Pakistan Institute of Development Economics

Course Contents

Department of Economics

PhD Economics

Program Structure
Total Credit Hours: 18
Core Courses Credit Hours: 09  Elective Courses Credit Hours: 09
Minimum (Normal) Duration: 3 Years (Six Semesters)
Maximum Duration: 6 Years (12 Semesters)

S. No  Course                                  Credits  S. No  Course                        Credits

Semester-I                          Semester-II
1. Advance Microeconomic Theory-II   3        4. Econometric Methods-II            3
2. Advance Macroeconomic Theory-II   3        5. Elective-II                        3

Comprehensive Examination: Microeconomic Theory and Macroeconomic Theory (Two attempts)


CORE COURSES

E601: ADVANCED MICROECONOMIC THEORY-II.........................................................(Credits 3)

Following topics are covered in this course: Theories of choice and production, General Equilibrium Theory, Fundamental theorems of Welfare Economics, Problems of market failure in the presence of externalities and public goods and Economics of information.

Prerequisite: E600
E611: ADVANCED MACROECONOMIC THEORY-II ...........................................(Credits 3)


Prerequisite: E610

E641: ECONOMETRIC METHODS II .................................................................(Credits 3)

Simple and Multiple Regression Analysis, Violation of basic assumptions, Estimation with deficient data, Formulation and Estimation of Special Models (qualitative response models), Generalized Linear Regression Model and its Application, Simultaneous Equation Systems, Time Series Analysis, Dynamic Econometric Model.

Prerequisite: E640

ELECTIVE COURSES

E700: TOPICS IN MICROECONOMIC THEORY .............................................(Credits 3)


Prerequisite: E600 & E601

E701: MATHEMATICAL ECONOMICS ............................................................(Credits 3)

This course will focus on the mathematical underpinnings of the general equilibrium theory with a view to imparting an ability to formalize economic ideas in a precise and rigorous fashion. Different mathematical structures in general equilibrium theory will be analyzed, including a detailed treatment of classical competitive and Cournot-Nash equilibria and extensions of these concepts to non-ordered preferences. Particular attention will be paid to the study of existence and optimality of these equilibria through the use of real analysis. In addition, the fundamental welfare and equivalence theorems will be discussed at some length.

Prerequisite: E601 & E700

E702: TOPICS IN MACROECONOMIC THEORY ..........................................(Credits 3)


Prerequisite: E610 & E611
E 710: PUBLIC FINANCE .................................................................(Credits 3)

Government revenue and expenditure; public debt; taxation (including issues of ecotaxation); feasibility and implications of public spending policies. Financing of government spending: finance through taxation, borrowing, and money creation. Major issues affecting each tax system, the issues of equity, efficiency, stabilization, and growth. Issues in publicly provided goods, public debt management, and fiscal transfer systems. Fiscal coordination: vertical and horizontal. Comparison of systems: developed and underdeveloped countries, private enterprise, and socialist economics.

Prerequisite: E 600 & E 610.

E 711: PUBLIC POLICY .......................................................................(Credits 3)

The key topics are: Measurements of Changes in Welfare; Economy-wide Incidence of Taxes; Taxation, Risk-taking and Investments; Corporate Taxation; Effects of Taxation on Financial Markets; Taxation of Goods and Services; Taxation of Income, Taxation and Savings; Problems of Redistribution; Tax Arbitrage, Tax Avoidance, Tax Evasion, and the Underground Economy; Application of Social Cost-Benefit Analysis to Public Policy; Applied Capital Theory (with applications); Social Opportunity Cost of Capital and Labour, Social Cost of Unemployment and the Inflation Tax

Prerequisite: E 710.

E 720: MONETARY ECONOMICS ...........................................................(Credits 3)

The course will include the following topics. Money and Interest rates; Banking and Finance, and Global Linkages; Money and Credit; Financial Liberalisation and Globalization; Stabilization Policies; Dynamic Macroeconomic Models with Heterogeneous Agents; Business Cycle Models; Vintage Capital and Technology Adoption Models; Firm Evolution and Industry Dynamics; Financial Markets; and Political Economy Models. Recent research papers on different issues using these techniques will also be discussed.

Prerequisite: E 610.

E 721: MONETARY POLICY ...................................................................(Credits 3)

A survey of equilibrium models of money and their implications for monetary and fiscal policies, Cash-in-Advance, Overlapping Generations models, Turnpike, Search models will be studied. Modigliani-Miller and Ricardian 'irrelevance' theorems, Exchange Rate Determinacy, Dynamic Laffer Curves, and arrangements for coordinating monetary and fiscal policies will be studied, as will the problem of optimal taxation under incomplete markets.

Prerequisite: E 610 & E 720.
E 722: FINANCIAL ECONOMICS .................................................................................................................. (Credits 3)

Foundations of Risk Analysis; Measuring Risk; Application of Risk Analysis; the Portfolio Selection Problem; the Capital Asset Pricing Model; the Arbitrage Pricing theory; Common Stocks; Preferred Stocks; Bonds; Capital Structure theories; the goal of the Firm; the Economic Evaluation of Investment Proposals; the traditional Mundell Fleming Model; the Dynamic-Optimising model with Price Flexibility; Intertemporal Model with Price Stickiness; Currency Crises; External Crises: Fiscal Policies and Taxation in the Open Economy; International Capital Flows under Asymmetric Information; and International Growth Convergence.

Prerequisite: E 721.

E 730: INTERNATIONAL ECONOMICS ......................................................................................................... (Credits 3)

The Ricardian model; the Heckscher-Ohlin model; the Specific Factor model; Many Goods and Factors Model; Economies-of-Scale and Monopolistic Competition; Non-traded Goods Model; Theories of Protection; International Factor Mobility; and the Gains from Trade.

Prerequisite: E 600.

E 731: INTERNATIONAL FINANCE ............................................................................................................... (Credits 3)

Balance of Payments; Foreign Exchange Markets; International Adjustment Mechanisms; Macroeconomic Policies and the Open Economy; Capital Flows, FDI vs. Portfolio Investment, Global Financial System, Offshore Banking; International Monetary System and Reforms; International Monetary System and Reforms.

Prerequisite: E 730.

E 732: TRADE POLICY .................................................................................................................................. (Credits 3)

New World Trading Environments; Globalization; WTO and its Implications for Pakistan, Trade Regimes in Pakistan.

Prerequisite: E 730 & E 731.

E 740: HUMAN RESOURCE DEVELOPMENT-I ......................................................................................... (Credits 3)

Issues in Labour Supply and Demand; Wage Determination; Efficiency Wage Hypothesis; Theory of Equalising Differences and Spatial Equilibrium; Principal-Agent Problems and Employment Contracts; Assignment and Matching Theory; Occupational Dynamics and Income Distribution.

Prerequisite: E 600.
E 741: HUMAN RESOURCE DEVELOPMENT-II .......................................................... (Credits 3)

This course examines following issues: Level and Composition of Employment; Job Search, Unemployment, Labour Mobility, Role of Public Policies like Unemployment Insurance, Welfare, Trade Policy, and Tax Policy; Determination of Rent in the Employment Relationship; Efficiency Wage, Rent Sharing, Matching, and Specific Human Capital Models; the Economics of Intra-household Allocation; Notions of Collective Choice; Collective Models of Household Behaviour; Collective Models of Labour Supply; the Role of Uncertainty in Household Decisions; Bargaining Approaches and Empirical Application.

Prerequisite: E 740.

E 742: ECONOMICS OF POPULATION ................................................................. (Credits 3)

The topics include the Effects of Demographic Changes on: Markets for Labour and Capital, on Savings Rates and the Structure of Investment, on Pensions and Health-care Costs, on Taxes and Government Expenditure, and Household Behaviour; Population Planning with a view to the consequences of population changes, including methods of forecasting, are considered. Additional topics include: Community Participation; Impact of Changes in Population on Poverty and Distribution; and Environmental Sustainability.

Prerequisite: E 740.

E 750: INDUSTRIAL ECONOMICS ...................................................................... (Credits 3)

Topics include: Theory of the Firm, Multi-product Cost Functions, Natural Monopoly, Oligopoly, Strategic Behaviour, Monopolistic Competition, Network Externalities, Transaction Costs, and Technical Change; Development of Microeconomic Models to explain the Structure and Performance of Markets; Conditions under which Monopoly Power can be exercised; Relationship between Profit Rates and Concentration or Sizes; the Persistence of Profits over time; Industry Turnover and Inter-industry comparisons; Game theory and its applications.

Prerequisite: E 600.

E 751: INDUSTRIAL POLICY .................................................................................. (Credits 3)

Empirical approaches with emphasis on theoretical underpinnings. Topics include: Technology and Industrial Structure; Vertical Integration; Application of Oligopoly; Cartels, Collusion, and Horizontal mergers; Price Discrimination; Product Differentiation; Imperfect Information; Externalities; Environmental Issues; Impact of Trade and Industrial Policies; and Industrial Policy in Pakistan.

Prerequisite: E 750.
E 760: DEVELOPMENT ECONOMICS .................................................................................. (Credits 3)

Harrod-Domar and Neoclassical Models; Technical Progress, Optimum Savings, and the Golden Rule; Savings and Capital Accumulation Development theories; Measuring Contributions to Growth; Population Growth; Labour and Employment; Investment in Human Capital; Entrepreneurship; Industrialisation; the Choice of Technology; Agriculture and Agrarian Reforms; Development Strategies; Development, Equity, and Welfare; Food Aid, Saving Disincentives; Foreign Investment and MNCs; Decision Models; Balanced and Unbalanced Growth; Migration from LDCs; Political Economy of Trade and Development; North-South Models.

Prerequisite: E 600 & E 610.

