make the course pivotal in addressing the challenges of sustainable agriculture and rural development.

Learning Outcomes:

- Students will gain a deep understanding of the role of agriculture in Pakistan's economy.
- Analyze the effect of government policies on agricultural production, marketing, and trade.
- Understand the critical issues related to land reforms, food security, and rural development in Pakistan.
- Assess the importance of sustainable agricultural practices and the role of water management in Pakistan.

Course Contents

1: Introduction to Agricultural Economics

- Definition and Scope of Agricultural Economics
- Agriculture's Role in Economic Development
- Historical and Current Importance of Agriculture in Pakistan

2: Agricultural Production and Productivity

- Agricultural Production Functions
- Farm Inputs and Output Relations
- Productivity Trends in Pakistan's Agriculture
- Technological Advancements in Agriculture

3: Land Tenure Systems and Reforms in Pakistan

- Land Ownership Patterns in Pakistan
- Land Tenure Systems (Sharecropping, Fixed Rent, etc.)
- Land Reforms in Pakistan and their Economic Impacts
- Issues of Land Inequality

4: Agricultural Policy in Pakistan

- Overview of Pakistan's Agricultural Policies
- Price Support Policies
- Subsidies and Input Pricing
- Agricultural Credit Policies
- Role of Institutions (State Bank of Pakistan, Zarai Taraqiati Bank, etc.)

5: Rural Development and Poverty Alleviation

- Rural-Urban Linkages
- Rural Infrastructure Development
- Agriculture's Role in Reducing Rural Poverty
- Challenges of Rural Development in Pakistan

6: Food Security in Pakistan

- Concept of Food Security
- Challenges to Food Security in Pakistan
- Production and Availability of Major Crops
- Government Initiatives and Policies to Ensure Food Security

7: Water Resource Management in Agriculture

- Importance of Irrigation in Pakistan's Agriculture
- Water Distribution and Usage
- Challenges of Water Scarcity
- Government Policies on Water Resource Management (Indus Water Treaty, etc.)

8: Agricultural Marketing and Price Systems

- Agricultural Market Structures in Pakistan
- Price Formation and Fluctuations
- Supply Chains for Agricultural Products
- The Role of Middlemen in Agricultural Markets

9: Agricultural Trade and International Markets

- Pakistan's Major Agricultural Exports and Imports
- Impact of Trade Policies on Agriculture
- Pakistan's Participation in Global Agricultural Trade
- Trade Agreements Impacting Agriculture (e.g., WTO, SAFTA)

10: Agricultural Credit and Financing

- Sources of Agricultural Credit in Pakistan
- Role of Microfinance in Agriculture
- Challenges in Accessing Agricultural Finance
- Government Credit Schemes and Programs

11: Agricultural Cooperatives and Farmer Organizations

- Role of Cooperatives in Agricultural Development
- Benefits and Challenges of Farmer Organizations
- Case Studies of Successful Cooperatives in Pakistan
- Government Policies Supporting Cooperatives

12: Livestock and Dairy Economics in Pakistan

- Importance of Livestock in Pakistan's Economy
- Production and Marketing of Dairy Products
- Challenges in the Livestock Sector
- Policies and Programs to Boost Livestock Development

13: Environmental Issues in Agriculture

- Impact of Agriculture on the Environment
- Soil Degradation and Erosion
- Climate Change and Its Impact on Agriculture
- Sustainable Agricultural Practices

14: Agricultural Research and Extension Services

- Importance of Research and Development in Agriculture
- Role of Agricultural Universities and Research Institutes
- Agricultural Extension Services in Pakistan
- Challenges in Disseminating Research to Farmers

15: Challenges and Future of Agriculture in Pakistan

- Challenges Facing Agriculture in Pakistan
- Future Prospects of Agricultural Growth
- Policy Recommendations for Sustainable Agricultural Development

Recommended Books

- Penson, J. B., Capps, O. Rossen C. P. & Woodward, R. 2009. Introduction to Agricultural Economics. Fifth Edition. Prentice Hall, New Jersey.
- Ghatak S., and Ingersent K., Agriculture and Economic Development, (Latest Edition), Harvester Press.
- Johnston, Bruce, F & Fellir Kily. Agricultural and Structural Transformation, Economic Strategies in late Developing Countries.
- Khan Mahmood-ul-Hassan. The Economics of Green Revolution in Pakistan, New York, Published 1975.
- Karamat, A., Political Economy of Rural Development in Pakistan, Lahore Vanguard Book House, 1981.
- Shafi M., (1995), Pricing of Farm Produce in Pakistan, Objectives, Practices, and Experiences. Print Associates International, Islamabad.
- Colman D. and Young T., Principals of Agricultural Economics, Markets and Prices in Less Developed Countries, (1989), Cambridge University Press.
- Selected readings on Agricultural Economics and Pakistan's Agriculture Sector.
- Government reports, FAO publications, and research papers on Pakistan's agricultural economy.

ECO-402 Intermediate Macroeconomics 3 Cr. Hrs.

Pre-requisite

ECO-302 Principles of Macroeconomics

Objectives

The objective of the course is to clarify and extend further the concepts of macroeconomics so as they develop the capacity to understand the issues and problems of the economy in a global scenario. In addition to the diagrammatic approach, the students are confronted to simple mathematical and numerical analysis. The teacher is expected to draw examples from the surrounding world for exposition.

The students may be given assignments to collect information about various aspects of the economy. They must read and understand the Economic Survey and Annual Reports of the State Bank of Pakistan. They may be asked to discuss the Federal and Provincial Budgets and to analyze the framework.

Relevancy to Sustainable Development Goals (SDGs)

This course aligns with the UN Sustainable Development Goals (SDGs) by addressing critical global and national economic challenges. It contributes to SDG- 8 (Decent Work and Economic Growth) through the analysis of national income, saving and investment dynamics, and macroeconomic stability. The course's focus on inflation, unemployment, and the Phillips curve directly ties to SDG- 1 (No Poverty) and SDG- 10 (Reduced Inequalities), offering insights into economic fluctuations and policy interventions. Additionally, the emphasis on aggregate demand, supply, and labor market dynamics supports SDG- 9 (Industry, Innovation, and Infrastructure) by promoting sustainable economic strategies. By exploring fiscal and monetary policies, it also informs SDG- 17 (Partnerships for the Goals), highlighting the role of institutions like central banks in achieving economic stability and development.

Course Contents

Introduction

The simple macroeconomic models, variables, and their functional relationships, Introduction to the different Schools of Thought.

Measurement of National Income

The circular flow of National Income, Total Production of Goods and Services, National Income Distributed to the Factors of Production, Demand for Goods and Services, Equilibrium in the Market for Goods and Services

Determination of National Income

The Keynesian model for a simple two-sector economy, inflationary and deflationary gaps, The concepts of multiplier, Interaction of the IS and LM functions and derivation of the aggregate demand function, The impact of changes in public expenditure, taxation and money supply on aggregate demand and the rate of interest.

Theories of Consumption

Consumption as a function of income, Theories of Consumption: The Absolute income, Relative income, Permanent income and Life-cycle income hypotheses, Kuznet’s findings and Reconciliation of Marginal and Average Propensity to Consume.

Saving and Investment

Definition of Investment, Real and Financial investment, Autonomous and Induced investment, Determinants of investment: Lags in Investment Demand, Volatility of Investment, Investment by the Public sector, Equilibrium in the goods market, Derivation of IS curve (graphic), Factors affecting the position and slope of the IS curve, The Saving-Investment gap in developing countries.

The Demand for and Supply of Money

The demand for money, The Liquidity Preference/ Portfolio Balance Approach, the money supply multiplier and the role of banking system, Instruments of credit control and the role of central bank, Equilibrium of the money market, Derivation of LM Curve (graphic), Factors affecting the position and slope of the LM curve.

Aggregate Demand: Building and applying the IS-LM Model: Goods Market and the IS Curve, Money Market and the LM Curve, The Short-Run Equilibrium, Explaining Fluctuations with the IS–LM Model, IS–LM as a Theory of Aggregate Demand

Aggregate Supply and the Labor Market: The aggregate production function, Economic Fluctuations, Demand for Labor in the short run, Labor market and its Equilibrium: The flexible and sticky wage models, The imperfect information model, The short-run aggregate supply function, The concepts of full-employment and underemployment, Supply shocks and stabilization, Interaction of aggregate demand and supply and price determination.

Inflation and Unemployment

Types, causes and measurement of inflation Social Costs of inflation, The Quantity Theory of money, Impacts of inflation on developing economies, Transitory and structural unemployment, The relationship between inflation and unemployment, Phillips curve in the short-run and long-run, Remedial measures to combat inflation and unemployment.

Recommended Books

- Froyen, Richard–Macroeconomics: Theories and Policies–7th Edition (2002) – • Macmillan
- Mankiw, Gregory N.- Macroeconomics –Latest Edition (2007), Worth Publishers, NY.
- Blanchard, Oliver – Macroeconomics -2nd Edition (2000)- Prentice Hall International.
- Dornbusch & Fisher – Macroeconomics- 9th Edition (2004) - McGraw Hill Inc.

- Abel, Andrew, B., Bernanke, Ben S. & Croushore, D. Macroeconomics, Seventh Edition. Addison-Wesley.
- Williamson, Stephen D. Macroeconomics, 4th Edition, Prentice Hall.
- Pakistan Economic Survey (latest), Annual reports of the State Bank of Pakistan, Federal and Provincial Budgets (latest).

ECO-404 World Economic History 3 Cr. Hrs.

Course Description:

This course provides an overview of world economic history, with an emphasis on globalization and its effects on economies across different periods. Using influential works by Joseph Stiglitz, L.S. Stavrianos, and Sven Beckert, the course will explore themes of economic inequality, colonialism, the global economic rift, and the transformation of global markets through industrialization and capitalism.

Course Objectives:

To understand the key economic events that shaped the modern world.
To critically assess the role of globalization in economic development and inequality.
To explore the historical processes that have led to global economic disparities.
To examine how economic policies have worked to either mitigate or exacerbate economic challenges.
To develop analytical tools to assess the historical roots of current global economic issues.

Relevancy to Sustainable Development Goals (SDGs)

The course on World Economic History aligns closely with several United Nations Sustainable Development Goals (SDGs) by addressing critical global economic issues and their historical roots. It supports SDG- 8 (Decent Work and Economic Growth) through the analysis of industrialization, labor exploitation, and global trade dynamics. The exploration of colonialism and economic inequality directly ties to SDG 10 (Reduced Inequalities) by examining historical power imbalances and their lasting effects. Discussions on the environmental costs of economic growth contribute to SDG 13 (Climate Action) and SDG 12 (Responsible Consumption and Production) by highlighting the need for sustainable practices. Finally, the focus on global governance, international institutions, and trade agreements supports SDG 16 (Peace, Justice, and Strong Institutions) and SDG 17 (Partnerships for the Goals) by emphasizing collaborative and equitable economic policies to foster sustainable globalization

Learning Outcomes:

Students will gain an understanding of major economic events and shifts in world economic history.
Ability to critically analyze the role of globalization in shaping modern economic systems.
Students will be able to relate historical economic developments to contemporary global economic issues.
Insight into the workings of international institutions and their historical impact on the global economy.

1: Introduction to World Economic History

What is Economic History?
Key Themes and Periods in World Economic History
Introduction to Globalization and its Discontents
Reading: Stiglitz (2002) - Introduction and Chapter 1.

2: The Rise of Globalization

Globalization in Historical Perspective
The Promises and Failures of Globalization
Economic Discontent and Its Causes
Reading: Stiglitz (2002) - Chapters 2 & 3.

3: Colonialism and Global Economic Inequality

Colonialism and the Global South
Economic Exploitation and Resource Extraction
The Global Rift: North-South Economic Divide
Reading: Stavrianos (1981) - Introduction and Chapters 1 & 2.

4: Globalization and Political Economy

Global Governance and Economic Policies
IMF, World Bank, and Global Discontent
The Role of International Institutions in Shaping the Global Economy
Reading: Stiglitz (2002) - Chapters 4 & 5.

5: The Transformation of Global Markets

The Industrial Revolution and Capitalist Expansion
The Empire of Cotton: Cotton's Role in Shaping Global Capitalism
Global Labor and Resource Exploitation
Reading: Beckert (2014) - Introduction and Chapters 1 & 2.

6: The Economic Impact of War and Crisis

The Great Depression and the Global Economy
Post-WWII Economic Order: Bretton Woods System
Global Economic Crisis of 2008
Reading: Stiglitz (2010) - Chapters 1 & 2.

7: Economic Development in Post-Colonial States

Challenges Facing Developing Economies
Aid, Development, and Debt
Economic Inequality Post-Colonialism
Reading: Stavrianos (1981) - Chapters 3 & 4.

8: Global Trade, Inequality, and Economic Power

Trade Liberalization: Winners and Losers
The Role of Trade in Development

Global Power Structures in Trade Agreements
Reading: Stiglitz (2006) - Chapters 1 & 2.
9: Economic Crises and Policy Failures
The 1997 Asian Financial Crisis
The 2008 Financial Crisis and Its Global Impacts
Financial Markets, Bubbles, and Crashes
Reading: Stiglitz (2010) - Chapters 3 & 4.
10: The Role of International Institutions in Economic History
The Role of the IMF, World Bank, and WTO
Globalization and International Financial Institutions
Policy Failures of International Institutions
Reading: Stiglitz (2002) - Chapters 6 & 7.
11: Economic Growth and Environmental Degradation
The Environmental Costs of Global Capitalism
Global Responses to Environmental Challenges
Sustainable Development and Economic History
Reading: Stiglitz (2006) - Chapter 6; Stavrianos (1981) - Chapter 7.
12: The Global Shift in Manufacturing and Labor
Global Supply Chains
Shift of Manufacturing from the West to the East
Impact on Labor Markets in Developed and Developing Economies
Reading: Beckert (2014) - Chapters 3 & 4.
13: The Global South and Economic Marginalization
Post-Colonial Economic Development
Dependency Theory and World Systems Theory
The Global South’s Place in the Modern Economy
Reading: Stavrianos (1981) - Chapters 5 & 6.
14: Global Capitalism and Economic Power
The Role of the United States and Europe in Global Capitalism
Emerging Markets and the BRICS Countries
Globalization's Future: Power Shifts and Economic Rebalancing
Reading: Stiglitz (2006) - Chapters 8 & 9.
15: The Future of Globalization
Is Globalization Sustainable?
Globalization and Technological Change
Economic Nationalism and Protectionism in the 21st Century
Reading: Stiglitz (2010) - Chapters 5 & 6.

Recommended Books
Stiglitz, J. (2002). Globalization and Its Discontents.
Stiglitz, J. (2006). Making Globalization Work.
Stiglitz, J. (010). Free Fa2ll.
Stavrianos, L. S. (1981). Global Rift: The Third World Comes of Age.
Beckert, S. (2014). Empire of Cotton: A Global History.

ECO-406 International Trade Theory 3 Cr. Hrs.

Objectives
This course is devised to understand current policy debates underlying the issue of trade and development.

Relevance to Sustainable Development Goals (SDGs)

The course on International Trade Theory aligns with several Sustainable Development Goals (SDGs) by exploring how trade influences economic growth, poverty reduction, and global cooperation. Through the study of trade theories, policies, and economic integration, students gain insights into how trade can contribute **to SDG-1 (No Poverty), SDG 8 (Decent Work and Economic Growth**), and **SDG-10 (Reduced Inequalities**) by fostering industrialization, job creation, and income equality. Additionally, it ties into **SDG-9 (Industry, Innovation, and Infrastructure)** by highlighting the role of trade in advancing technological progress and sustainable infrastructure. The course also connects to **SDG 12 (Responsible Consumption and Production)** by addressing the impact of trade policies on resource use and environmental sustainability, while **SDG-17 (Partnerships for the Goals)** is supported through the study of international institutions like the WTO and regional economic integration efforts, promoting global cooperation for sustainable development.

Course Contents

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 the 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 Reasons for 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 the balance of payment

Recommended Books

- Salvatore, D. International Economics, (latest edition).Wiley Global Education.
- Stiglitz, J.,Fair Trade for All: How Trade can Promote Development. Oxford University Press, 2007.
- Caves Richard, E., and Jones Ronald W., World Trade and Payments: An Introduction, Latest Editions. Little, Brown and Company, Boston, Toront. Latest edition..
- Chacholiades, Miltiades, International Trade Theory and Policy (Latest Edition). McGraw Hill Book Company, New York, London, Latest edition.
- Donomick Sal Vatore B., International Economics (Latest Edition), Prentice Hal, Latest edition.
- Grubel Herbert C., International Economics, (Latest Edition) Richard D. Irwin Inc., Honewood, Illinois.
- Peter Holinder & Thomas A., Pugel., International Economics. Latest edition.
- Sodersten B. and Geoffry Read., (1994). International Economics, MacMillan Press Ltd. Latest edition.

- The Global Competitiveness, Report 1999, World Economic Forum, Oxford University Press, Oxford, New York.
- Baldwin Robert L. and Richardson David J., (1986). International Trade and Finance, Little Brown and Company, Boston, Toronto.

ECO-408 Issues in Pakistan Economy 3 Cr. Hrs.

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

COURSE OBJECTIVES The major objective of the course is to give the students a complete comprehension of the socioeconomic issues of Pakistan's economy. The students will be able to:
1. To have familiarity with key features of socioeconomic problems and their solutions in Pakistan
2. To understand the process of emerging issues in Pakistan's economy
3. To analyze the programs dealing with issues in Pakistan's economy

Relevancy to Sustainable Development Goals (SDGs)

The course on Issues in Pakistan's Economy is closely related to several Sustainable Development Goals (SDGs) by addressing key socioeconomic issues and challenges faced by the country. It focuses on SDG- 1: No Poverty through its examination of poverty, income distribution, and poverty alleviation strategies, while also discussing SDG-10: Reduced Inequalities, as it covers gender and regional inequalities and income distribution. The course's focus on inflation, unemployment, and fiscal management directly ties into SDG- 8: Decent Work and Economic Growth, emphasizing the importance of stable economic policies and job creation. By analyzing Pakistan's agricultural and industrial sectors, it also connects to SDG -2: Zero Hunger and SDG-9: Industry, Innovation, and Infrastructure, as it explores agricultural development, land reforms, and industrialization's role in sustainable growth. SDG-3: Good Health and Well-being and SDG-4: Quality Education are addressed in the section on the social sector, examining issues in health and education. The study of external debts, fiscal deficits, and the Structural Adjustment Program aligns with SDG -17: Partnerships for the Goals, highlighting the role of international cooperation (such as with the IMF and WTO) in addressing Pakistan's economic challenges. Lastly, the course's focus on energy crises, urbanization, and law and order touches on SDG -7: Affordable and Clean Energy and SDG -11: Sustainable Cities and Communities, emphasizing the importance of resolving these critical issues for sustainable development.

LEARNING OUTCOMES Upon Successful Completion, the Students Should be able to:
- IDENTIFY the challenges to the economy of Pakistan
- UNDERSTAND the problems in the economy of Pakistan
- Know the state of the 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-PQLI and HDI

2. **Review of Alternative Models of Economic Management**
- Capitalism, Socialism, Islamic Economic system, Mixed Economic system.
- Pakistan's Models of Economic Management

3. **Agricultural Sector of Pakistan**
- 1947-58: The Neglected Agriculture Sector
- The Green Revolution and its Impacts on Pakistan's economy.
- Critical Analysis of Land Reforms in Pakistan.

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 and expenditures
- Financing of Fiscal Deficit
- New NFC Award
- 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**

- Composition of SAP
- Implementation of SAP in Pakistan
- Evaluation of the Results of SAP
- Why Does Pakistan Adopt IMF Program?

8. Performance of Pakistan on Foreign Economic Front

- Understanding BOP accounts and its trends.
- Composition of Exports and Imports of Pakistan.
- Dealing with Globalization and WTO

9. Social Sector in Pakistan

- Health Sector and its Issues
- Education and its Issues
- Gender Inequality
- Regional Inequalities
- Structure of Population
- Urbanization and Housing Problems
- Poverty, Income Distribution, and analysis of two most popular Poverty alleviation strategies

10. Recent Challenges Facing Pakistan Economy

- Law and Order Situation
- Energy Crises
- Rising Circular Debt

Recommended Books

- Aslam M., Perspective on Development Planning In Pakistan, Allied Book Centre, Lahore, 2001-2002.
- Chaudhary M. Aslam and Ahmad Eatzaz: Globalization, WTO and Trade Liberalization in Pakistan, FerozSons, Lahore (2004).
- Ahmed, Vaqar (2017) Pakistan's Agenda for Economic Reform, Oxford University Press.
- Khan, Shahrukh R., 50 Years of Pakistan's Economy – Traditional Topics and Contemporary Concerns. Oxford Univ. Press, Karachi (2000).
- Mahbool-ul-Haq Centre for Human Development (MHCHD), Poverty Profile of Pakistan, (1989) Oxford University Press.
- Human Development In South Asia, Annual Report.
- Saeed, Khawaja Amjad, The Economy of Pakistan, Karachi: Oxford University Press, 2004.
- Zaidi, Akbar, (latest issue), Issues in Pakistan Economy, Oxford Univ., Press, Karachi.

ECO-501 Microeconomic Theory 3 Cr. Hrs.

Pre-requisite

ECO-401 Intermediate Microeconomics

<u>Relevance to Sustainable Development Goals (SDGs)</u>

The **Microeconomic Theory** course is closely tied to several **Sustainable Development Goals (SDGs)** by exploring how individuals, firms, and markets make decisions that impact resource allocation, economic growth, and sustainability. By analyzing **consumer behavior**, **utility (Maximization**, and **Production functions**, it offers insights into poverty reduction SDG-1 economic growth and job creation SDG-8 (Responsible consumption and production (SDG-12). The study of **external costs** and **market constraints** supports the transition to sustainable practices, while the analysis of **game theory** encourages strategic partnerships (SDG-17). Additionally, it informs policies to reduce inequalities (SDG -10), promote sustainable industries (SDG-9), and foster innovation, helping align economic decision-making with long-term sustainable development goals.

Course Contents

Introduction

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

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)
- The 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)

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 unction, Leoetief 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

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)

Introduction to Game Theory

Types of Games
Cournot Competition and Bertrand Competition

Recommended Books

- Nicholson, Walter - Microeconomic Theory: Basic Principles and Extensions- Latest Edition Thomson & Learning Inc.
- Varian H. R. Microeconomic Analysis, Latest Edition, W.W. Norton and Company, New York.
- Henderson & Quandt - Microeconomic Theory: A Mathematical Approach- 3rd Edition (1980)– McGraw Hill International
- Silberberg, E. & Suen, W.- The Structure of Economics: A Mathematical Analysis- 3rd Edition (2001) – McGraw Hill International
- Koutsoyiannis, A.- Modern Microeconomics- 2nd edition (1979)- Palgrave, London Macmillan.

ECO-503 Macroeconomic Theory 3 Cr. Hrs.

Objectives

The course is designed for senior-level undergraduate students. The objective is to enhance their analytical skills and to further clarify their macroeconomic concepts with the quantitative tools at hand. They must have a strong theoretical foundation so as to understand the real problems of the economy with particular emphasis on inflation, unemployment, instability, deficit, debt, etc., with which the developing countries are confronted at present.

Homework: The students may be given frequent assignments and exercises from the texts, Economic Survey, reports of the State Bank, and articles appearing in the press. The students should be motivated to use computers for solving the assignments.