E 761: DEVELOPMENT POLICY .................................................................................... (Credits 3)

This course covers following topics: Role of Institutions governing the Allocation of Resources (e.g., land, labour, credit, and insurance); Enforcement of Property Rights and Contracts in Developing Economies and evaluates their effect on Economic Efficiency. It will also draw on recent research in development economics, microeconomic models of household behaviour, contract theory, game theory, planning models, and the experience of developed and developing countries, East-Asian growth experience, crisis of governance, Role of NGOs.

Prerequisite: E 760.

E 770: APPLIED ECONOMETRICS (Credits 3)

This course develops and applies the following econometric methods designed for analysing dynamic models of economic time series: Estimation Methods such as Maximum Likelihood and Generalised Method of Moments; Models of Consumption and Investment; Models connecting Asset Market data to Economic Aggregates and Models of the underlying Sources of Economic Fluctuations; the Estimation of Demand and Supply Equations; Estimation of Production Relationship; Estimation of Pricing Equations in Finance and Labour Economics; and Calibration of General Equilibrium Models.

Prerequisite: E 640.

E 771: TOPICS IN ADVANCED ECONOMETRICS ......................................................... (Credits 3)

The course provides an introduction to the large-sample (asymptotic theory), maximum likelihood estimation, and generalized method of moments. Various micro-econometric models, including discrete choice, panel data, and duration models, bootstrapping, and kernel estimation will also be discussed.

Prerequisite: E 770.
E 780: AGRICULTURAL DEVELOPMENT ............................................................. (Credits 3)

Models of Agricultural growth, Determinants of Urban Rural Disparity, Role of Technology in Agricultural growth, Interdependence between Agricultural Growth and Economic Growth, Models for the Analysis of Food Security and Sustainable Agriculture.

Prerequisite: E 600.

E 781: AGRICULTURAL POLICY ........................................................................ (Credits 3)

Review of Agricultural System and Policies in Pakistan, Agricultural supply topics including: Product and Factor Prices, Analysis of Policy Options, Price Support and Input Subsidies, Price Policy and Adoption of New Technologies, Interrelated Commodities, Water Pricing and Project Evaluation Principles as applicable to Third World Countries.

Prerequisite: E 600 & E780.

E 790: ECONOMIC GROWTH AND DISTRIBUTION ..................................... (Credits 3)

The course includes: Historical development in the theory of economic growth like growth models developed by Harrod-Domer, Solow, and others; Recent developments in the theory of economic growth like Endogenous Growth Models, Increasing Returns to Scale; Empirical studies of the determinants of productivity and economic growth at aggregate and sectoral, regional level.

Prerequisite: E 600, E610 & E611.
Phil Economics

Program Structure
Total Credit Hours: 36
Core Courses Credit Hours: 15       Elective Courses Credit Hours: 09
Minimum (Normal) Duration: 2 Years (Four Semesters)
Maximum Duration: 3 Years (Six Semesters)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Semester-I</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Advance Microeconomic Theory-I</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Advance Macroeconomic Theory-I</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Advance Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Elective-I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester-II</strong></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Econometrics Methods-I</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Research Methodology</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>Elective-II</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>Elective-III</td>
<td>3</td>
</tr>
</tbody>
</table>

Summer Internship: Since PIDE has various research divisions, the students can be attached with any of them for research learning.

<table>
<thead>
<tr>
<th>Semester-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Thesis</td>
</tr>
</tbody>
</table>

CORE COURSES

E 600: ADVANCEDMICROECONOMIC THEORY-I .................................................. (Credits 3)

The course covers topics under the following broad heads: Theory of Consumer Behaviour; Theory of Firm; Market Equilibrium; Uncertainty and Information Asymmetry. The theory of consumer behavior includes: Direct and Indirect Utility Functions, Derivation of Marshallian and Hicksian Demand Curves; Consumer Surplus. Theory of Firm includes constrained optimization of Production, Cost and Profit Functions; Derivation of Input Demand Functions, Returns to Scale, Perfect and Imperfect Market Competition. Game theoretic concepts are discussed with reference to Oligopolistic Markets.

E610: ADVANCED MACROECONOMIC THEORY-I .................................................. (Credits 3)

E630: ADVANCED MATHEMATICS
Real Analysis, Linear Algebra and Matrices, Calculus, Classical Optimization, Non-linear Programming, Convex Analysis, Integral Calculus, Differential Equations and Dynamic Optimization.

E640: ECONOMETRIC METHODS-I
Simple and Multiple Regression Analysis, Violation of basic assumptions, Estimation with deficient data, Formulation and Estimation of Special Models (qualitative response models), Generalized Linear Regression Model and its Application, Simultaneous Equation Systems, Time Series Analysis, Dynamic Econometric Model.
Prerequisite: E620

ELECTIVE COURSES

E700: TOPICS IN MICROECONOMIC THEORY
Prerequisite: E600 & E601

E701: MATHEMATICAL ECONOMICS
This course will focus on the mathematical underpinnings of the general equilibrium theory with a view to imparting an ability to formalize economic ideas in a precise and rigorous fashion. Different mathematical structures in general equilibrium theory will be analyzed, including a detailed treatment of classical competitive and Cournot-Nash equilibria and extensions of these concepts to non-ordered preferences. Particular attention will be paid to the study of existence and optimality of these equilibria through the use of real analysis. In addition, the fundamental welfare and equivalence theorems will be discussed at some length.
Prerequisite: E601 & E700

E702: TOPICS IN MACROECONOMIC THEORY
Prerequisite: E610 & E611
E 710: PUBLIC FINANCE ...........................................................................................................(Credits 3)

Government revenue and expenditure; public debt; taxation (including issues of ecotaxation); feasibility and implications of public spending policies. Financing of government spending: finance through taxation, borrowing, and money creation. Major issues affecting each tax system, the issues of equity, efficiency, stabilization, and growth. Issues in publicly provided goods, public debt management, and fiscal transfer systems. Fiscal coordination: vertical and horizontal. Comparison of systems: developed and underdeveloped countries, private enterprise, and socialist economics.

Prerequisite: E 600 & E 610.

E 711: PUBLIC POLICY ...........................................................................................................(Credits 3)

The key topics are: Measurements of Changes in Welfare; Economy-wide Incidence of Taxes; Taxation, Risk-taking and Investments; Corporate Taxation; Effects of Taxation on Financial Markets; Taxation of Goods and Services; Taxation of Income, Taxation and Savings; Problems of Redistribution; Tax Arbitrage, Tax Avoidance, Tax Evasion, and the Underground Economy; Application of Social Cost-Benefit Analysis to Public Policy; Applied Capital Theory (with applications); Social Opportunity Cost of Capital and Labour, Social Cost of Unemployment and the Inflation Tax.

Prerequisite: E 710.

E 720: MONETARY ECONOMICS ...........................................................................................(Credits 3)

The course will include the following topics. Money and Interest rates; Banking and Finance, and Global Linkages; Money and Credit; Financial Liberalisation and Globalization; Stabilization Policies; Dynamic Macroeconomic Models with Heterogeneous Agents; Business Cycle Models; Vintage Capital and Technology Adoption Models; Firm Evolution and Industry Dynamics; Financial Markets; and Political Economy Models. Recent research papers on different issues using these techniques will also be discussed.

Prerequisite: E 610.

E 721: MONETARY POLICY ....................................................................................................... (Credits 3)

A survey of equilibrium models of money and their implications for monetary and fiscal policies, Cash-in-Advance, Overlapping Generations models, Turnpike, Search models will be studied. Modigliani-Miller and Ricardian 'Irrelevance' theorems, Exchange Rate Determinacy, Dynamic Laffer Curves, and arrangements for coordinating monetary and fiscal policies will be studied, as will the problem of optimal taxation under incomplete markets.

Prerequisite: E 610 & E 720.
E 722: FINANCIAL ECONOMICS ................................................................. (Credits 3)

Foundations of Risk Analysis; Measuring Risk; Application of Risk Analysis; the Portfolio Selection Problem; the Capital Asset Pricing Model; the Arbitrage Pricing theory; Common Stocks; Preferred Stocks; Bonds; Capital Structure theories; the goal of the Firm; the Economic Evaluation of Investment Proposals; the traditional Mundell Fleming Model; the Dynamic-Optimising model with Price Flexibility; Intertemporal Model with Price Stickiness; Currency Crises; External Crises: Fiscal Policies and Taxation in the Open Economy; International Capital Flows under Asymmetric Information; and International Growth Convergence.

Prerequisite: E 721.

E 730: INTERNATIONAL ECONOMICS ....................................................... (Credits 3)

The Ricardian model; the Heckscher-Ohlin model; the Specific Factor model; Many Goods and Factors Model; Economies-of-Scale and Monopolistic Competition; Non-traded Goods Model; Theories of Protection; International Factor Mobility; and the Gains from Trade.

Prerequisite: E 600.

E 731: INTERNATIONAL FINANCE ............................................................... (Credits 3)

Balance of Payments; Foreign Exchange Markets; International Adjustment Mechanisms; Macroeconomic Policies and the Open Economy; Capital Flows, FDI vs. Portfolio Investment, Global Financial System, Offshore Banking; International Monetary System and Reforms; International Monetary System and Reforms.

Prerequisite: E 730.

E 732: TRADE POLICY .................................................................................. (Credits 3)

New World Trading Environments; Globalization; WTO and its Implications for Pakistan, Trade Regimes in Pakistan. [credits 3]

Prerequisite: E 730 & E 731.

E 740: HUMAN RESOURCE DEVELOPMENT-I ........................................... (Credits 3)

Issues in Labour Supply and Demand; Wage Determination; Efficiency Wage Hypothesis; Theory of Equalising Differences and Spatial Equilibrium; Principal-Agent Problems and Employment Contracts; Assignment and Matching Theory; Occupational Dynamics and Income Distribution.