Relevance to Sustainable Development Goals (SDGs)

The **Macroeconomic Theory** course is closely linked to various **Sustainable Development Goals (SDGs)** by providing a framework to analyze and address key economic issues, such as inflation, unemployment, and government debt, which are crucial for sustainable development. The focus on **economic growth** and the factors that influence it—such as capital accumulation, technology, and human capital—aligns with **SDG-8: Decent Work and Economic Growth** and **SDG-9: Industry, Innovation, and Infrastructure**. The examination of **macroeconomic policies** and their effects on fiscal deficits, government debt, and stabilization supports **SDG-10: Reduced Inequalities**, as it provides insight into equitable economic policy-making. Additionally, the course's exploration of **international macroeconomics** and **exchange rates** touches on **SDG-17: Partnerships for the Goals**, emphasizing the importance of international trade, capital flows, and cooperation for achieving sustainable development. The study of financial crises and the role of financial systems connects to **SDG- 9** by underscoring the need for resilient financial infrastructure. Ultimately, the course helps students understand how sound macroeconomic policies and growth strategies can contribute to broader societal goals, such as poverty reduction, sustainable industries, and global cooperation.

Course Contents

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

Recommended Books

- Branson, Willium – Macroeconomics: Theory and Policy – 3rd Edition (1989) or latest Harper and Row, New York.
- Froyen, Richard–Macroeconomics: Theories and Policies – 7th Edition (2002) Prentice Hall
- Gupta, G.S.- Macroeconomics: Theory and Applications- 2nd Edition (2004) Tata McGraw Hill Publishing Company, New Delhi
- Scarth, Willium,M – Macroeconomics: An Introduction to Advanced methods 2nd Edition (1996)- Dryden Press: Harcourt Brace & Company.
- Romer, David - Advanced Macroeconomics -(2001)- McGraw Hills, New York.
- Mankiw, Gregory- Macroeconomics- 5th Edition (2003)- Worth Publisher, New York.

ECO-505 Mathematical Economics-I 3 Cr. Hrs.

Objectives

The course is designed to enable the students to use mathematical tools in clarifying their economic concepts and solving problems. This is because economic analysis requires extensive use of mathematics in the present-day world of complexity. Mere logical reasoning and a diagrammatic approach are perhaps not sufficient. This is true for positive economics in particular. As such, economics students have to learn and apply mathematics alongside their theoretical underpinnings.

Homework: The students may be given assignments and exercises from the texts and weekly or fortnight class tests, including MCQ and confronted with extensive practice.

Relevancy to Sustainable Development Goals (SDGs)

Mathematical economics contributes to the Sustainable Development Goals (SDGs) by using mathematical models and optimization techniques to analyze complex economic systems and design efficient policies. It helps in poverty reduction (SDG- 1) by optimizing income distribution and welfare programs, supports food security (SDG -2) by modeling agricultural systems, and aids in health policy design (SDG- 3) through cost-effective healthcare models. It also optimizes educational resource allocation (SDG -4), water management (SDG -6), and clean energy policies (SDG -7). Additionally, mathematical economics informs sustainable production (SDG -12), climate action (SDG -13), and inequality reduction (SDG -10), enabling more efficient, evidence-based decision-making to achieve the SDGs.

Course Contents

The Nature of Mathematical Economics

Pure and applied mathematics, The use of mathematical tools in social sciences, particularly in economics, Economic theory (logical argument) as the description of some kind of relationship between variables, Mathematical Support: Expression of theory in functional form, Explaining properties of economic parameters like elasticity, the 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.

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, The effect of an excise tax on market equilibrium, National Income determination: Closed economy with goods and money markets.

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, Ad-joint and inverse of a matrix, Properties of inverse of a matrix, Solution of linear equations: the Gaussian method, the Cramer's rule and Inverse matrix method, Economic applications: Solution of market models, national income models, and the normal equations of the Least-Squares econometric model via matrix approach.

Differentiation

The concept of derivations, Functions of one variable and 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, Partial differentiation & its rules, Hessian and Jacobian determinants, Higher order & cross partial derivatives (Young's theorem), Total differentials & total derivatives, Optimizing cubic functions.

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, Partial and Substitution elasticities, 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.

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.

Recommended 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 (1993) or latest – McGraw Hill Publishing Company.
- Dowling E. T.- Mathematics for Economists, Schaum's Outline Series- 3rd Edition (2001) – McGraw Hill Publishing Company.
- George, Alvery et al – Essentials of Mathematics with Business Applications- 5th Edition (1995) - 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.

ECO- 507 Population Economics 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

The **Population Economics** course is closely related to various **Sustainable Development Goals (SDGs)** by exploring how demographic factors like fertility, mortality, migration, and aging affect economic and social development. Understanding **population dynamics** aligns with **SDG -3: Good Health and Well-being**, especially in measuring fertility and mortality trends, and **SDG- 10: Reduced Inequalities**, by analyzing population composition and its impact on social structures. The study of **urbanization** and its demographic components supports **SDG- 11: Sustainable Cities and Communities**, as it explores the challenges and opportunities of rural-to-urban migration and the growth of cities. The course also addresses the **impact of aging** on resource sustainability, linking to **SDG-12: Responsible Consumption and Production** by analyzing how an aging population can influence resource use. Furthermore, the focus on **population policies** and their role in shaping demographic processes ties into **SDG- 1: No Poverty** and **SDG- 2: Zero Hunger**, as effective population management can promote sustainable economic growth and poverty alleviation. Ultimately, the course emphasizes how understanding population trends is vital for crafting policies that foster inclusive, equitable, and sustainable development.

Course Contents

Introduction

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

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

Fertility

- Understanding the Concept
- Measuring Fertility
- Period Measures of Fertility
- Cohort Measures of Fertility
- Fertility Trends
- Fertility & Population Growth in Pakistan

Mortality

- Components of Mortality
- Measuring Mortality
- Differentials in Mortality
- Estimates of Mortality in Pakistan

Migration

- Definition & Measurement
- Causes of Migration
- Internal Vs International Migration
- Individual & Social Consequences of Migration
- Migration Trends in Pakistan: Causes & Consequences

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

Population Growth & Ageing

- Demographic Composition of the Elderly
- Dynamic Scenarios, Biological & Social Aspects of Aging
- Impact of Aging on Sustained Stock of Renewable Resources

Family taxation

- Income Taxation with Two-Person Households
- The Fiscal Treatment of Family Size

Urbanization

- Demographic Components of Urbanization
- Internal Rural-to-Urban Migration
- Impact of Population Processes and Urbanization in Pakistan

Population Policy

Need of Population Policy
Influencing Population Processes
Case Studies of Pakistan

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.
- Balestrino, A. (2023). The Economics of Family Taxation. Population Economics. Springer Cham Publisher. DOI: https://doi.org/10.1007/978-3-031-28170-9
- Yakita, A. (2017). *Population aging, fertility and social security*. Cham, Switzerland: Springer International Publishing.DOI: https://doi.org/10.1007/978-3-319-47644-5

ECO-509 International Finance 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

The International Finance course is integral to several Sustainable Development Goals (SDGs) by examining the global financial systems and their impact on economic stability, growth, and development. The study of balance of payments, foreign exchange markets, and international institutions like the WTO and IMF supports SDG- 8: Decent Work and Economic Growth, as it provides insights into the global economic environment and its effects on trade, investment, and employment. Understanding exchange rate theories and economic shocks aligns with SDG -10: Reduced Inequalities, as it highlights the role of monetary policies in stabilizing economies, particularly in developing countries. The focus on adjustment policies and their role in addressing external imbalances connects to SDG- 1: No Poverty and SDG -2: Zero Hunger, as it emphasizes the importance of financial stability in promoting inclusive economic growth. Additionally, the exploration of the role of fiscal and monetary policies to stimulate growth and manage external shocks contributes to SDG -9: Industry, Innovation, and Infrastructure, as it underpins strategies for resilient economic systems. Ultimately, the course highlights how international finance mechanisms and policies can help countries integrate into the global economy while pursuing sustainable development.

Course Contents

- Introduction to international finance concepts: balance of payments, foreign exchange rate and market, arbitrage, hedging, foreign bonds, Euro-bonds, speculation, etc.
- Description of the balance of payments and its various accounts: current, capital and official reserve accounts
- Illustration of foreign exchange markets: spot and forward markets, forward premium and discount
- Interest arbitrage and efficiency of foreign exchange markets: covered & uncovered interest arbitrage, Covered interest arbitrage parity line & margin.
- Theories of exchange rate/balance of payments determination: modern theories (Purchasing Power Parity, monetary approach to BOP, Portfolio balance model)
- Traditional theories of BOP: price adjustment mechanism (elasticity approach to BOP) and income adjustment mechanism (Absorption approach to BOP).
- 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.
- Prices and output in an open economy: aggregate demand and aggregate supply model under fixed exchange rate and flexible exchange rate systems.
- Economic Shocks (real & nominal) and aggregate demand in open economy in long run
- Role of fiscal and monetary policies in aggregate demand in open economy.
- Role of macroeconomic policies to stimulate growth and adjust to supply shocks in open economy.
- Introduction to European Monetary System (1979-1998), Exchange rates bands: adjustable pegs, crawling pegs and managed floating

Recommended Books:

- • Steve Suranovic, International Finance: Theory and Policy latest edition
- • Salvatore, D. International Economics, Wiley.
- • Madura, International Financial Management 8th, Ed. Thomson/Southwest

ECO-511 Health Economics 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

The **Health Economics** course aligns closely with several **Sustainable Development Goals (SDGs)** by examining the economic aspects of healthcare systems and their role in promoting social and economic well-being. By focusing on resource allocation, healthcare production, and cost-effectiveness analysis, the course supports **SDG- 3 (Good Health and Well-being)**, particularly in understanding how efficient healthcare systems can reduce inequalities in health outcomes and improve access to essential services. The exploration of healthcare financing and government roles contributes to **SDG- 10 (Reduced Inequalities)** by addressing disparities in healthcare access, especially in developing countries. Additionally, the course's focus on economic evaluation and the implications of health policies ties into **SDG-9 (Industry, Innovation, and Infrastructure)** by fostering innovative solutions in healthcare service delivery and financing mechanisms. Through a comparative analysis of healthcare systems, the course also touches on **SDG-1 (No Poverty)**, as it highlights how economic factors influence health outcomes and the ability of individuals to access necessary healthcare, which in turn impacts their economic stability. Moreover, by examining the pharmaceutical market and the future of health reform, the course connects to **SDG-17 (Partnerships for the Goals)**, emphasizing the importance of international collaboration in achieving sustainable health outcomes globally.

- This course is an introduction for advanced economics students to contemporary theoretical analysis of empirical evidence on and policy debate about:
- what and who produces health, how it is produced, variations in its production, consequences of its production or lack of production

Course Contents

- 1. Introduction
- Importance of economics to the resource allocation, planning, and management of the health sector.
- The basics of economics, such as demand, supply, normative versus positive economics, supply and demand analysis, and need and demand analysis, are all explored in the context of health economics, making the theoretical concepts directly applicable to real-world health sector scenarios.
- Market equilibrium and Pareto efficient price mechanism in the health sector.
- 2. The fundamental microeconomics of healthcare
- The fundamental microeconomics of healthcare, exploring questions such as:
- Is health care really different from other commodities?
- Is this market failure irreparable, and what does it imply for market versus social or state provision of health care?
- Have we learned more since Arrow’s basic insights?
- Health care insurance as a special sub-topic of insurance.
- The health care market:
- Supply, demand, industrial organization.
- Health care is a part of public economics. What is happening in Russia? What could happen?
- How should healthcare systems be compared? Cost-effectiveness and the role of the economist in the health sector (Cost-Benefit Analysis).
- Measuring Health :
- Adjusted Life Years: QALYs, DALYS, life years. How far have we come? Can we really measure cost-effectiveness?
- How health and health care has changed in the last century, the last two decades, the last year: an international overview.
- Demographers’ measures, particularly life expectancy.
- 3. Features of the health care service and its relation with economic development.
- Meaning and basis of cost as a concept.
- Possibility of using cost concepts to undertake economic evaluation.
- Cost-effectiveness analysis in assessing the performance of health care activities.
- Opportunity costs, economic evaluation, and calculation of future benefits and costs.
- Direct, indirect, and intangible costs. Methods needed for costing in an economic evaluation. Examples of costing methods and cost data types.
- Health utilities and contingent valuation, their calculation and potential problems with their use.
- 4. Health Care Financing
- Health utilities and contingent valuation, their calculation and potential problems with their use.
- Factors that influence the choice of a financing system and the different sources of financing in the health service sector.
- Strong and weak points of different financing mechanisms.
- 5. Role of Government in the Health Sector
- Problems of Health Policy and the Role of government in affecting the resource allocation pattern in health and the extent to which it can influence the sector's overall performance.
- Analyze the possible measures that can be taken to alleviate the health problems of developing countries.
- Appreciate the problems of health policy in developing countries.