Prerequisite: E 600.
E 741: HUMAN RESOURCE DEVELOPMENT-II .................................................. (Credits 3)

This course examines following issues: Level and Composition of Employment; Job Search, Unemployment, Labour Mobility, Role of Public Policies like Unemployment Insurance, Welfare, Trade Policy, and Tax Policy; Determination of Rent in the Employment Relationship; Efficiency Wage, Rent Sharing, Matching, and Specific Human Capital Models; the Economics of Intra-household Allocation; Notions of Collective Choice; Collective Models of Household Behaviour; Collective Models of Labour Supply; the Role of Uncertainty in Household Decisions; Bargaining Approaches and Empirical Application.

Prerequisite: E 740.

E 742: ECONOMICS OF POPULATION ................................................................. (Credits 3)

The topics include the Effects of Demographic Changes on: Markets for Labour and Capital, on Savings Rates and the Structure of Investment, on Pensions and Health-care Costs, on Taxes and Government Expenditure, and Household Behaviour; Population Planning with a view to the consequences of population changes, including methods of forecasting, are considered. Additional topics include: Community Participation; Impact of Changes in Population on Poverty and Distribution; and Environmental Sustainability.

Prerequisite: E 740.

E 750: INDUSTRIAL ECONOMICS ................................................................. (Credits 3)

Topics include: Theory of the Firm, Multi-product Cost Functions, Natural Monopoly, Oligopoly, Strategic Behaviour, Monopolistic Competition, Network Externalities, Transaction Costs, and Technical Change; Development of Microeconomic Models to explain the Structure and Performance of Markets; Conditions under which Monopoly Power can be exercised; Relationship between Profit Rates and Concentration or Sizes; the Persistence of Profits over time; Industry Turnover and Inter-industry comparisons; Game theory and its applications.

Prerequisite: E 600.

E 751: INDUSTRIAL POLICY ........................................................................... (Credits 3)

Empirical approaches with emphasis on theoretical underpinnings. Topics include: Technology and Industrial Structure; Vertical Integration; Application of Oligopoly; Cartels, Collusion, and Horizontal mergers; Price Discrimination; Product Differentiation; Imperfect Information; Externalities; Environmental Issues; Impact of Trade and Industrial Policies; and Industrial Policy in Pakistan.

Prerequisite: E 750.
E 760: DEVELOPMENT ECONOMICS.................................................................(Credits 3)

Harrod-Domar and Neoclassical Models; Technical Progress, Optimum Savings, and the Golden Rule; Savings and Capital Accumulation Development theories; Measuring Contributions to Growth; Population Growth; Labour and Employment; Investment in Human Capital; Entrepreneurship; Industrialisation; the Choice of Technology; Agriculture and Agrarian Reforms; Development Strategies; Development, Equity, and Welfare; Food Aid, Saving Disincentives; Foreign Investment and MNCs; Decision Models; Balanced and Unbalanced Growth; Migration from LDCs; Political Economy of Trade and Development; North-South Models.

Prerequisite: E 600 & E 610.

E 761: DEVELOPMENT POLICY ........................................................................(Credits 3)

This course covers following topics: Role of Institutions governing the Allocation of Resources (e.g., land, labour, credit, and insurance); Enforcement of Property Rights and Contracts in Developing Economies and evaluates their effect on Economic Efficiency. It will also draw on recent research in development economics, microeconomic models of household behaviour, contract theory, game theory, planning models, and the experience of developed and developing countries, East-Asian growth experience, crisis of governance, Role of NGOs.

Prerequisite: E 760.

E 770: APPLIED ECONOMETRICS .................................................................(Credits 3)

This course develops and applies the following econometric methods designed for analysing dynamic models of economic time series: Estimation Methods such as Maximum Likelihood and Generalised Method of Moments; Models of Consumption and Investment; Models connecting Asset Market data to Economic Aggregates and Models of the underlying Sources of Economic Fluctuations; the Estimation of Demand and Supply Equations; Estimation of Production Relationship; Estimation of Pricing Equations in Finance and Labour Economics; and Calibration of General Equilibrium Models.

Prerequisite: E 640.

E 771: TOPICS IN ADVANCED ECONOMETRICS ........................................(Credits 3)

The course provides an introduction to the large-sample (asymptotic theory), maximum likelihood estimation, and generalized method of moments. Various micro-econometric models, including discrete choice, panel data, and duration models, bootstrapping, and kernal estimation will also be discussed.

Prerequisite: E 770.
E 780: AGRICULTURAL DEVELOPMENT ......................................................... (Credits 3)

Models of Agricultural growth, Determinants of Urban Rural Disparity, Role of Technology in Agricultural growth, Interdependence between Agricultural Growth and Economic Growth, Models for the Analysis of Food Security and Sustainable Agriculture.

Prerequisite: E 600.

E 781: AGRICULTURAL POLICY ................................................................. (Credits 3)

Review of Agricultural System and Policies in Pakistan, Agricultural supply topics including: Product and Factor Prices, Analysis of Policy Options, Price Support and Input Subsidies, Price Policy and Adoption of New Technologies, Interrelated Commodities, Water Pricing and Project Evaluation Principles as applicable to Third World Countries.

Prerequisite: E 600 & E780.

E 790: ECONOMIC GROWTH AND DISTRIBUTION .................................. (Credits 3)

The course includes: Historical development in the theory of economic growth like growth models developed by Harrod-Domer, Solow, and others; Recent developments in the theory of economic growth like Endogenous Growth Models, Increasing Returns to Scale; Empirical studies of the determinants of productivity and economic growth at aggregate and sectoral, regional level.

Prerequisite: E 600, E610 & E611.
M.Sc (Economics)

Program Structure
Total Credit Hours: 61
Core Courses Credit Hours: 43  Elective Courses Credit Hours: 18
Minimum (Normal) Duration: 2 Years (Four Semesters)
Maximum Duration: 3 Years (Six Semesters)

<table>
<thead>
<tr>
<th>Semester-I</th>
<th>Course Title</th>
<th>Credit Hours (Cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sr. No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Microeconomic Theory-I</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Macroeconomic Theory-I</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Statistics for Economists</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Mathematics for Economists</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>English Language Proficiency</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester-II</th>
<th>Course Title</th>
<th>Credit Hours (Cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Microeconomic Theory-II</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Macroeconomic Theory-II</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Public Economics</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Monetary Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester-III</th>
<th>Course Title</th>
<th>Credit Hours (Cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>International Economics</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Development Economics</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Elective I</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Elective II</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Elective III</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester-IV</th>
<th>Course Title</th>
<th>Credit Hours (Cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>History of Economic Thoughts</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Applied Economics</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Elective IV</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Elective V</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Elective VI</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Viva-Voce Examination</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credit Hours 61

*An extensive viva of 15-20 minutes by a panel chaired by the Head of Department at the end of forth semester is held. To pass the Viva-voce examination is mandatory for the degree.
### Core (Compulsory) Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 501</td>
<td>Microeconomic Theory-I</td>
<td>3</td>
</tr>
<tr>
<td>E 502</td>
<td>Microeconomic Theory-II</td>
<td>3</td>
</tr>
<tr>
<td>E 505</td>
<td>Macroeconomic Theory-I</td>
<td>3</td>
</tr>
<tr>
<td>E 506</td>
<td>Macroeconomic Theory-II</td>
<td>3</td>
</tr>
<tr>
<td>E 509</td>
<td>Statistics for Economists</td>
<td>3</td>
</tr>
<tr>
<td>E 512</td>
<td>Mathematics for Economists</td>
<td>3</td>
</tr>
<tr>
<td>E 500</td>
<td>English Language Proficiency</td>
<td>3</td>
</tr>
<tr>
<td>E 515</td>
<td>Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>E 518</td>
<td>History of Economic Thought</td>
<td>3</td>
</tr>
<tr>
<td>E 521</td>
<td>Monetary Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 524</td>
<td>Public Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 527</td>
<td>International Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 530</td>
<td>Applied Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 553</td>
<td>Development Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 590</td>
<td>Viva-Voce Examination</td>
<td>1</td>
</tr>
</tbody>
</table>

### Elective (Optional) Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 513</td>
<td>Mathematics II</td>
<td>3</td>
</tr>
<tr>
<td>E 525</td>
<td>Institutional Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 533</td>
<td>Monetary Policy</td>
<td>3</td>
</tr>
<tr>
<td>E 535</td>
<td>Political Economy</td>
<td>3</td>
</tr>
<tr>
<td>E 551</td>
<td>Agricultural Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 557</td>
<td>WTO, Globalization and Economic Integration</td>
<td>3</td>
</tr>
<tr>
<td>E 559</td>
<td>Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 560</td>
<td>Management of Pakistan Economy</td>
<td>3</td>
</tr>
<tr>
<td>E 561</td>
<td>Financial Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 562</td>
<td>Fiscal Policy</td>
<td>3</td>
</tr>
<tr>
<td>E 563</td>
<td>Financial Institutions and Markets</td>
<td>3</td>
</tr>
<tr>
<td>E 564</td>
<td>Open Economy Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>E 565</td>
<td>Industrial Organization</td>
<td>3</td>
</tr>
<tr>
<td>E 566</td>
<td>Economics of Regulations</td>
<td>3</td>
</tr>
<tr>
<td>E 567</td>
<td>International Finance</td>
<td>3</td>
</tr>
<tr>
<td>E 569</td>
<td>Islamic Economics - Theory and Policy</td>
<td>3</td>
</tr>
<tr>
<td>E 571</td>
<td>Labour Economics</td>
<td>3</td>
</tr>
<tr>
<td>E-572</td>
<td>Political Economy</td>
<td>3</td>
</tr>
<tr>
<td>E 573</td>
<td>Urban Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 574</td>
<td>Health Economics</td>
<td>3</td>
</tr>
<tr>
<td>E 575</td>
<td>Population Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>E 577</td>
<td>Economics of Environment and Natural Resources</td>
<td>3</td>
</tr>
<tr>
<td>E 578</td>
<td>Game Theory</td>
<td>3</td>
</tr>
</tbody>
</table>
**E 501: MICROECONOMIC THEORY-I** ................................................................. (Credits 3)

Introduction to Microeconomic Analysis: Scarcity and Choice, Types of Microeconomic Analysis, Individual and Market Demand and Supply Analysis; Different Elasticities of Demand and Supply; The Theory of Consumer Behaviour: Cardinal and Ordinal Utility Approaches, Indifference Curves; Income and Substitution Effects of a Price Change; Ordinary versus Compensated Demand Curves; The Theory of Producer Behaviour: Total, Average and Marginal Products; Iso-Quant Curves; Cost of Production; Returns to Scale and Economies of Scale, Profit Maximization; Pricing in Product Markets; Perfect Competition, Monopoly; Monopolistic Competition; Oligopoly; Pricing of Factors of Production.