- The alternate private/public mix which has been developed in different countries.
- 6. Studies of the production of health.
- What makes individuals and populations healthier or unhealthier?
- Life expectancy mortality, morbidity, and X-Adjusted Life.
- The distinction between the production of health and the production of health care is also a distinction between the production of health and the production of utility.
- 7. The pharmaceutical market.
- 8. Health in transition.
- 9. The future of health care reform in the world, and particularly Pakistan.

Recommended Books

- • Andargie, G. (2008). Introduction to Health economics.
- • The Economics of Health is one of the newest fields to have its own North-Holland 2-Volume Handbook, and remains somewhat unstandardized, with major variations in subject matter between countries and departments.
- • Bootman JL, Townsend RJ, McGhan WF. (2005). Principles of Pharmacoeconomics. Harvey Whitney Books, Cincinnati.
- • Drummond MF, O'Brien BJ, Stoddart GL, Torrance GW (1998). Methods for the Economic Evaluation of Health Care Programmes. 2nd edition, Oxford University Press, Oxford.
- • Duckett SJ (2004). The Australian Health Care System. Oxford University Press, Oxford.
- • Gold MR, Siegel JE, Russell LB, Weinstein MC (1996). Cost-Effectiveness in Health and Medicine. Oxford University Press, Oxford.
- • Petitti DB (2000). Meta-Analysis, Decision Analysis, and Cost-Effectiveness Analysis:
- • Methods for Quantitative Synthesis in Medicine, 2nd edition. Oxford University Press, Oxford.
- • Rychlik R (2002). Strategies in Pharmacoeconomics and Outcomes Research. The Haworth Press, New York.
- • Vogenburg, FR (2001). Introduction to applied pharmacoeconomics. McGraw Hill, New York.
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ECO-502 Development Economics 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

Development Economics course aligns with several **Sustainable Development Goals (SDGs)** by addressing key aspects of economic growth, poverty reduction, and sustainable development. It emphasizes **SDG-1 (No Poverty)** through the study of poverty traps, inequality, and policies for poverty alleviation, and explores the role of education and health in reducing poverty, directly contributing to **SDG- 3 (Good Health and Well-being)** and **SDG- 4 (Quality Education)**. The course's focus on human capital, gender gaps in education and health, and rural-urban migration relates to **SDG -5 (Gender Equality)** and **SDG- 8 (Decent Work and Economic Growth)**, promoting inclusive and sustainable development. By examining environmental sustainability, the impact of climate change, and policies for sustainable development, it contributes to **SDG- 13 (Climate Action)** and **SDG -15 (Life on Land)**. Additionally, the study of international trade, development aid, and the role of institutions aligns with **SDG- 10 (Reduced Inequalities)** and **SDG -17 (Partnerships for the Goals)**, focusing on fostering global cooperation and reducing economic disparities. The course also ties into **SDG -11 (Sustainable Cities and Communities)** through its analysis of urbanization and the challenges of developing sustainable cities. Finally, it addresses **SDG -9 (Industry, Innovation, and Infrastructure)** by analyzing the role of institutions, infrastructure, and innovation in fostering economic development.

Course Contents

An Overview of Development:

Introduction to Economics, Institutions, and Development

- Why is Development Economics important to study?
- How does Economic Development differ from Development Economics?
- Definition and understanding of Development Economics
- Comparison of developed and underdeveloped nations.
- Why are low-developed countries unable to adopt developed country models? Where does Pakistan stand?

Classical Theories of Development and Contemporary Models:

- Linear Stages of Growth Model: Rostow's Stages of Growth, Harrod-Domar Model
- Structural-Change Models: Lewis Two-Sector Model
- International-Dependence Models: Neocolonial Dependence, False Paradigm, and Dualistic Development
- Neoclassical Counter-Revolution: Free Market Approach
- New Growth Theory
- Todaro’s Theory of Migration and Development

Poverty, Inequality, and Development

- Measuring Inequality and Poverty: Gini Coefficient, Poverty Lines, Lorenz Curve
- Economic Characteristics of Poverty Groups
- Poverty Traps and the Vicious Circle of Poverty
- Policies for Reducing Inequality and Poverty

Population Growth and Economic Development

- Population and Development: The Demographic Transition
- Malthusian Population Theory
- Causes and Consequences of High Fertility in Developing Countries
- Policy Approaches to Population Growth Control

Human Capital: Education and Health in Economic Development

- Role of Human Capital in Development
- Education and Health as Joint Investments for Development
- Gender Gap in Education and Health
- Policy Initiatives for Enhancing Education and Health Outcomes

Urbanization and Rural-Urban Migration

- Rural-Urban Migration Models
- Todaro Model of Migration
- Urbanization and its Challenges in Developing Countries
- Urban Informal Sector and Policy Implications

Agriculture and Rural Development

- Role of Agriculture in Economic Development
- Agricultural Transformation and Policy
- Agricultural Productivity and Poverty Alleviation
- Rural Development Strategies

Environment and Development

- Environmental Sustainability and Economic Growth
- The Impact of Climate Change on Development
- Population-Environment Nexus
- Sustainable Development Goals (SDGs) and Environmental Policies

International Trade and Economic Development

- The Role of Trade in Development
- Export Promotion vs. Import Substitution

- Trade Policies for Developing Countries
- Globalization and Development

Development Aid and Finance

- Foreign Aid: Types and Effectiveness
- Role of International Organizations (IMF, World Bank)
- Debt Crisis and Development Finance
- Microfinance and Development

Institutions and Economic Development

- Role of Institutions in Economic Development
- Good Governance, Corruption, and Development
- Institutional Change and Development Policy

Regional Development and Globalization

- Impact of Globalization on Developing Countries
- Regional Development Patterns
- Globalization, Inequality, and Social Justice
- Policies for Inclusive Development in a Globalized World

Case Studies in Economic Development

- Case Study of Asian Economies: South Korea, China, India
- Case Study of African Economies
- Latin American Development Experiences

Policy Approaches to Economic Development

- Growth Strategies for Developing Countries
- State vs. Market in Development Policy
- Sustainable Development and Growth
- Evaluation of Policy Effectiveness

Conclusion and Future of Development Economics

- Challenges for Development in the 21st Century
- Future Trends: Technological Change, Global Integration, Climate Challenges
- Final Review inline with Pakistan's Economic Condition and Solution

Recommended 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 Fails: 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
- Balasubramanyam V. and Lall, S. (Latest eds.), Current Issues in Development Economics. McMillan, London.
- Chaudhary M. Aslam and Eatzaz, A., (2004), Globalization: WTO, Trade and Economic Liberalization in Pakistan, Ferozsons, Lahore, Pakistan.
- Cypher J. M. and Dietz James L., (2004), The Process of Economic Development, Routledge. Tayl or Francis Group, London/New York.
- Ghatak Subarta, (2003), Introduction to Development Economics, Routledge, Taylor and Francis Group, London/New York.
- Herrick B. and Kindleberger C., (latest eds.). Economic Development. McMillan, New York.
- Mahboob-ul-Haq Center for Human Development (MHCHD). Human Development in South Asia, Annual Reports, Islamabad.
- Meier Gerald M., Leading Issues in Economic Development, (Latest Issue), Oxford University Press. The

ECO-504 Econometrics-I 3 Cr. Hrs.

Relevancy to Sustainable Development Goals (SDGs)

Econometrics plays a crucial role in achieving the **Sustainable Development Goals (SDGs)** by using statistical and mathematical techniques to analyze economic data, quantify relationships, and evaluate the impact of policies. It helps track progress on SDGs like poverty reduction (SDG 1), economic growth (SDG 8), and environmental sustainability (SDGs 12, 13), by assessing the effectiveness of interventions such as healthcare programs (SDG 3), education policies (SDG 4), and clean energy investments (SDG 7). By providing evidence-based insights, econometrics aids in making informed decisions, optimizing resource allocation, and designing policies that support sustainable development.

Course Contents

An Introduction to Econometrics

Why Study Econometrics? Methodology of Econometrics, Types of Econometrics, Data types and its sources

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 regression parameters using calculator and using computer program, Interpretation of regression coefficients.

Classical Normal Linear Regression Model (CNLRM)

Normality assumption, Classical Normal Linear Regression Model (CNLRM) its assumptions and properties, introduction to Maximum Likelihood Estimator.

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 (R2) and Adjusted R^2, Testing the significance of Regression coefficients (t-test), Testing the overall significance (F-test) of the model

Few Extensions of the Linear Regression Model

a) 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

b) Issues related to Functional Forms of Regression Model: Reviewing the functional form assumption of a regression model, regression through origin, interpreting regression coefficients of variables with different scales and units of measurements, Elasticity and log-log or semilog models

Issues in Model Specification: Model selection criteria, Types of specification errors, Consequences of model specification errors, Tests of specification errors, Errors of measurement.

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

Note: Organizing few hands-on sessions using real life data and estimation through computer programs are appreciated to better motivate participants.

Recommended Books

- Gujrati, D.J. - Basic Econometrics – 4th Edition (2003)- McGraw Hill Company.
- Dougherty, Christopher – Introduction to Econometrics – 2nd edition (2002) Oxford University Press.
- Koutsoyiannis, A.- Theory of Econometrics - 2nd Edition (1977) - McMillan.
- Wonnacot & Wonnacot –Econometrics – 2nd Edition (1970)-John Wiley, New York.
- Pindyck & Rubinfeld- Econometric Models & Economic Forecasts- 3rd Edition (1992)- McGraw Hill Inc.

Maddala, G.S. – Econometrics - (1988) - McGraw Hill Company.

ECO-506 Mathematical Economics-II 3 Cr. Hrs.

Objectives

Objectives: The course is designed for senior undergraduates more interested in quantitative economics. The objective is to confront the students to advanced mathematical techniques so as to enable them handle economic models, interpret the results and solve complex problems.
The students may be given assignments and exercises from the texts and weekly or fortnight class tests and quizzes including MCQ's.

Relevancy to Sustainable Development Goals (SDGs)

Mathematical economics contributes to the Sustainable Development Goals (SDGs) by using mathematical models and optimization techniques to analyze complex economic systems and design efficient policies. It helps in poverty reduction (SDG- 1) by optimizing income distribution and welfare programs, supports food security (SDG -2) by modeling agricultural systems, and aids in health policy design (SDG- 3) through cost-effective healthcare models. It also optimizes educational resource allocation (SDG -4), water management (SDG -6), and clean energy policies (SDG -7). Additionally, mathematical economics informs sustainable production (SDG -12), climate action (SDG -13), and inequality reduction (SDG -10), enabling more efficient, evidence-based decision-making to achieve the SDGs.

Course Contents

Complex Number and Circular Functions

Imaginary and Complex Numbers, Complex Roots, Circular Functions, Properties of Sine & Cosine functions, Eular and Maclaurin series, Alternative representation of Complex Numbers.

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 of cash flow, P.V. of a Perpetual Flow, The Domar growth model.

Differential Equations

(i) First Order Linear Differential Equations

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, Non-linear differential equations of the first order and first degree, Bernoulli Equation, Separable Variables, Economic Application: Dynamics of market models, Solow growth model.

(ii) Higher Order Differential Equations

Solution and Verification of second order linear differential equations with constant coefficients and constant terms, Real and imaginary roots, Distinct, repeated roots and complex roots, Dynamic stability of equilibrium, Economic applications: Market models with price expectations, The Interaction of inflation and unemployment in continuous time, Higher order differential equations, Convergence and the Routh theorem, Solution of simultaneous difference equations.

Difference Equations

(i) 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.

(ii) 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, Higher order difference equations and their solutions, Convergence and the Schur's theorem, Solution of simultaneous difference equations.

Recommended Books

- Chiang A.C and Kevin Wainwright - Fundamental Methods of Mathematical Economics- 4th Edition (2005) McGraw Hill Publishing Company.
- Gandalfo, G – Economic Dynamics: Methods and Models – (1983 or Latest Edition) North Holland Publishing Company
- Dowling Edward T. -Mathematics for Economics: Schaum Series – (1981).
- 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 – (1996) - Addison & Wesley Publishers.

Shone, R – Economic Dynamics: Phase Diagrams and their Economic Applications- (1997)- Cambridge University Press.

ECO-508 Environmental and Natural Resource Economics 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

The Environmental and Natural Resource Economics course directly contributes to several Sustainable Development Goals (SDGs) by addressing the interconnections between economic activities, environmental protection, and resource management. It relates to SDG- 13 (Climate Action) through the study of climate change, international environmental agreements, and strategies for sustainable development. The course's focus on pollution, its impacts on human health, and models for pollution control aligns with SDG- 3 (Good Health and Well-being) and SDG -6 (Clean Water and Sanitation), emphasizing the importance of clean environments for public health. It also supports SDG -7 (Affordable and Clean Energy) by addressing the economics of energy use and pollution control, and SDG -15 (Life on Land) through the discussion of conservation and preservation of natural resources. The course's examination of market failures, externalities, and property rights ties into SDG -12 (Responsible Consumption and Production), promoting sustainable management of resources. Additionally, the focus on the environment in developing economies and the role of public and private efforts in environmental protection is connected to SDG- 1 (No Poverty) and SDG- 10 (Reduced Inequalities), advocating for equitable solutions to environmental issues. Finally, the course's exploration of global environmental issues, such as ozone depletion and global warming, links to SDG- 17 (Partnerships for the Goals) by emphasizing international cooperation and policy coordination.

Course Contents

Introduction and Awareness

What is Economics of Environment. Historical Framework for Environmental Protection, Economy–environment interdependence, Natural resource economics: overview, Distinction between natural resource economics and environmental economics. First and the second laws of thermodynamics. The fundamental balance, Natural Resources: Types, Classification and Scarcity.

Reasons of Studying Environmental and Natural Resource Economics

Market Failure External costs and external benefits, Property rights, open access resources, tragedy of the commons.

Analytical Tools: An Environment

Supply and Demand Issue: Cost of Controlling Environment, Benefit – Cost and its Estimation. Willingness to Pay. Equilibrium Principle Technology and Equi. Marginal Principles, Marginal Cost and Supply, Economic Efficiency and Markets. Equity and Social Efficiency.

The Economics of Environmental Quality

Pollution and Impacts on Human Life, quality of life and Environment Quality, General Models of Pollution Control. Emission Reduction and Equi. Marginal Principle. Long Run Sustainability through Pricing Mechanism.

Valuing the Environment and Benefit Cost Analysis

Measuring environmental benefits: Contingent valuation, the travel cost method and the hedonic approach. Benefit Cost analysis: Costs: The value of life, health, safety and risk. Pigovian Analysis, The Coase Theorem.

Economic Development and the Environment

General considerations, Environmental degradation in developing economies. Economy and Environment. The Pollution Haven hypothesis. The role of developed countries.

Sustainability, Conservation and Preservation

The origins of the sustainability problem, the pursuit of sustainable development, Sustainability, Conservation, and Preservation.

Environment and Pakistan

Emergence of Environment Issue in Pakistan, Industrial Waste, Urban Waste and Agricultural Issues Related to Pesticides use, Salinity and Water Logging. Urban Environmental Issues. Public and Private Efforts to Improve Environment Quality and Impacts. Air pollution in Pakistan. Public Policies and Awareness to Control Pollution. Environmental Policy and Strategy in Pakistan.

The Global Environment

Ozone Depletion, The Economics of Global Warming. Keyoto – Protocol and Issues. International Environmental Agreements. UN and Environmental Cooperation. International trade and the Environment. Impacts of Awareness Policy.

Advanced topics in environmental economics

- The Science of Climate Change, Negotiations over Climate Change Policy, Creating Incentives for Participation in Climate Change
- Toxic Substances and Environmental Justice
- Water, and mobile source air pollution

Recommended Books

- Field, B.C and M.K Field, Environmental Economics: An Introduction (3rd Edition) 2002 New York: Mc Graw Hill
- Barry C. Field, Environmental Economics, An Introduction, McGraw Hill (Latest Edition).
- Chapman, D. Environmental Economics: Theory Application and Policy, Latest eds. Massachusetts: Addison- Wesley
- Hussen A. (2003), Principles of Environmental Economics, Routledge Publishers.

- Baker Steve, Environmental Economics, (2003) Dominant Publisher and Distributors, New Delhi.
- 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.

ECO-510 General Equilibrium and Welfare Economics 3 Cr. Hrs.
Prerequisite: ECO-401 Intermediate Microeconomics

Relevance to Sustainable Development Goals (SDGs)

The General Equilibrium and Welfare Economics course is closely aligned with several Sustainable Development Goals (SDGs), particularly through its exploration of efficient resource allocation and welfare maximization. The course's emphasis on Pareto efficiency and social welfare functions directly relates to SDG-10 (Reduced Inequalities) by addressing the equitable distribution of resources and the optimal allocation of wealth. The study of general equilibrium, market failures, and the effects of monopolies and externalities ties into SDG- 12 (Responsible Consumption and Production), as it highlights how markets can be regulated to promote sustainable and equitable consumption. Additionally, its focus on welfare economics and policies for welfare maximization supports SDG- 1 (No Poverty), as efficient allocation can reduce poverty by optimizing the use of resources. The application of general equilibrium theory to international trade (Heckscher-Ohlin Theory) and global economic coordination relates to SDG- 17 (Partnerships for the Goals) by fostering cooperation among countries to achieve sustainable global trade practices. Furthermore, the course's discussions on public goods, externalities, and income distribution are essential to understanding how to balance SDG- 3 (Good Health and Well-being) and SDG- 8 (Decent Work and Economic Growth), ensuring that economic growth and social welfare are both inclusive and sustainable.

Course Contents
Introduction to General Equilibrium
Complete Markets, Spot Market vs Forward Market, Partial versus general equilibrium, the Walrasian System, Exchange Economy, Production Economy
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
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
Application of General Equilibrium Theory some applications
Heckscher-Ohlin Theory of Trade, Stolper Samuelson Theorems, Problems of the general equilibrium model
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, The compensation principle and the social welfare function, 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, The Direction of Welfare Change: Welfare Criteria, The Magnitude of Welfare Change: Consumer Surplus, The Optimal Distribution of Income.
Recommended 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.
- Mas-Colell, Whinston and Green, Microeconomics Theory, Oxford University Preses, 1995. Other Reference Books for general equilibrium.
- Boadway, R. (1981). Welfare Economics: Introduction and Development of Basic Concepts.
- Arrow and Hahn, General Competitive Analysis, San Francisco, Holden-Day 1971.
- Jehle, G.A., & P.J. Reny, Advanced Microeconomics, Theory, Addison Wesley, 2001 (2nd ed.)

ECO- 512 Managerial Economics 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

The Managerial Economics course is highly relevant to multiple Sustainable Development Goals (SDGs), especially through its focus on efficient decision-making, resource optimization, and market structures. The course's emphasis on economic optimization and cost minimization supports SDG -12 (Responsible Consumption and Production) by encouraging firms to operate efficiently, reduce waste, and make sustainable choices in resource allocation. Topics like market structure, pricing strategies, and monopolistic competition directly relate to SDG- 8 (Decent Work and Economic Growth) by addressing how firms can foster competitive markets and drive economic growth through innovation and pricing strategies that benefit society. The inclusion of consumer behavior and demand forecasting connects to SDG- 3 (Good Health and Well-being), as understanding consumer needs can guide firms to produce healthier products and services. The course's exploration of public goods, externalities, and government policy ties to SDG- 16 (Peace, Justice, and Strong Institutions) by addressing the role of regulation in ensuring equitable market outcomes and sustainable development. Moreover, the focus on capital budgeting, investment decisions, and business strategy aligns with SDG -9 (Industry, Innovation, and Infrastructure) by preparing future managers to make decisions that support long-term innovation and infrastructure development. Finally, the incorporation of decision-making under uncertainty encourages managers to consider environmental and social risks, further contributing to a sustainable and resilient economy, supporting SDG- 13 (Climate Action).

Course Contents:

The Fundamentals of Managerial Economics:

The definition, Nature and Scope of Managerial Economics, Firms and Managerial Objectives, The Managerial decision making process, Economic Optimization, Firms and Profits, Tools of Economic Analysis, Marginal Analysis, Theory of the firm. Profit maximization, Cost Minimization. Economic optimization. Economic relations of variables. The Incremental concept in Economic Analysis. Demand, Supply and Equilibrium

Market Forces: Demand and Supply, Quantitative Demand Analysis:

Demand, Supply, Demand Analysis, Elasticity, Price elasticity of demand and supply and use of derivative in finding elasticity of demand & supply, Point & Arc elasticity; income elasticity of demand, cross-price elasticity of demand, Promotional elasticity of demand, Concept of partial elasticity, Measuring Economic Relationships, Statistical Relations and Regression Analysis, Forecasting, Methods of demand forecasting. Trend projections, smoothing techniques, Exponential smoothing. Econometric models, Simple linear regression model, estimation etc, Multiple linear regression model estimation. Business Cycle, Time Series Trends

Marginal Analysis:

Consumer Behavior, Constraints, Consumer Equilibrium, Deriving Demand Curve

Production and Cost:

Theory of Production, Production functions. Total, Marginal and Average Product. Revenue and Cost in Production. Production function estimation. Productivity Measurement. Homogenous and Homothetic Production Function. Short run and long run cost curves. Cost estimation, Learning curves and application. Cost and Profit Analysis, Empirical Analysis of Production and Cost, Cost-value-profit analysis.

Market Structure:

Perfect Competition, Monopolies, Monopolistic Competition. Oligopoly. Selected Pricing Models. Marginalist Pricing. Mark up pricing. New Product Pricing. Oligopoly Model. Contestable Markets. Pricing Strategies for Firms and Market Power. Monopolistic Competition. Price Discrimination, Monoposony and Price Product. Measuring; Performance, Making Decisions under Noncompetitive Conditions, Oligopolies, Game Theory: Inside Oligopoly, Pricing Methods, Pricing Strategies for Firm with Market Power.

Managerial Theories and Models of the Firm:

Baumol's Theory of Sales Revenue Maximization. Marris's Model of Managerial Enterprise. Williamson's Model of Managerial Discretion Topics, Behavioral Model by Cyert and March.

Regulating the Market Economy:

Economies of Scale, Taxes and Subsidies, Costs of Regulation

Public Sector Production and Pricing of Goods:

Public and Private Goods and their pricing mechanism. Decreasing cost Industry and pricing. Externalities and Market Pricing issues. Rent seeking and control. Government Policy and International Trade, tariff and pricing. Import Competitiveness and tax, International pricing Techniques /Strategies.

Advanced Topics in Business Strategy

Limit Pricing to Prevent Entry, Theoretical Basis for Limit Pricing, Limit Pricing May Fail to Deter Entry, Linking the Pre entry Price to Post entry Profits, Commitment Mechanisms, Learning Curve Effects, Reputation Effects, Dynamic Considerations, Penetration Pricing to Overcome Network Effects.**Capital Budgeting and Investment:**

Pre-requisites of Capital Budgeting. Investment Criteria and Decisions. Cash flow estimation, Internal Rate of Return, Profitability-Index Criterion and other criterion. Optimal Capital Budget.