**E 502: MICROECONOMIC THEORY-II** ........................................................... (Credits 3)

The Consumer Choice and Revealed Preferences; Utility Function and its Properties, Demand Systems; Marshallian Demand Function: Engle Aggregation, Cournot Aggregation, Indirect Utility Function, Roy’s Identity; Hicksian Demand Function: Expenditure Function, Shephard Lemma; Empirical Models of Consumers Demand; Production Functions and its Properties; Homogenous and Homothetic Functions; Cost, Revenue and Profit Functions; Duality Theory; Input Demand and Output Supply Function; Hotelling Lemma, Theory of the Market and Market Failures; General Equilibrium Analysis; Inter-temporal Consumption and Investment; Uncertainty and Information Asymmetry.

**E 505: MACROECONOMIC THEORY-I** ............................................................ (Credits 3)


**E 506: MACROECONOMIC THEORY-II** .......................................................... (Credits 3)

Introduction to Growth Models: The Solow Growth Model, The Endogenous-Growth Model, Real-Business-Cycle Theory: Theories of Business Fluctuations; Theories of Consumption;

E 509: STATISTICS FOR ECONOMISTS ................................................................. (Credits 3)

Measures of Averages and Dispersion; Index Numbers; Probability Theory. Distributions and Expectations; Probability Distribution of Mean and Percentages; Sampling: Probability Samples, Non-Probability Samples, Sampling Distributions; Estimation: Estimates and Estimators, Point Estimation, Estimation by Confidence Interval; Hypothesis Testing; Binomial Distributions and Statistical Inferences: The Chi-Square Distribution, The Student’s \( t \)-Distribution, The \( F \)-Distribution; The Analysis of Variance and Covariance; Non-Parametric and Bayesian statistics. (Credit Hours 3)

E 512: MATHEMATICS FOR ECONOMISTS.................................................... (Credits 3)

The Nature of Mathematical Economics; Economic Models; Static Analysis in Economics; Some Linear Economic Models; Matrix Algebra; Comparative Static Analysis in Economics; Differentiation: Partial and Total Differentiation; Economic Applications of Partial and Total Differentiation; Optimization; Exponential and Logarithmic Functions; The Case of More than One Choice Variables; Optimization with Equality Constraints; Constrained and Extrema; Linear Programming.

E 515: ECONOMETRICS .................................................................................. (Credits 3)

The Simple Linear Regression Model (SLRM); The Multiple Linear Regression Model (MLRM); The General Linear Regression Model (GLRM); Evaluating an Estimated Linear Regression Model; Coefficient of Correlation and Coefficient of Determination; Relaxing the Assumptions of the Classical Model: Multicollinearity, Heteroscedasticity; Autocorrelation; Endogeniety; Model Selection Criterion; Forecasting with a Single Equation Regression Model; Errors in Variables, Time as a Variable, Dummy Variables; Grouped Data; Autoregressive and Distributed-Lag Models; Identification; Simultaneous Equations Models.

E 518: HISTORY OF ECONOMIC THOUGHT ................................................. (Credits 3)

E 521: MONETARY ECONOMICS ................................................................. (Credits 3)

Introduction and Development of Monetary Mechanisms; The Functions of Money; Monetary Standards: Fiat and Commodity Money; Measuring Money; Evolution of the Payment System; The Demand for Money: Fisher’s Quantity Theory of Money (QTM), Cambridge Approach, Liquidity Preference Theory, Inventory Theoretic Approach, Tobin’s Portfolio Theory, Restatement of QTM; The Money Supply Process: Money Multiplier and its Determinants; Multiple Deposit Creation and the Money Supply Process; Central Bank and Conduct of Monetary Policy; Money in the Static Classical and Keynesian Models; Money and Interest Rate: Poole’s Analysis; Money and Inflation; Money and Output.

E 524: PUBLIC ECONOMICS ................................................................. (Credits 3)

The Role of Public Sector in Economics; Market Efficiency: Pareto Improvements and Efficiency; Market Failure and the Role of Government; Theories of Public Goods, Efficiency and Equity; Externality and Congestion; Distribution; Equity and Economic Welfare; Politics of Social Choice, Benefit-Cost Analysis of Expenditure Policy; Public Expenditure Evaluation-Principles; Positive and Normative Analysis of Taxation; Tax Incidence in Different Market Structure; Taxation and Economic Efficiency; The Theory of Optimal Taxation; Tax Avoidance and Tax Theft; Fiscal Federalism; Informal Sector.

E 553: DEVELOPMENT ECONOMICS .................................................... (Credits 3)

Defining Development: Scope and New Developments, Theories of Development; Structures and Characteristics of Developing Countries; Agriculture and Industry; Population Growth and Economic Development; Education and Human Capital; Human Development Index (HDI); Poverty, Inequality and Development: Kuznets’ Inverted-U Hypothesis, Lorenz Curve; Urbanization and Rural-Urban Migration; The Environment and Development; International Debt, Foreign Aid/Assistance; World Trade Organization (WTO), Liberalization and International Trade; Development Policymaking and the Role of the State.

E 527: INTERNATIONAL ECONOMICS .................................................... (Credits 3)


E 530: RESEARCH METHODOLOGY ..................................................... (Credits 3)

Importance of Research Methodology; Theory and Basis of Research; Empirical and Theoretical
Research, Stages of Research Process; Identification of Problem/Issue Data, Theory and Estimation and Related Problems; Thinking, Field Research Designs; Sample Design; Experimentation and Simulations; Use of Secondary Data; Data Presentation and Analysis; Report Writing; Organization of Research Paper; Executive Summary and Abstract of a Report; Conclusion and its Basis; Evaluation of Research Work; The Research Report; Research Report Format, Writing and Editing of Research Report.

E 500: ENGLISH LANGUAGE PROFECIENCY ........................................ (Credits 3)

E 590: VIVA-VOCE EXAMINATION.................................................... (Credits 3)

ELECTIVE COURSES:

E 513: MATHEMATICS II ................................................................. (Credits 3)

E 522: MONETARY POLICY .............................................................. (Credits 3)

E 540: CORPORATE FINANCE........................................................... (Credits 3)
Introduction and Fundamentals of Corporate Finance; Financial Decisions regarding Consumption, Investment and Capital Market; Investment Decisions and Certainty; Sources of long term and Short Term Finance: Debt, Equity; Portfolio Selection and Portfolio Analysis; Market Equilibrium: CAPM and APT; Dividend Decisions; Capital Structure Decisions; Cost of Capital and Taxation Issues; Derivative Market: Options, Futures; Capital Market Efficiency, Financial Distress.

E 551: AGRICULTURAL ECONOMICS........................................... (Credits 3)
Introduction and importance of agriculture; structure and characteristics of agriculture in LDCs; role of agriculture in economic development; theory of rent and the concept of surplus;
agriculture in dualistic development models; resource use efficiency and technical change in peasant agriculture; supply response; population and food supplies. (Credit Hours 3)

E 557: WTO, GLOBALIZATION AND ECONOMIC INTEGRATION ..................... (Credits 3)

Major WTO rules and their implications; WTO and LDC's, emerging issues; liberalization and efficiency improvement; free trade and efficiency gains, theory of economic integration; institution of economic integration; custom union theory; empirical research on the trade and welfare effects of monetary system and macroeconomic policy; NAFTA, ASEAN, APEC, SAARC and ECO; regional industrial and social policy; meaning of globalization; effects of globalization on developed and developing countries.

E 559: MANAGERIAL ECONOMICS ........................................................................ (Credits 3)

Nature, scope and overview of managerial economics; demand analysis: estimation and forecasting; decision making under risk and uncertainty; pricing analysis and decisions; managerial theories and models of the firm; public sector production and pricing of goods; capital budgeting and investment.

E 560: MANAGEMENT OF PAKISTAN ECONOMY ........................................... (Credits 3)

Pakistan’s Economics Performance, Growth and Structural Change, Social Indicators; Poverty, HDI and Income Inequality. Economics Decision Making ; Short, Medium and Long Term, Different Economic phases ;1947 to 2010, Agriculture Sector, Industrial Sector, Services Sector, Social Sector Development, Infrastructure; water and Power, Fiscal Management, Monetary Management, Trade Policies, Impact of Foreign Aid/Loans Including Debt Management.

E 561: FINANCIAL ECONOMICS ................................................................. (Credits 3)

Theoretical and empirical analysis of saving, investment and finance; asset inter-structures; stock prices; interest rates; financial intermediaries; speculative connections of financial and real variables in the economy.

E 562: FISCAL POLICY .................................................................................. (Credits 3)


E 563: FINANCIAL INSTITUTIONS AND MARKETS .................................. (Credits 3)

Theory of the role and functioning of financial system; role of regulatory institutions/agencies: growth and stability of financial system; financial institutions and current issues; financial markets and current issues; financial infrastructure.
E 564: OPEN ECONOMY MACROECONOMICS ........................................... (Credits 3)

Saving and investment decision in small and large open economies; The IS-LM model for an open economy; Concepts of convergence, conditional convergence and divergence w.r.t Growth Models; The open economy in the long run; International flows of capital and goods; Exchange rate; Interest rate differentials; Mundell-Fleming model; Open economy and the debt issues; Twin deficit, Purchasing Power Parity (PPP); Monetary and credit aggregates, Policy co-ordination failure, Stabilization policy in an open economy: Globalization and inter-dependence, Currency unions, MNCs (Multi-National Co-operations), Trickle-down Economies, International Economic Orders (IEOs).

E 565: INDUSTRIAL ORGANIZATION ......................................................... (Credits 3)

Introduction, scope and methods; structure, conduct and performance; welfare economics of competition and monopoly; determinants of market structure; economic theories of oligopoly pricing; price discrimination under monopoly and oligopoly structure; innovations and patents; product variety; product differentiation, market structure and competition; industrial location choice; policy towards monopoly and oligopoly.

E 567: INTERNATIONAL FINANCE ......................................................... (Credits 3)

Balance of Payments Accounting, Importance of exchange rate in international economics, Types of exchange rate, Models for Exchange Rate determination (Monetary Model, Uncovered and Covered interest parity, Purchasing Power Parity theory), Impact of Exchange rate adjustment on open economy macro fundamentals, Mundell’s Assignment Problem, Foreign Exchange Intervention, Optimum Currency Areas, Anchor Currency Areas, International Financial Crisis, Problems of Developing Countries, International movements of factors and welfare: impacts/issues; international institutions and flow of capital.

E 566: ECONOMICS OF REGULATIONS ............................................... (Credits 3)

Theory and practice of regulation and regulatory reform; special reference to transport & utility (e.g energy, telecommunications and water) industries; competition policy, privatization, industry structural change, vertical and horizontal separation, access pricing, spot markets, contracts, multi-product pricing & investment.

E 569: ISLAMIC ECONOMICS - THEORY AND POLICY ......................... (Credits 3)

Introduction; major economic thoughts: contribution of scholars; Islamic economic system; microeconomics in Islamic framework; the modes of financing in Islam; distribution in Islamic economy; some basic macroeconomic concepts; demand and supply of money and banking; zakat, social justice and state, The Islamization process in Pakistan.
E 571: LABOUR ECONOMICS ............................................................................................. (Credits 3)

Importance of labour economics, labour markets analysis; demand for labour; labour market: supply of labour and wages; wages, unemployment and inflation; labour market discrimination; labour market information system; Human Capital Investment; Theories of labour movements; Unemployment; child labour.

E 573: URBAN ECONOMICS ............................................................................................. (Credits 3)

The urban system analysis; provision of urban social and public services; role of small cities in national development; optimal size of cities; rural economy crises; migration and urban development.

E 574: HEALTH ECONOMICS ............................................................................................. (Credits 3)


E 575: POPULATION DYNAMICS ........................................................................................ (Credits 3)

Population theories; population growth and economic development; fertility: trends, determinants and female labour market behavior, mortality and issues of population ageing; demographic profile of the population and population dynamics; population growth and the environment; spatial distribution of population, internal migration and urbanization; population policies and the health sector.

E 577: ECONOMICS OF ENVIRONMENT AND NATURAL RESOURCES .... (Credits 3)

Introduction and awareness; analytical tools: an environment; the economics of environmental quality; valuing the environment and benefit cost analysis; economic development and the environment; environment and Pakistan; the global environment.

E 579: ADVANCED ECONOMETRIC TECHNIQUES AND FORECASTING. (Credits 3)

General linear regression model; ordinary least square and summary statistics; generalized least square and maximum likelihood estimation; dummy variables and structural shifts; non-linear models and estimation algorithms, panel data, seemingly-unrelated regressions and simultaneous equations; estimation with limited dependent variables, data censoring and selectivity bias; concept of stationary, Analysis of stationary and integrated data, generalizing process, ARIMA models, forecasting and time series decomposition; analysis and decomposition of forecast errors; ARCH models and risk return analysis; VAR models; causality analysis; response analysis and Multivariate decomposition and co-integration and error correction analysis.
E 581: GENERAL EQUILIBRIUM AND WELFARE ECONOMICS ............... (Credits 3)

The nature of general equilibrium analysis, general equilibrium theory: multi market equilibrium in a competitive setting; Walras law; existence of equilibrium; stability of equilibrium; money in a general equilibrium setting, Technical and Allocative efficiency and case of exchange economy; linear programming technique to general equilibrium theory (activity analysis); the Von-Neuman model of an expanding economy; the input-out model, Pareto principle; Optional, production and resource allocation and efficiency of perfect competition; measurement of changes in welfare: consumer surplus, compensation principle the theory of social choice: social welfare function; arrows impossibility theorem; marginal cost pricing; joint products; externalities; income distribution and compensation principles; theory of second best and its application in public sector and international trade.

E 583: ECONOMIC GROWTH AND DISTRIBUTION........................................ (Credits 3)

Harrod-Domar growth model, neo-classical growth theory, two sector growth models, Cambridge growth controversy, technological change in neo-classical and Cambridge setting, endogenous growth models

E 525: INSTITUTIONAL ECONOMICS................................................................. (Credits 3)


E 572: POLITICAL ECONOMY............................................................... (Credits 3)

Politics, Economic Choices, Policies (Monetary, Fiscal Trade), Foreign Aid, Institutions, Inequality, Regulations, the Nature and Extent of State Intervention in the Economy and Conflict over Distribution of Resources.

E 578: GAME THEORY............................................................................. (Credits 3)

Definitions and Rules of Games, Games in Normal and Extensive Forms, Dominant Strategies, Dominance Solvability, Nash Equilibrium, Mixed Strategies, Zero-Sum Games, Existence of Nash Equilibrium, Extensive-Forms Games and Backward Induction, Subgame Perfect Equilibrium, Finitely Repeated Games, Infinitely Repeated Games, Games with Incomplete Information, Signaling Games and the Lemons Problem.

E 580: RESEARCH PAPER ............................................................... (Credit Hours 6)
Department of Econometrics and Statistics

PhD ECONOMETRICS

Academic Program
Total Credit Hours: 18
Course Work: 18
Duration: 3 Years
Total Courses: 6
Core Courses: 3(First semester 2, Second Semester 1)
Elective Courses: 3(First semester 1, Second Semester 2)

Course Work Structure Semester Wise

<table>
<thead>
<tr>
<th>1st Semester (Fall)</th>
<th>2nd Semester (Spring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETS-840 Micro Econometrics (3 credit hours)</td>
<td>ETS-771 Topics in Advance Econometrics (3 credit hours)</td>
</tr>
<tr>
<td>ETS-841 Macro Econometrics (3 credit hours)</td>
<td>Elective II (3 credit hours)</td>
</tr>
<tr>
<td>Elective I (3 credit hours)</td>
<td>Elective III (3 credit hours)</td>
</tr>
<tr>
<td>9 Credits</td>
<td>9 Credits</td>
</tr>
</tbody>
</table>

Deficiency Courses

1. The students not having M.Phil. in Econometrics from PIDE shall have to qualify in the following deficiency courses
2. ETS-600 Microeconomic Theory (3 credit hours)
3. ETS-610 Macroeconomic Theory (3 credit hours)

- ETS-620 Quantitative Foundation for Econometrics (3 credit hours)

1. ETS-640 Econometrics Methods (3 credit hours)
2. ETS-770 Applied Econometrics (3 credit hours)
3. ETS-638 Data Visualization (3 credit hours)
4. The students shall have to apply for removal of the deficiency course if he/she has qualified the course (or equivalent course) during his/her MS/MPhil coursework with minimum 3.0/4.0 GPA or 65% marks.

2.1. A course shall be considered equivalent to a deficiency course if 75% of the course contents are similar (or as per HEC criterion)

2.2. This similarity shall be determined by the concerned Departmental Council.
3. The student applying for removal of deficiency course shall have to take an exam conducted by the Departmental Council and shall pass the exam with at least 65% marks. In case the student clears the exam, the Departmental Council can remove the deficiency.

4. If the student fails to qualify the deficiency course exam he/she shall have to study the course as a regular course.

5. A student having MPhil Economics/Econometrics from respective department of PIDE shall also have to study the deficiency courses in which he/she has scored less than 65% marks.

6. The student can apply for removal of deficiency through prescribed form in any one or all the defined deficiency courses.

7. The deficiency courses shall not be counted toward the CGPA.

On fulfilling the required criteria, the department council may allow for the removal of the deficiency. The Head of Department will recommend the case to the competent authority for elimination of deficiency courses, if feasible otherwise.

**Comprehensive Exam**

After completion of prescribed coursework, a student must pass comprehensive examinations in Econometric Theory and Applied Econometrics. The comprehensive examinations shall be composed of two parts – a written examination and an oral examination. The oral examination shall be taken after one week of written examination. The marks distribution shall be:

<table>
<thead>
<tr>
<th>Written (Marks)</th>
<th>Viva-Voce (Marks)</th>
<th>Total Marks</th>
<th>Passing Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>15</td>
<td>100</td>
<td>65</td>
</tr>
</tbody>
</table>

In normal circumstances, the comprehensive examination must be taken after the completion of the core courses: ETS-840 Micro Econometrics, ETS-840 Macro Econometrics, ETS-640 Econometrics Methods, ETS-638 Data Visualization, ETS-620 Quantitative Foundation for Econometrics, ETS-770 Applied Econometrics and ETS-771 Topics in Advance Econometrics.