Decision Making:

Decision Making under Uncertainty: Risk Analysis, Advanced Topics in Business Strategy.

Recommended Books

- Baye, Michael, Managerial Economics and Business Strategy. Sixth Edition. Boston: McGraw-Hill Irwin, latest edition
- Mark, Hirschey, Managerial Economics, latest edition, Thomson/South-Western College Publishing: 2003
- Peterson, Craig, H., Lewis, W. Cris and Jain, Sudhir, K., Managerial Economics, latest Edition Pearson Education: 2009
- Hirschey, M. Managerial Economics, (10th edition) U.S.A. Thomson South-Western, (2003).
- Kent P, and P Young., Managerial Economics: Economic Tools for Today's Decision Makers., (4th Edition) Pearson (2003).
- Keat, P., and P., Young, Managerial Economics, MacMillan, (1992).
- Mansfield E., (1998), Manageral Economics, Theory, Application and Cases. W. W. Nortion & co.
- Michael R., Baye (2000) Managerial Economics and Business Strategy, McGraw Hills.
- Pappas, James, Brigham Eugene F and Hirschey Mark., (latest edition), Managerial Economics, Dryden Press, Chicago.
- Salvatore, D. Managerial Economics, McGraw Hill, (2001).

ECO-601 Research Methodology 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

The Research Methodology for Economics course is closely aligned with several Sustainable Development Goals (SDGs), particularly SDG- 4 (Quality Education), SDG 10 (Reduced Inequalities), and SDG- 17 (Partnerships for the Goals). By focusing on both qualitative and quantitative research methods, the course equips students with the necessary skills to assess economic issues that are crucial for sustainable development, such as poverty, inequality, and social justice. The emphasis on impact evaluation techniques like Randomized Control Trials (RCTs) and Difference-in-Differences (DID) directly supports evidence-based decision-making to foster equitable policies and sustainable practices. Understanding the ethical considerations in research ensures that the data collected respects human dignity and promotes inclusion. Furthermore, by providing the tools to analyze economic data and evaluate policy interventions, students are empowered to contribute to evidence-based strategies that address global challenges outlined in the SDGs, such as fostering innovation (SDG -9), improving health and education, and reducing inequalities. The course's focus on research proposal writing and report presentation also encourages collaboration and transparency, in line with SDG 17's focus on partnerships and global cooperation.

Course Description:

This course is designed to introduce students to the fundamental concepts and practices of research methodology, with a particular focus on economics and social sciences. It provides a comprehensive understanding of both qualitative and quantitative research methods, data collection techniques, and impact evaluation methods. The course draws from a range of resources, including essential texts by Acharyya, Bhattacharya, Khandker, Kothari, Neuman, and others, to provide students with both theoretical knowledge and practical tools for conducting economic research.

Course Objectives:

- To understand the basic principles of research methodology in economics and social sciences.
- To develop skills in both qualitative and quantitative research techniques.
- To explore methods of data collection, analysis, and interpretation.
- To apply research methods to real-world economic issues and evaluate their impact.
- To develop an understanding of how to structure and conduct research projects, including impact evaluations.

1: Introduction to Research Methodology

- Definition and Scope of Research in Economics
- The Scientific Method
- Research Paradigms: Quantitative vs. Qualitative

Reading: Kothari, C.R. Research Methodology: Methods and Techniques, Chapter 1; Neuman, W.L. (1997), Social Research Methods, Chapter 1.

2: Steps in the Research Process

- Defining the Research Problem
- Formulating Research Hypotheses
- Research Design: Exploratory, Descriptive, and Causal Research

Reading: Kumar, R. Research Methodology: A Step by Step Guide for Beginners, Chapter 2.

3: Literature Review and Conceptual Framework

- Importance of Literature Review
- Building a Conceptual Framework
- The Role of Theory in Research

Reading: Acharyya, R., & Bhattacharya, N. (2019). Research Methodology for Social Sciences, Chapter 2.

4: Data Collection Techniques

- Primary vs. Secondary Data
- Qualitative Data Collection Methods: Interviews, Focus Groups, Case Studies
- Quantitative Data Collection Methods: Surveys, Questionnaires

Reading: Dawson, C. Practical Research Methods, Chapters 3-5.

5: Sampling Techniques

- Probability and Non-Probability Sampling
- Sample Size Determination
- Sampling Bias and Errors

Reading: Kothari, C.R. Research Methodology: Methods and Techniques, Chapter 5.

6: Measurement and Scaling Techniques

- Types of Scales: Nominal, Ordinal, Interval, and Ratio
- Reliability and Validity of Scales
- Constructing Scales for Economic Research

Reading: Kumar, R. Research Methodology: A Step by Step Guide for Beginners, Chapter 3.

7: Quantitative Data Analysis

- Descriptive Statistics
- Inferential Statistics: Hypothesis Testing, Correlation, and Regression
- Software for Quantitative Analysis: SPSS, STATA

Reading: Neuman, W.L. Social Research Methods, Chapter 10.

8: Qualitative Data Analysis

- Content Analysis
- Thematic Analysis
- Grounded Theory Approach

Reading: Acharyya, R., & Bhattacharya, N. (2019), Research Methodology for Social Sciences, Chapter 4.

9: Research Design for Impact Evaluation

- Difference-in-Differences (DID)
- Randomized Control Trials (RCTs)
- Matching Methods

Reading: Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2009), Handbook on Impact Evaluation, Chapters 1-3.

10: Ethical Issues in Research

- Ethical Considerations in Economic Research
- Confidentiality and Consent
- Avoiding Plagiarism

Reading: Neuman, W.L. Social Research Methods, Chapter 12.

11: Writing Research Proposals

- Structure of a Research Proposal
- Writing Research Objectives and Research Questions
- Time Management and Budgeting

Reading: Kumar, R. Research Methodology: A Step by Step Guide for Beginners, Chapter 6.

12: Report Writing and Presentation

- Writing a Research Report
- Presentation of Findings: Tables, Graphs, Charts
- Academic Writing and Citation Styles

Reading: Kothari, C.R. Research Methodology: Methods and Techniques, Chapter 11; Dawson, C. Practical Research Methods, Chapter 8.

13: Case Studies in Economic Research

- Application of Research Methodologies in Economics
- Impact of Policy Interventions
- Evaluating Case Studies: Strengths and Limitations

Reading: Etheridge, D.E. Research Methodology in Applied Economics, Chapter 5.

14: Advanced Research Techniques

- Econometrics and Experimental Design in Economic Research
- Mixed-Methods Research
- Challenges in Economic Research
- Data types: primary and secondary, Qualitative and Quantitative, Cross sectional, Time Series and panel data
- Descriptive analysis, Regression, Data Visualization

Reading: Etheridge, D.E. Research Methodology in Applied Economics, Chapters 7 & 8.

15: Final Review and Project Presentation

- Review of Key Concepts
- Student Research Presentations
- Feedback and Future Directions in Economic Research
- 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.

Recommended Books

- Acharyya, R., & Bhattacharya, N. (Eds.). (2019). Research methodology for social sciences. Taylor & Francis.
- Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2009). Handbook on impact evaluation: quantitative methods and practices. World Bank Publications.
- Neuman W. Lawrence, (1997) Social Research Methods, Qualitative and Quantitative Approaches, Allyn and Bacon; Boston.
- 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

ECO-603 Public Sector Economics 3 Cr. Hrs.

Course Objective:

1. Provide arguments for the case of government intervention in a modern economy
2. Understanding the functioning of public finance
3. To explain the rational and form of taxation
4. This contents of this course will enable the students to learn about the about the 9th (industry, innovation, and infrastructure) and10th (Reduced Inequalities) SDGs, as taxation is directly linked to the redistribution of resources and incentives to prioritized industries.

Relevance to Sustainable Development Goals (SDGs)

The Public Sector Economics course is closely related to several Sustainable Development Goals (SDGs), particularly SDG -1 (No Poverty), SDG- 9 (Industry, Innovation, and Infrastructure), and SDG -10 (Reduced Inequalities). By focusing on taxation, resource redistribution, and public goods allocation, the course emphasizes the government's role in addressing market failures, such as externalities and income inequality, through fiscal policy and public finance. The study of progressive taxes and public expenditures directly supports SDG 10, as equitable tax systems and resource allocation can reduce inequalities and promote inclusive economic growth. The analysis of public goods and externalities relates to **SDG- 9** by addressing how public intervention can promote infrastructure development and innovation, ensuring that key sectors benefit from necessary public investments. Additionally, understanding the tax structure and fiscal policy in Pakistan enables students to critically examine how taxation can drive economic development and contribute to social stability, aligning with the goals of reducing poverty and promoting sustainable industry and infrastructure.

Course Contents

Introduction and Role of Public Sector

The Economic Functions and Public Goods: Allocation of Resources, Redistribution of Income and Wealth and Stabilization. Pricing Public Goods.

The Theory of Public Goods

Fiscal Principles and Concepts: The Traditional Principle of Tax Neutrality is Expended Principle of Fiscal Neutrality. Exhaustive Vs. Non-Exhaustive Public Expenditures, Income Elasticity of Government Expenditures, Tax Vs. Non-tax Revenues, Microeconomic Vs. Macroeconomic Regulatory Taxes, Tax Base, Tax Rate Relationship; Progressive, Regressive and Proportional Taxes, Marginal Propensity to Tax and Marginal Vs. Average Tax Rates; Income Elasticity of a Tax Integral Fiscal Non-Neutrality. Tax Efforts and Tax Collection Performance in Pakistan.

Public Revenue and Taxes

The Economic Case for the Public Sector to Allocate Resources: Market Imperfections, Decreasing Costs of Production, Public Goods and Externalities. Pricing Decreasing Cost Industry. What is tax morale and determinants of tax morale in Pakistan.

The Theory of Public Goods

Public and Private Goods, Pure Public Goods, Should Public Sector be Produced Vs. Private Goods? Semi Public Goods, Merit Goods, Free Rider Problem, Externalities and Public Policy.

Distributional Equity in Taxation

The Ability to pay and Economic benefits (received), Cannons of Taxation, The Optional Income Tax Approach. Optimum Tax and Revenue Collection.

Tax Structure of Pakistan

Various Kinds of Taxes and their Objectives / Performance in Pakistan. Income and Sales Taxes, Excise and Custom Duties, Export and Import Taxes, Tax Reforms in Pakistan and their Impacts.

General Equilibrium Vs. Partial Equilibrium: Tax Incidence Analysis. Determinants of Tax Shifting under Partial Equilibrium Conditions. Impacts of Tax Shifting on Price.

Fiscal Policy: Public Expenditure and Budget

Theories of Public Expenditures, Wagner’s Law, Efforts of Public Expenditures. Components of Public Expenditures in Pakistan, Sources and Direction of the Growth of Public Expenditures. Kinds of Budget, Surplus, Deficit and Balanced: Preparation of Budget Cycle in Pakistan, Development and Non-Development Budget and its Patterns. Zero Based Budget, Planning, Programming Budgeting System. 7th NFC award of Pakistan.

Fiscal Relations

Fiscal and Economic Aspects of Federalism, Federal – Provincial Fiscal Co-ordination, Collection of Revenue and Provincial Share and its Distribution Criteria. Deficit Financing and its Impacts.

Recommended Books

- Bernard P. Herber, (1999), Modern Public Finance.
- Chellieah R.J. (Latest eds.), Fiscal Policy in Less Developed countries.
- David N. Hyman, (1996), Public Finance, A Contemporary Application of ---. Harcount Brace College Publishers.
- Govt. of Pakistan, Economic Survey, Yearly Publication, Ministry of Finance, Economic Advisory Wing, Islamabad.
- Rosen and Harvey S., (1999), Public Finance, McGraw Hill.

- Musgrave R.A. and B.P., Musgrave (Latest Eds.), Public Finance in Theory and Practice, McGraw Hill.
- Stiglitz E., (2000), Economics of The Public Sector, W. W. Norton & Co.
- Cyan, M. R., Koumpias, A. M., & Martinez-Vazquez, J. (2016). The determinants of tax morale in Pakistan. Journal of Asian Economics, 47, 23-34. 7th NFC Award. Retrieved from: http://webcache.googleusercontent.com/search?q=cache:urPCuik3bVQJ:www.finance.gkp.pk/attachments/2da9abc0b38511e9b3c853d7f6bb97a7/download+&cd=3&hl=en&ct=cln

ECO-605 Econometrics-II 3 Cr. Hrs.

Objectives

The course is designed for senior undergraduates more inclined towards quantitative studies. The objective is to enable the students dive deep into complex problems of the real world economic life. They have to understand data problems, to have good grasp over advanced estimation techniques and to have the capability of inferring results accurately. The students have to learn certain computer packages like SPSS, E-views and Strata besides Excel. Laboratory work: The students are required to devote at least one hour per week to computer laboratory. They have to develop the capacity to read and understand papers that appear in research journals. This course is directly linked with sustainable development goals of UNs, because data analysis helps making targeted sustainable policies.

<u>Relevance to Sustainable Development Goals (SDGs)</u>

Econometrics plays a crucial role in achieving the **Sustainable Development Goals (SDGs)** by using statistical and mathematical techniques to analyze economic data, quantify relationships, and evaluate the impact of policies. It helps track progress on SDGs like poverty reduction (SDG 1), economic growth (SDG 8), and environmental sustainability (SDGs 12, 13), by assessing the effectiveness of interventions such as healthcare programs (SDG 3), education policies (SDG 4), and clean energy investments (SDG 7). By providing evidence-based insights, econometrics aids in making informed decisions, optimizing resource allocation, and designing policies that support sustainable development.

Course Contents

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

Note: Organizing few hands-on sessions using real life data and estimation through computer programs are appreciated to better motivate participants.

Recommended Books

- Johnston, J & John Dinardo- Econometric Methods – 4th Edition (1997) The McGraw Hill Companies, Inc, Singapore.
- Intrilligator, M - Econometric Models: Techniques and Applications- N. J. Prentice Hall, (Latest).
- Judge, George G. et al - The Theory and Practice of Econometrics- (1988)
- John Willey and Sons.
- Maddala, G.S. & Kim –Unit Roots, Co-integration and Structural Change -(1998) Cambridge University Press.
- Johnston, J.- Econometric Mothods – 3rd Edition (1991)- McGraw Hill Company
- Kamenta, J. - Elements of Econometrics - 2nd Edition. (1971) – Macmillan
- Gujarati, D. N., Porter, D. C., & Gunasekar, S. (2012). Basic econometrics. Tata McGraw-Hill Education.

ECO- 607 Project Appraisal and Investment Analysis 3 Cr. Hrs.

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.
3. The contents of this course are perfectly in line with the 11^{th} SDG which is "Sustainable cities and communities", because the basic knowledge of Project Appraisal and investment analysis will enable the students to evaluate the projects keeping in view the mentioned SDG

Relevance to Sustainable Development Goals (SDGs)

The **Project Appraisal and Investment Analysis** course is directly linked to the **Sustainable Development Goals (SDGs)**, especially **SDG- 11 (Sustainable Cities and Communities)**. By equipping students with the tools to conduct **Cost Benefit Analysis (CBA)** and evaluate the economic and financial viability of projects, the course prepares them to assess the sustainability of investments in urban development, infrastructure, and community initiatives. The focus on **measuring social vs. economic benefits**, **shadow pricing**, and **discounted measures** ensures that students can prioritize projects that foster long-term societal benefits, reduce resource wastage, and mitigate environmental impacts. The inclusion of **sensitivity analysis** and **cost-effectiveness analysis** also empowers students to evaluate the sustainability and resilience of projects in the face of changing economic conditions, thereby contributing to the creation of cities and communities that are **inclusive, resilient, and sustainable**. Furthermore, by addressing the **financial analysis** of investments, the course supports the effective allocation of resources to projects that drive sustainable economic growth and equitable development.

Course Contents

Introduction

Meaning of Project Appraisal, usefulness and significance, Aspect of project appraisal with a special focus on economic versus financial analysis, Contours and Dimensions of a project and its essential ingredients, Project Vs. Plans. Project Cycle.

Identify Project Benefits and Costs

Objectives of Costs and Benefits, The Incremental / Net Benefits and "With" and "Without" Comparisons. Categories of Costs and Benefits.

Pricing Project Costs and Benefits

Prices reflecting values, Market price and financial analysis, finding market prices and related problems, Change in relative prices and inflation: Shadow Prices and economic analysis, Removal of market price distortions in traded and non-traded goods. Premium on foreign exchange through use of Shadow exchange rate and conversion factor approach.

Comparing Project Costs and Benefits (Measuring of a Project Worth)

Undiscounted measures of project worth, Discounted measures of NPW, IRR, BCR, Net benefit – Investment Ratio, Comparative assessment of discounted measures. Social vs. Economic benefits and selection of projects.

Applying Discounted Measures of Project Worth

Sensitivity analysis, switching value, Choice among mutually exclusive alternatives, Domestic resource cost of foreign exchange earning / saving.

Cost Effectiveness Analysis

Areas and elements of analysis, Methods of analysis: Constant Effect Method, Constant Cost Method, Measuring of cost effectiveness, Present Worth, Annual Worth, Cross over discount rate, Limitation of analysis.

Financial (Investment) Analysis

Theoretical and empirical examination and saving and investment, Concept of capitalization types of securities, non-banking financial institution. Development financing, Asset Structure, Stock Prices, Money Market, Portfolio Theory and Investment Analysis. Financing the industrial sector; Large scale and small scale, Interest rate. Bond market, Real and financial investment. Financial intermediaries; Speculation and Inter – relationship of financial and real variables in the economy.

Recommended Book

- Hughes, A., & D.J. Storey: "Finance and The Small Firm" (Ed) Routledge, London, (Latest Edition).
- Bruno Solmik, International Investment, Addison Wesley, (Latest Edition).
- Donald, E., Fischer, Arnold, J., Security Analysis and Portfolio Management. Prentice Hall, Delhi, (Latest Edition).
- Edwin J., Elton and Martin J. Goober, Modern Portfolio Theory and Investment Analysis, John Wiley and Sons (Latest Edition).
- Gittinger J. Price, "Economic Analysis of Agricultural Projects", The Johns Hopkins University Press, London, Dec. (Latest Edition).
- Chapman, C., & Ward, S. (2003). Project risk management processes, techniques and insights. John Wiley & Sons Ltd.
- Hussain, Ch. M: "Project Appraisal, Monitoring and Evaluation Process with Special Reference to Pakistan" Royal Book Co. Karachi, (Latest Edition).
- Punjab P&D Board, "Planning Manual" Lahore, (Latest Edition).

- United Nations: “Guide to Practical Project Appraisal – Social Benefit – Cost Analysis in Developing Countries.” Oxford & IBH publishing Co. New Delhi. (Latest Edition).
- United Nations: “Manual for Evaluation of Industrial Projects” Oxford & IBH Publishing Co. New Delhi, (Latest Edition).
- Zvi Bodie, Alex Kane, Alan K., Essentials of Investment, McGraw Hill, (Latest Edition).

ECO-609 Labor Economics 3 Cr. Hrs.

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.
5. The contents of this course will help students learn about the 8th SDG which is "**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decen**t work for all".

Relevance to Sustainable Development Goals (SDGs)

The Labor Economics course is closely aligned with the Sustainable Development Goal- 8 ("Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all"). By examining key aspects such as labor market dynamics, wage determination, human capital development, and the causes of unemployment, the course provides students with the tools to understand and address the challenges of fostering inclusive and sustainable employment. The study of labor supply and demand, labor market equilibrium, and compensating wage differentials helps students analyze how to create fair and equitable job opportunities. Additionally, the exploration of labor market discrimination, the role of labor unions, and policies to combat child labor directly supports efforts to promote (SDG-8) decent work and reduce inequalities. By addressing the economic impacts of labor migration and unemployment, students are equipped to contribute to policies and strategies that ensure productive employment and inclusive economic growth, ultimately helping to achieve the broader objective of sustainable and fair work environments for all.

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 Barganing**
    - 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 labor markets and unemployment
    - Child Labor

Definition and extent of child labor. Child labor; moral aspects. Child labor an international issue: Extent of Child labor in developing countries. Child labor in Pakistan. Policies to combat child labor. Child labor and international trade issue.

Recommended Books

- Comith Stephen (2003) Labour Economics, Routledge Publishers.
- Bruce, Kaufman; e. Kaufman, Julie L; Hotchkiss, (2002), Economics of Labour Markets, Thomson Publisher.
- Reynolds, Labor Economics and Labor Relations.
- Borjas, George J. (2008). Labor Economics. McGraw-Hill/Irwin.
- McConnell et al. Contemporary Labor Economics, (latest edition), McGrawHill/Irwin.
- R. Ehrenberg and R. Smith. Modern Labor Economics, (latest edition), Addison Wesley.

ECO-611 Energy Economics 3 Cr. Hrs.

Objective

Energy is what makes an economy run. There is a strong correlation between economic development and energy consumption. The industrial revolution, which improved living standards of millions of people around the world, would not have been possible without energy obtained first from coal and then from other fossil fuels. The transformation, is not complete as changes in technology, economic development, ever-stringent environmental protectionism and the growing global competitiveness continue to induce a trend toward innovative market-based solutions. In this course, students will study these issues within the 3-E framework (Energy- Economy-Environment) using the tools of economic analysis. In particular, you will:

Develop an understanding of the state of the energy world.

Study the principles of exhaustible resource economics.

Explore the reasons for major oil price shocks as well as their similarities and differences.

Evaluate the effects of these price shocks on the energy industry as well as on the overall economy.

Understand the role environmental regulations play in changing the energy industry.

Study the economics of externalities.

Discuss the pros and cons of the Strategic Petroleum Reserve.

Study policies of conservation, increased efficiency and alternative energy sources.

Learn about the regulation and deregulation (or restructuring) of the energy industries.

Understand the principles of the spot and futures markets and price risk management.

What is it? Energy economics is a broad scientific subject area which includes topics related to supply and use of energy in societies.

Due to diversity of issues and methods applied and shared with a number of academic disciplines, energy economics does not present itself as a self-contained academic discipline, but it is an applied sub discipline of economics.

Relevance to Sustainable Development Goals (SDGs)

The Energy Economics course is closely linked to multiple Sustainable Development Goals (SDGs), particularly SDG -7: Affordable and Clean Energy and SDG -13: Climate Action. By studying energy demand and supply, including renewable and non-renewable resources, as well as the economics of energy investments, the course equips students with the knowledge to understand and promote sustainable energy solutions. The focus on energy pricing, taxation, and the role of government intervention addresses the need for effective policies to manage energy resources while mitigating negative environmental impacts. Furthermore, the analysis of energy storage, efficiency, and the implications of energy supply on economic development emphasizes the importance of sustainable energy access to support economic growth, reduce inequalities, and ensure that energy systems are resilient and environmentally responsible. Through a combination of theoretical and practical insights, this course aligns with global efforts to achieve affordable, reliable, and sustainable energy for all, fostering a transition to cleaner energy sources while promoting economic growth and environmental protection.

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. **Energy Demand Analysis and Forecasting**
   - Understanding and Analyzing Energy Demand
   - Energy Demand Analysis at a Disaggregated Level
   - Energy Demand Forecasting
   - Energy Demand Management
5. **Economics of Energy Supply**
   - Economic Analysis of Energy Investments
   - Economics of Fossil Fuel Supply
   - Economics of Non-Renewable Resource Supply
   - Economics of Electricity Supply
   - The Economics of Renewable Energy Supply

6. **Energy Markets and Principles of Energy Pricing** (Basic Competitive Market Model Extension of the Basic Model, Market Failures, Government Intervention and Role of Government in the Sector)
7. **Energy Pricing and Taxation** (Basic Pricing Model, Tradability of Energy Products and Opportunity Cost

Peak and Off-Peak Pricing, Energy Taxes and Subsidies, Implications of Traditional Energies and Informal Sectors)
8. **Energy storage**
9. **Energy-Based Economic Development** (definition, why, goals, Policies)

Recommended 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
- Sharma, K. R., & Wilson, E. J. (2016). Energy-Based Economic Development: How Clean Energy Can Drive Development and Stimulate Economic Growth.