**Core Course Contents**

**ETS- 610: MACROECONOMIC THEORY................................................................. (CREDIT HOURS 3)**

Pre requisite: Nil

Course Outline:

Introduction to Classical Economics-Utopian world of Demand and Supply, Quantity theory of money, Why supply and demand does not work in the labor market – Efficiency Wage Theories, Factors that led to Great Depression, Nonexistent demand and supply model, Household debt, Bubble in the assets market, Keynesian Economics,-Wage – Price rigidities and malfunctioning of demand – supply model, Role of money in economic activity, Government role as a leader in investment activities, Chicago plan and Islamic Chicago Plan. Post Keynesian Economics and the first Neo-Classical synthesis, Convergence
and stability debate, Monetarists counter revolution, Redefining role of money, New classical economics, Rational expectations hypothesis, Policy irrelevance proposition, Macroeconomic modeling based on microeconomic foundations, New Keynesian Economics and the second Neo-Classical synthesis: The Era of Great Moderation, Rational expectations and micro foundations as norms in macroeconomics, Wrong perception of the role of money, Interest rate as monetary policy instrument despite its limited role, DSGE models and neglecting the distributional issues, Inflation targeting regime, How did economists get it wrong, Misperception of the role of money: Werner’s theory, Limitations of interest rate targeting, Misuse of rational expectations hypothesis, Monopoly of private banks and money creation process, Explaining bubble as great moderation, Financial crisis and Great Recession, Fiscal austerity in Europe, Role of free trade in European crisis, Ideological battle in Macroeconomics.

**Recommended Books:**


**Other Books**


**Reading Material**

2. Efficiency Wage Hypothesis – the case of Pakistan by Zaman, Asad and Syed Kanwar Abbas, (2005), Pakistan Development Review, Vol 44 number 4, 1051-1066

ETS-620: QUANTITATIVE FOUNDATION FOR ECONOMETRICS: ........................................... (CREDIT HOURS 3)

Pre requisite: Nil

Course Outline:


Recommended Books

6. Intro Stats (2nd Edition) by Richard D. De Veaux, Paul F. Velleman, David E. Bock

Other Books


ETS-640: ECONOMETRIC METHODS .................................................................................. (CREDIT HOURS 3)

Pre requisite: Nil

Course Outline


**ETS-638: DATA VISUALIZATION** ................................................................. (CREDIT HOURS 3)

**Pre requisite:** Nil

**Course Outline:**

Introduction Course Setup: What is data visualization? How can data be visualized, How can Data Visualization be used? When data visualization is suitable? Econometrics, Data Visualization and Data Science, Tools for data visualization for this course (R-Studio and R library ggplot2),

- Explorative Data Analysis Start tutorials,
- R Graphics I, R Graphics II, ggplot2
- Which Chart to use When
- Visualizing Categorical and Continuous data
- Time series visualization
- Scatter plots, residuals, regression discontinuity designs, nonlinearities
- Geospatial data visualization
- Advanced Charts: Treemap, Classification Trees, Heatmap etc
- De-Clutter Graphs for Better Data Insights
- Making use of colors, facets, aesthetics, legends
- Interactive Data Visualization Using plotly/R shiny
- Dashboard Designs
- Telling Story With Data Visualization

Note: Additional resources like Excel for graphics can be used but main software to be used is R (ggplot2) as coding will help students in their data analytics in other courses as well. We shall mainly follow book Winston Chang and Nathan Yau (both use R language for data visualization).

**Books**

ETS - 770: APPLIED ECONOMETRICS ................................................................. (CREDIT HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline

Estimation Methods; Maximum Likelihood and Generalised Method of Moments; Models of Consumption and Investment; Models Connecting Asset Market Data to Economic Aggregates and Models of the Underlying Sources of Economic Fluctuations; The Estimation of Demand and Supply Equations; Estimation of Production Relationship; Estimation of Pricing Equations in Finance and Labour Economics and Calibration of General Equilibrium Models, Monte Carlo Simulations and Computer Programming. House hold demand Models

ETS-840: MICRO ECONOMETRICS ........................................................................ (CREDIT HOURS 3)

Pre requisite: ETS-640 Econometric Methods

Course Outline

Discrete choice models: The Binary and Multinomial Response Models for unordered and ordered choices. The utility basis of such models. Other Limited Dependent Variables Models, e.g., for models for Count and Duration Data. Truncated and censored regression models; Duration models; Quantile regression; Variance estimation and power; Bootstrapping; Non-parametric regression and matching; Heckman bivariate normal selection model; Instrumental variables models; Regression discontinuity designs; Difference-in-differences and panel data models; Missing Data and Selection Problems. Censored and Truncated Regression models; switching regression (Roy model). Basic Concepts of Causal Inference - Experimental data - Performing social experiments - Imperfect compliance; Observational data with selection on observables - Regression and matching.

ETS-845: MACROECONOMETRICS ........................................................................ (CREDIT HOURS 3)

Pre Requisite: ETS-640: Econometric Methods, ETS-641: Time Series Analysis

Course Outline

ETS- 771: TOPICS IN ADVANCE ECONOMETRICS ................................................................. (CREDIT HOURS 3)

Pre requisite:  ETS-640 Econometric Methods

Course Outline


Optional Courses

ETS 641: TIME SERIES ANALYSIS ....................................................................................... (CREDITS HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline:


Recommended Books:

1. Box, Jenkins and Reinsel (2008), Time Series Analysis- Forecasting and Control, Prentice Hall.

Other Books


ETS-800 PANEL DATA ECONOMETRICS (credits 3)

Pre requisite: ETS-640 Econometric Methods

Course Outline:

Recommended Books:

Other Books

ETS-810 FINANCIAL ECONOMETRICS .................................................................(CREDITS HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline:
Value at Risk, ARCH Models, GARCH and EGARCH Models, Forecast and Management of Market Risks, Modeling Long-Run Relationships in Finance, Trading Strategies and High Frequency Data Review.

**Recommended Books:**

**Other Books**

**ETS-820 SPATIAL ECONOMETRICS** ..........................................................(CREDITS HOURS 3)

**Pre requisite:**  ETS – 640 Econometric Methods

**Course Outline:**
Recommended Books:


Other Books


ETS-830 NON-PARAMETRIC AND SEMI PARAMETRIC ECONOMETRICS (CREDITS HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline:


Recommended Books:


Other Books

3. E. L. Lehmann, Nonparametrics Statistical Methods Based on Ranks.
14. Thomas P. Hettmansperger, Statistical Inference Based on Ranks.
ETS-850 MULTIVARIATE ANALYSIS ...........................................................(CREDITS HOURS 3)

Pre requisite: ETS-640 Econometric Methods

Course Outline:

Recommended Books:

Other Books

ETS- 870 STATIC AND DYNAMIC OPTIMIZATION .................................................(CREDITS HOURS 3)

Pre requisite: Nil

Recommended Books:


ETS-880 OPERATIONS RESEARCH ..........................................................(CREDITS HOURS 3)

Pre requisite: Nil

Course Outline:

Introduction; Linear programming and modelling; Simplex method; Sensitivity Analysis; Decision analysis; Game theory; Queuing systems; Optimization theory; Post-optimal analysis; Dynamic programming; Network Optimization models: Critical Path Method (CPM), PERT; Project Management with PERT/CPM; Simulation; Planning over Time, Uncertainty and Forecasting; Markov Decision Process; Operations Research Applications.

Recommended Books:


Other Books

ETS-890 STRUCTURAL EQUATION MODELLING ...........................................(CREDITS HOURS 3)

Pre requisite: ETS-640 Econometric Methods

Course Outline:

Fundamentals of Structural Equation Modeling: Basic concepts, Latent versus observed variables, Exogenous versus endogenous latent variables, The factor analytic model, The full latent variable model, General purpose and process of statistical modeling, The general structural equation model, Symbol notation, The path diagram, Structural equations, Nonvisible components of a model, Basic composition,

**Recommended Books:**

1. A First Course in Structural Equation Modeling Second Edition Tenko Raykov, Michigan State University and George A. Marcoulides California State University, Fullerton
2. Introduction to Statistical Mediation Analysis by David P. Mackinnon
3. Structural Equation Modeling with AMOS, SECOND EDITION, Barbara M. Byrne
ETS-622 SAMPLING DESIGN AND ANALYSIS ...................................................(CREDITS HOURS 3)

Pre requisite: ETS – 620 Quantitative Foundation for Econometrics

Course Outline:

Basic Concepts of population, Target Population, A sample, Sampling frame, Probability and non-probability sampling, Design of the survey, Sampling techniques such as random sampling, stratified random sampling, systematic sampling, Areas aping etc. Estimation of ratio and regression estimators, Comparisons of various estimators, Response and non-response errors and imputation.

Recommended Books:


Other Books

ETS-624 NUMERICAL ANALYSIS AND STOCHASTIC SIMULATIONS ........(CREDITS HOURS 3)

Pre requisite: ETS-620 Quantitative Foundation for Econometrics

Course Outline:


Recommended Books:

Other Books

ETS-626 ADVANCED PROBABILITY THEORY ...........................................................(CREDITS HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline:

Recommended Books:

Other Books

ETS-630 ADVANCED STATISTICAL INFEERENCE ..................................................... (CREDITS HOURS 3)

Pre requisite: ETS-620 Quantitative Foundations for Econometrics


**Recommended Books:**

5. Statistical Theory: B W Lindgren, Collier MacMillan

**ETS-634 BIG DATA ANALYSIS.................................................. (CREDITS HOURS 3)**

**Pre requisite:** Nil

**Course Outline:**


**Presentation and visualization:** Understand the purpose of various types of data visualization, ranging from infographics to visual analytics, Apply design principles to design visualization techniques, Use visualization tools to perform visual analysis. 

**Algorithms and analytics:** Identify Big Data problems that require Statistical Techniques, Apply the Statistical Techniques correctly on Big Data Problems, Understand the properties of these techniques, and the role of assumptions, Interpret the conclusions properly, Programme in “R”, Neural nets, Support vector machines. 

**Understand methods from machine learning:** Classification and regression trees, decision trees and decision forests, Random forests, clustering and topic modelling, logistic regression and deep learning, matrix factorization and time series analysis &spatio-temporal event modelling, Boosting, Bagging, Spike and slab regression? Penalized regression (e.g., the lasso, lars, and elastic nets). 

**Apply the methods in advanced techniques:** text analytics, image and video analytics and recommendation, Apply the techniques in large scale use-cases. Security and privacy.
Recommended Books:


ETS-643 FORECASTING METHODOLOGY ...........................................................(CREDITS HOURS 3)

Pre Requisite: ETS-640 Econometrics Methods

Course Outline:


Recommended Books:

Others


ETS-835 BAYESIAN ECONOMETRICS................................................................. (CREDITS HOURS 3)

Pre Requisite: ETS- 640 Econometrics Methods

Course Outline:

The overall aim of this subject is to familiarize students with essential concepts and techniques used in Bayesian inference. The course will provide students with the necessary programming skills to implement Bayesian estimation and inference for econometric model using suitable software. The formal course description is:


Recommended Books:

ETS-635 ASYMPTOTIC THEORY AND SIMULATIONS  ..................................................(CREDITS HOURS 3)

Pre Requisite: ETS – 640 Econometric Methods,
   ETS- 620 Quantitative Foundations for Econometrics

Course Outline:
The purpose of this course is to enable students to understand what asymptotic theory is and how is it
used to design and analyze the statistical tests and estimators. However, asymptotic could fail to perform
for two reasons (a) asymptotic theory is the large sample theory and could not be very good in
small/medium sizes (b) the asymptotic theory could be sometimes too complicated to be analytically
solved. Simulations could serve as a substitute for the asymptotic theory where it fails to perform. The
second half of the course is about simulation, where, the students will be taught how to solve econometric
problems using simulation methods.

Asymptotic Theory

This part will cover selected chapters from William H Greene (Econometric Analysis), Jhonston and
Dinardo (Econometric Methods) and Peter Kennedy (A Guide to Econometrics) including topics:
Maximum likelihood principal and applications, Properties of maximum likelihood estimators, Wald,
Lagrange Multiplier and Likelihood Ratio tests, Large sample theory, Central Limit theorem, Law of
Large Numbers, Convergence in Probability, Convergence in Distribution, Convergence of Function of
Random Variables, Large Sample Properties of Least Square, Instrumental Variables and GLS, More on
Maximum Likelihood, Estimating Asymptotic Variance of Maximum Likelihood Estimator, 2 step
maximum likelihood.

Simulations

This part will cover what is simulation? Simulating mean, median, mode and matching it with theoretical
properties of the random variables, Central Limit Theorem: Verification by simulations. Properties of
OLS using Monte Carlo simulations: Unbiasedness, and Consistency; biasedness in overs pecified and
underspecified models. Testing Correlation: Pearson and Rank Order Correlation, Computing Simulated
Critical Values and Power of correlation tests, comparison of power of the two tests and choice of test.
Introduction to MATLAB: How to write function and program files, loops, matrices, conditions, Using
MATLAB to simulate unit root tests and cointegration tests, Introduction to R programing: comparison of
features of MATLAB and R. Using built in packages of R

Helping Material: Excel Lecture Notes, MATLAB user manual, R-user manual

Recommended Books:
   2. Johnston and DiNardo (1997), Econometric Methods
ETS-722 FINANCIAL ECONOMICS ............................................................... (CREDITS HOURS 3)

Pre Requisite: Nil

Course Outline:

Foundations of Risk Analysis; Measuring Risk; Application of Risk Analysis; the Portfolio
Selection Problem; the Capital Asset Pricing Model; the Arbitrage Pricing theory; Common
Stocks; Preferred Stocks; Bonds; Capital Structure theories; the goal of the Firm; the Economic
Evaluation of Investment Proposals; the traditional Mundell Fleming Model; the Dynamic-
Optimizing model with Price Flexibility; Intertemporal Model with Price Stickiness; Currency
Crises; External Crises: Fiscal Policies and Taxation in the Open Economy; International Capital
Flows under Asymmetric Information; and International Growth Convergence.

ETS-625 ELEMENTS OF STATISTICAL LEARNING ........................................ (CREDITS HOURS 3)

Pre Requisite: Nil

Course Outline:

Introduction to Modern Statistical Learning Approaches, Summary of different methods we will
cover in the course, what is Statistical Learning?, Inference vs. Prediction, Supervised vs.
Unsupervised Learning Problems, Regression vs. Classification, Introduction to R, Basic Commands,
Graphics, Indexing Data, Loading Data, Assessing the Accuracy of a Statistical Learning Method,
Less Flexible vs. More Flexible Methods, Bayes Classifier, Bias/Variance ideas, Review of Linear
Regression, Linear Regression, Logistic Regression, Using the Logistic Function for Classification,
Linear Discriminant Analysis, Logistic Regression and LDA, Resampling Methods (Finite Sample
Theory), The Cross-Validation and the Bootstrap (Finite Sample Theory), kNN, Best Subset
Regression, Shrinkage and Dimension Reduction Methods, Shrinkage Methods, General Linear
Methods, Generalized Additive Models, Polynomial Regression, Splines and GAM, Tree Methods,
Bagging and Boosting, Tree Methods, Clustering Methods.

Reference Books:

1. Elements of Statistical Learning by James, Witten, Hastie, and Tibshirani
3. An Introduction to Statistical Learning with Applications in R by Gareth James, Daniela Witten,
ETS-745 AGENT BASED MODELING .................................................................(CREDITS HOURS 3)

Pre Requisite: Nil

Course Outline:

This course is designed to understand wide variety of complex adaptive systems using agent based modelling. During the course, power of ABM in understanding the real world behavior amenable to complex system analysis will be explored. This course will help students to learn studying economic and social phenomenon through ABM. NetLogo programming language which is developed at Northwestern University will be used for building ABM. No programming background/knowledge is required for student to register the course.

Why do we need to understand agent Based modelling?


Recommend texts:

Additional Resources:

Online-Resources:
1. NetLogo software package and community models are available https://ccl.northwestern.edu/netlogo/
2. The videos are freely available on YouTube (https://www.youtube.com/channel/UCCqW98YlsST73jnB3WuUjbw).
3. The Santa Fé institute also offers ABM and related courses (https://www.complexityexplorer.org/courses).
4. ABM by TU Delft (http://wiki-app1.tudelft.nl/bin/view/Education/SPM955xABMofCAS/Spm4530).
5. Other great resources are: the journal of artificial societies and social simulation (http://jasss.soc.surrey.ac.uk/JASSS.html).
6. A platform (https://www.openabm.org/) on which free working models are posted.
7. Agent Based Computational Economics: http://www2.econ.iastate.edu/tesfatsi/finance.htm (ABCE)
M.PHIL ECONOMETRICS

Academic Program
Total Credit Hours: 39
Course Work: 27
Thesis: 12
Duration: 2 Years
Total Courses: 9
Core Courses: 7 (First Semester: 4, Second Semester: 2, Third Semester, 1)

Elective Courses: 2 (Second Semester: 2)

Note: A student will qualify for thesis if he/she attains minimum 3 CGPA in course work after completion of 2nd semester (excluding Research Methodology).

Program Structure Semester Wise

<table>
<thead>
<tr>
<th>1st Semester (Fall)</th>
<th>2nd Semester (Spring)</th>
<th>3rd Semester (Fall)</th>
<th>4th Semester (Spring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETS-600 Microeconomic Theory (3 credit hours)</td>
<td>ETS-771 Applied Econometrics (3 credit hours)</td>
<td>Research Methodology (3 credit hours)</td>
<td>Thesis (9 credit hours)</td>
</tr>
<tr>
<td>ETS-610 Macroeconomic Theory (3 credit hours)</td>
<td>ETS-638 Data Visualization(3 credit hours)</td>
<td>Elective I (3 credit hours)</td>
<td>Thesis (6 credit hours)</td>
</tr>
<tr>
<td>ETS-620 Quantitative Foundation for Econometrics (3 credit hours)</td>
<td>Elective I (3 credit hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETS-640 Econometrics Methods (3 credit hours)</td>
<td>Elective II (3 credit hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Credits</td>
<td>12 Credits</td>
<td>9 Credits</td>
<td>9 Credits</td>
</tr>
</tbody>
</table>

Core Course Contents

ETS-600: MICROECONOMIC THEORY .............................................................. (CREDIT HOURS 3)

Pre Requisite: Nil

Course Outline:

Theory of Consumer Behaviour; Theory of Firm; Market Equilibrium; Uncertainty and Information Asymmetry. The theory of consumer behavior includes: Direct and Indirect Utility Functions, Derivation of Marshallian and Hicksian Demand Curves; Consumer Surplus. Theory of Firm includes constrained optimization of Production, Cost and Profit Functions; Derivation of Input Demand Functions, Returns to Scale, Perfect and Imperfect Market Competition. Game theoretic concepts are discussed with reference to Oligopolistic Markets.
ETS- 610: MACROECONOMIC THEORY ........................................................................ (CREDIT HOURS 3)

Pre requisite: Nil

Course Outline:

Introduction to Classical Economics-Utopian world of Demand and Supply, Quantity theory of money, Why supply and demand does not work in the labor market – Efficiency Wage Theories, Factors that led to Great Depression, Nonexistent demand and supply model, Household debt, Bubble in the assets market, Keynesian Economics,-Wage – Price rigidities and malfunctioning of demand – supply model, Role of money in economic activity, Government role as a leader in investment activities, Chicago plan and Islamic Chicago Plan. Post Keynesian Economics and the first Neo-Classical synthesis, Convergence and stability debate, Monetarists counter revolution, Redefining role of money, New classical economics, Rational expectations hypothesis, Policy irrelevance proposition, Macroeconomic modeling based on microeconomic foundations, New Keynesian Economics and the second Neo-Classical synthesis: The Era of Great Moderation, Rational expectations and micro foundations as norms in macroeconomics, Wrong perception of the role of money, Interest rate as monetary policy instrument despite its limited role, DSGE models and neglecting the distributional issues, , Inflation targeting regime, How did economists get it wrong, Misperception of the role of money: Werner’s theory, Limitations of interest rate targeting, Misuse of rational expectations hypothesis, Monopoly of private banks and money creation process, Explaining bubble as great moderation, Financial crisis and Great Recession, Fiscal austerity in Europe, Role of free trade in European crisis, Ideological battle in Macroeconomics.