ECO- 602 Institutional Economics 3 Cr. Hrs.

Objective

Objective: UN, in its 16th SDG (Peace, justice, and strong institutions), focuses on the importance of strong institutions for peace and economic development, that is why, this course in "Institutional economics" accomplishes a series of courses that constitute the basic training for economists. Before studying institutional economics students should master not only the fundamentals of general economic theory but have knowledge of the historical courses and humanities as well.

Relevance to Sustainable Development Goals (SDGs)

The Institutional Economics course aligns closely with SDG- 16: Peace, Justice, and Strong Institutions, as it emphasizes the role of institutions—both formal and informal—in promoting economic development, peace, and stability. By examining the historical and cultural contexts of institutions, as well as the dynamics of legal systems, property rights, political regulation, and international organizations like the EU and WTO, the course provides students with the tools to understand how strong, efficient, and inclusive institutions can foster economic growth and social cohesion. Additionally, the study of rent-seeking behaviors, institutional change, and the interactions between politics and economics encourages students to critically analyze how institutions can both promote and hinder development. This course highlights the importance of well-functioning institutions in addressing issues of inequality, ensuring justice, and supporting sustainable development through environmental sustainability and gender equality, in line with the broader goals of promoting peaceful societies and strong governance structures.

Pre-Requisite: It is assumed that the students should be familiar with the following courses: Microeconomics and Macroeconomics, game theory, industrial organization, economic history and history of economic thought.

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?
   - Environmental sustainability in social context: an original institutionalist perspective
   - Culture, gender, and feminist institutionalism

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?
7. 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.

Recommended Books

- Ménard, C., & Shirley, M. M. (Eds.). (2005). Handbook of new institutional economics (Vol. 9). Dordrecht: Springer.

- North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge university press.
- Acemoglu, D.,& Robinson, J. (2012). Why nations fail: The origins of power, prosperity and poverty. New York: Crown.
- Tauheed, L. (2013). A critical institutionalist reconciliation of contradictory institutionalist institutions: What is an institution? Journal of Economic Issues, 47(1), 1–21.
- Christoforou, A. (2022). Institutional Economics: Perspectives and Methods in Pursuit of a Better World by Charles J. Whalen Routledge, 2022. Panoeconomicus, 69(3), 493-497.
- 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.

ECO-604 Islamic Economics 3 Cr. Hrs.

Objectives

The course is designed for senior students having gone through some basic courses in economic theory and development economics. The objective is to let them realize that Islam provides full guidance to its followers in all spheres of social life. The students have to understand the Islamic injunctions ordained for economic behaviour, both in the individual as well as collective capacity. They have to compare the prevailing system with that devised by Islam, to capture the socio-economic problems faced by the present day Muslim countries and to find ways and means to reconstruct the system in vogue according to Islamic guidelines so as to achieve greater stability, equity in distribution and reduction in poverty as the primary goals of all developing nations.

Relevance to Sustainable Development Goals (SDGs)

The Islamic Economics course aligns with several Sustainable Development Goals (SDGs) of the United Nations, particularly SDG- 1: No Poverty, SDG- 8: Decent Work and Economic Growth, SDG- 10: Reduced Inequality, and SDG- 16: Peace, Justice, and Strong Institutions. By emphasizing principles such as equity in distribution, the prohibition of interest (riba), and the promotion of philanthropic behavior, the course advocates for a more just and ethical economic system that prioritizes social welfare and reduces poverty. The exploration of Islamic financial systems, including Islamic banking and financing models, provides students with tools to address economic disparities and promote inclusive economic growth. The course's focus on Islamization of economies and institutions, especially in countries like Pakistan, reflects the potential for restructuring financial systems to ensure stability, sustainability, and fairness, contributing to peaceful and just societies. Additionally, the ethical guidelines provided by Islamic economics encourage responsible economic behavior that supports environmental sustainability and social equity.

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
- Contribution of prominent scholars towards development of Islamic Economic Thought

2. **Islam and other Economic Systems**
- Introduction,
- Capitalism, Socialism, Communism, Mixed Economic System, Comparison and contrast

3. **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
- Public Finance and Fiscal Policy

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 [Pakistan and at least anyther two countries]

10. Emerging Trends and Recent Developments

Recommended Books

- Taqi Usmani, Justice M – (2000) - Introduction to Islamic Finance - Idarat-al- Ma'arif Karachi.
- Siddiqui, M.N. – (2001)- Economics: An Islamic Approach – Institute of Policy Studies Islamabad and The Islamic Foundation, UK.
- Ghazanfar S.M., (2003), Medieval Islamic Economic Thoughts- Routledge Publishers.
- 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.
- Ziauddin et al (Ed) – Money and Banking in Islam – (1983)- King Abdul Aziz University Jeddah and Institute of Policy Studies Islamabad.
- 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

ECO-606 Monetary Economics 3 Cr. Hrs.

Course Objective
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. This course will enhance the understanding of the students that how monetary tools can accelerate Economic growth which one of the main SDG (8^{th}).

Relevance to Sustainable Development Goals (SDGs)

The Monetary Economics course directly aligns with several Sustainable Development Goals (SDGs), particularly SDG- 8: Decent Work and Economic Growth. By providing a comprehensive understanding of monetary policy, money supply, and financial markets, this course equips students with the knowledge to assess how central bank tools and monetary policies can foster economic stability and growth. This is crucial for enhancing economic development, ensuring that growth is both inclusive and sustainable. The exploration of inflation control, interest rate management, and financial sector reforms contributes to economic resilience, while the focus on Pakistan's monetary policy highlights the role of sound financial institutions in addressing economic challenges. Furthermore, the course's emphasis on global monetary frameworks underscores the importance of stable financial systems in supporting sustainable economic growth and reducing poverty, integral to achieving SDG 8.

Course Contents

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
- Infectiveness 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's Role for Pakistan's Economic Stability**
    - Assessing the Role of Money versus Interest Rate in Pakistan
    - Pakistan's Five Currency Crises
    - Effectiveness of the Exchange Rate Channel in Monetary Policy Transmission in Pakistan
9. **Monetary Policy in International Framework**
    - Money Demand and Empirical Evidence
    - 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 the Balance of Payment (BOP) and Exchange Rates
    - Targeting Exchange Rate
    - Managed Exchange Rate System and Monetary Policy
    - Targeting Inflation, Exchange Rate and Balance of Payment
    -

Recommended Books

- Bennett T. McCallum, (1989), Monetary Economics, Theory and Policy, McMillan.
- Fredric S. Mishkin, (1995), Financial Markets and Money, Harper & Row Publishers.
- Laider, David E.W (1996), The Demand for Money: Theories, Evidence and Problems (Fourth edition), Harper & Row, Publishers, New York.
- Miller, R. L. and David VanHose, (2001), Money, Banking & Financial Markets. South Western, Singapore.
- Mishkin, Frederic S., (2001), The Economics of Money, Banking and Financial Markets. (Sixth edition). Addison Wesley, New York.
- Jalil, A., & Hina, H. (2024). Monetary Policy: Crafting a Path for Pakistan's Economic Stability. Pakistan Institute of Development Economics.
- Patinkin Don, Money, Interest and Prices, Harper and Row Publishers, (Latest Edition).
- 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).

CAP-630 Project 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

Economic projects can be directly related to the **Sustainable Development Goals (SDGs)** by focusing on initiatives that address poverty (SDG- 1), food security (SDG -2), health (SDG- 3), education (SDG -4), and clean water (SDG -6). Projects promoting renewable energy (SDG- 7), job creation (SDG- 8), and sustainable production (SDG -12) contribute to environmental sustainability and inclusive economic growth. Additionally, initiatives targeting climate change (SDG- 13) and reducing inequalities (SDG -10) through equitable policies further support the SDGs. By aligning economic projects with these goals, stakeholders can promote sustainable development, equity, and environmental protection.

Course Contents

- A capstone project allows students to combine the concepts, principles, and methods they have learned in their course of study and apply their knowledge and acquired competencies to address real-world problems.
- The project analyzes and implements a meaningful strategic question. Its basic objective is to train the students to apply the different principles of economics and practically implement the knowledge to solve real-world problems.

- All final-semester students of the Department of Economics are required to complete a mandatory capstone project of 03 credit hours as partial fulfillment of the degree program.
  - It is designed to enable students to apply their knowledge and acquired competencies to address real-world problems.
  - Students may start working on their capstone project any time after the fourth semester, as the department advises.

INT-631 Internship 3 Cr. Hrs.

Relevance to Sustainable Development Goals (SDGs)

An economics internship can directly contribute to the **Sustainable Development Goals (SDGs)** in several ways:

1. **Poverty Reduction (SDG 1)**: Analyzing data on poverty and assessing the effectiveness of anti-poverty policies.
2. **Decent Work and Economic Growth (SDG 8)**: Studying labor markets, employment trends, and promoting inclusive economic growth.
3. **Reduced Inequality (SDG 10)**: Researching income distribution and evaluating social programs to reduce inequality.
4. **Climate Action (SDG 13)**: Contributing to environmental economics projects, including climate change mitigation strategies.
5. **Quality Education (SDG 4)**: Analyzing economic barriers to education and evaluating educational investments.
6. **Sustainable Consumption (SDG 12)**: Assessing the economic impact of sustainable business practices and consumer behavior.
7. **Global Partnerships (SDG 17)**: Supporting research on international economic cooperation and funding for SDG initiatives.

In these areas, interns help with data analysis, policy evaluation, and research, directly impacting SDG-related projects and strategies.

Course Contents

An internship allows students to implement learning and conduct themselves practically in a professional atmosphere.

- Students must engage in an internship of 3 credit hours after completing their 6th semester of the coursework, preferably during the summer break.
- The internship can be done at different institutions, depending on students' interests, availability, and approval from the department and the concerned institutions.
- After completing the internship, students are required to submit a project report regarding their duties, assignments, and learning.

ECO-611 Energy Economics 3 Cr. Hrs.

Objective

Energy is what makes an economy run. There is a strong correlation between economic development and energy consumption. The industrial revolution, which improved living standards of millions of people around the world, would not have been possible without energy obtained first from coal and then from other fossil fuels. The transformation, is not complete as changes in technology, economic development, ever-stringent environmental protectionism and the growing global competitiveness continue to induce a trend toward innovative market-based solutions. In this course, students will study these issues within the 3-E framework (Energy- Economy-Environment) using the tools of economic analysis.

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. **Energy Demand Analysis and Forecasting**
   - Understanding and Analyzing Energy Demand
   - Energy Demand Analysis at a Disaggregated Level
   - Energy Demand Forecasting
   - Energy Demand Management
5. **Economics of Energy Supply**
   - Economic Analysis of Energy Investments
   - Economics of Fossil Fuel Supply
   - Economics of Non-Renewable Resource Supply
   - Economics of Electricity Supply
   - The Economics of Renewable Energy Supply
6. **Energy Markets and Principles of Energy Pricing** (Basic Competitive Market Model Extension of the Basic Model, Market Failures, Government Intervention and Role of Government in the Sector)
7. **Energy Pricing and Taxation** (Basic Pricing Model, Tradability of Energy Products and Opportunity Cost

   Peak and Off-Peak Pricing, Energy Taxes and Subsidies, Implications of Traditional Energies and Informal Sectors)
8. **Energy storage**
9. **Energy-Based Economic Development** (definition, why, goals, Policies)

Recommended 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
- Sharma, K. R., & Wilson, E. J. (2016). Energy-Based Economic Development: How Clean Energy Can Drive Development and Stimulate Economic Growth.