Recommended Books:


Other Books


Reading Material

2. Efficiency Wage Hypothesis – the case of Pakistan by Zaman, Asad and Syed Kanwar Abbas, (2005), Pakistan Development Review, Vol 44 number 4, 1051-1066
ETS-620: QUANTITATIVE FOUNDATION FOR ECONOMETRICS: ................................. (CREDIT HOURS 3)

Pre requisite: Nil

Course Outline:


Recommended Books

6. Intro Stats (2nd Edition)by Richard D. De Veaux, Paul F. Velleman, David E. Bock

Other Books


ETS-640: ECONOMETRIC METHODS: ................................................................. (CREDIT HOURS 3)

Pre requisite: Nil

Course Outline

Application, Two-Stage Least Squares (2SLS) and Instrumental Variables Least Squares (ILVLS) estimators; Likelihood Ratio, Lagrange Multiplier and Wald tests; Model Selection: Choice of Variables and Choice of Functional Form, Hausman test; Testing Between Nested and Non-Nested Models; Qualitative Response Models; Dummy variables, Structural Shifts, Seasonality, Tests of Structural Shifts and Model Stability, Splines functions; Pooled Time Series and Cross Section Data: Structure, Assumptions and Estimation Techniques; Dynamic Models Involving Pooled Data and GMM Estimation; Simultaneous Equations: Structure, Identification and Estimation; Seemingly Unrelated Regression Models: Structure, Assumptions and Estimation; Limited Dependent Variables: Linear and Non-Linear Probability Models for Bivariate and Multivariate Models, Data Censoring and Selectivity Bias, Bayesian Econometrics.

ETS-638: DATA VISUALIZATION .................................................................................. (CREDIT HOURS 3)

Pre requisite: Nil

Course Outline:

Introduction Course Setup: What is data visualization? How can data be visualized, How can Data Visualization be used? When data visualization is suitable? Econometrics, Data Visualization and Data Science, Tools for data visualization for this course (R-Studio and R library ggplot2),

- Explorative Data Analysis Start tutorials,
- R Graphics I, R Graphics II, ggplot2
- Which Chart to use When
- Visualizing Categorical and Continuous data
- Time series visualization
- Scatter plots, residuals, regression discontinuity designs, nonlinearities
- Geospatial data visualization
- Advanced Charts: Treemap, Classification Trees, Heatmapsetc
- De-Clutter Graphs for Better Data Insights
- Making use of colors, facets, aesthetics, legends
- Interactive Data Visualization Using plotly/R shiny
- Dashboard Designs
- Telling Story With Data Visualization

Note: Additional resources like Excel for graphics can be used but main software to be used is R (ggplot2) as coding will help students in their data analytics in other courses as well. We shall mainly follow book Winston Chang and Nathan Yau (both use R language for data visualization).

Books

ETS- 770: APPLIED ECONOMETRICS .................................................................................................................. (CREDIT HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline

Estimation Methods; Maximum Likelihood and Generalised Method of Moments; Models of Consumption and Investment; Models Connecting Asset Market Data to Economic Aggregates and Models of the Underlying Sources of Economic Fluctuations; The Estimation of Demand and Supply Equations; Estimation of Production Relationship; Estimation of Pricing Equations in Finance and Labour Economics and Calibration of General Equilibrium Models, Monte Carlo Simulations and Computer Programming. Household demand Models

Optional Courses

ETS 641 TIME SERIES ANALYSIS ..................................................................................................................... (CREDIT HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline:


Recommended Books:
1. Box, Jenkins and Reinsel (2008), Time Series Analysis- Forecasting and Control, Prentice Hall.

Other Books
ETS-800 PANEL DATA ECONOMETRICS ................................................................. (CREDIT HOURS 3)

Pre requisite: ETS-640 Econometric Methods

Course Outline:

Recommended Books:

Other Books

ETS-810 FINANCIAL ECONOMETRICS ........................................................................................................ (CREDIT HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline:
Recommended Books:


Other Books


ETS-820 SPATIAL ECONOMETRICS .................................................. (CREDIT HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline:


Recommended Books:


**Other Books**

**ETS-830 NON-PARAMETRIC AND SEMI PARAMETRIC ECONOMETRICS (CREDIT HOURS 3)**

**Pre requisite:** ETS – 640 Econometric Methods

**Course Outline:**


**Recommended Books:**


**Other Books**
3. E. L. Lehmann, Nonparametrics Statistical Methods Based on Ranks.
14. Thomas P. Hettmansperger, Statistical Inference Based on Ranks.
17. Yatchew A.(2003), Semiparametric regression for the applied econometrician.
ETS-850 MULTIVARIATE ANALYSIS.................................................................................................................. (CREDIT HOURS 3)

**Pre requisite:** ETS-640 Econometric Methods

**Course Outline:**

**Recommended Books:**

**Other Books**

ETS- 870 STATIC AND DYNAMIC OPTIMIZATION................................................................. (CREDIT HOURS 3)

**Pre requisite:** Nil


**Recommended Books:**
ETS-880 OPERATIONS RESEARCH ........................................................................................ (CREDIT HOURS 3)

Pre requisite: Nil

Course Outline:

Introduction; Linear programming and modelling; Simplex method; Sensitivity Analysis; Decision analysis; Game theory; Queuing systems; Optimization theory; Post-optimal analysis; Dynamic programming; Network Optimization models: Critical Path Method (CPM), PERT; Project Management with PERT/CPM; Simulation; Planning over Time, Uncertainty and Forecasting; Markov Decision Process; Operations Research Applications.

Recommended Books:


Other Books

ETS-890 STRUCTURAL EQUATION MODELLING ............................................................... (CREDIT HOURS 3)

Pre requisite: ETS-640 Econometric Methods

Course Outline:


Recommended Books:

1. A First Course in Structural Equation Modeling Second Edition TenkoRaykov, Michigan State University and George A. Marcoulides California State University, Fullerton
2. Introduction to Statistical Mediation Analysis by David P. Mackinnon
3. Structural Equation Modeling with AMOS, SECOND EDITION, Barbara M. Byrne

ETS-622 SAMPLING DESIGN AND ANALYSIS .............................................................. (CREDIT HOURS 3)

Pre requisite: ETS – 620 Quantitative Foundation for Econometrics

Course Outline:

Basic Concepts of population, Target Population, A sample, Sampling frame, Probability and non-probability sampling, Design of the survey, Sampling techniques such as random sampling, stratified
random sampling, systematic sampling, Areas aping etc. Estimation of ratio and regression estimators, Comparisons of various estimators, Response and non-response errors and imputation.

**Recommended Books:**


**Other Books**


**ETS-624 NUMERICAL ANALYSIS AND STOCHASTIC SIMULATIONS ......... (CREDIT HOURS 3)**

**Pre requisite:** ETS-620 Quantitative Foundation for Econometrics

**Course Outline:**


**Recommended Books:**


**Other Books**


ETS-626 ADVANCED PROBABILITY THEORY ............................................................... (CREDIT HOURS 3)

Pre requisite: ETS – 640 Econometric Methods

Course Outline:

Recommended Books:

Other Books

ETS-630 ADVANCED STATISTICAL INFERENCE ............................................................. (CREDIT HOURS 3)

Pre requisite: ETS-620 Quantitative Foundations for Econometrics


Recommended Books:
ETS-634 BIG DATA ANALYSIS ........................................................................................................ (CREDIT HOURS 3)

Pre requisite: Nil

Course Outline:

What Big Data Means? When Do You Have a Big Data Problem? Characteristics, Sources and importance of Big Data Analysis. Compare and contrast the roles of: data-at-rest processing, data-in-motion processing, data-warehouse processing, and contextual search. Tools available for Big Data Analytics. Ingesting and integrating data, Storage and compute platforms. Presentation and visualization: Understand the purpose of various types of data visualization, ranging from infographics to visual analytics, Apply design principles to design visualization techniques, Use visualization tools to perform visual analysis. Algorithms and analytics: Identify Big Data problems that require Statistical Techniques, Apply the Statistical Techniques correctly on Big Data Problems, Understand the properties of these techniques, and the role of assumptions, Interpret the conclusions properly, Programme in “R”, Neural nets, Support vector machines. Understand methods from machine learning: Classification and regression trees, decision trees and decision forests, Random forests, clustering and topic modelling, logistic regression and deep learning, matrix factorization and time series analysis &spatio-temporal event modelling, Boosting, Bagging, Spike and slab regression? Penalized regression (e.g., the lasso, lars, and elastic nets). Apply the methods in advanced techniques: text analytics, image and video analytics and recommendation, Apply the techniques in large scale use-cases. Security and privacy.

Recommended Books:

ETS-835 BAYESIAN ECONOMETRICS................................................................. (CREDIT HOURS 3)

Pre Requisite: ETS- 640 Econometrics Methods

Course Outline:

The overall aim of this subject is to familiarize students with essential concepts and techniques used in Bayesian inference. The course will provide students with the necessary programming skills to implement Bayesian estimation and inference for econometric model using suitable software. The formal course description is:


Recommended Books:

ETS-635 ASYMPOTOTIC THEORY AND SIMULATIONS ................................. (CREDIT HOURS 3)

Pre Requisite: ETS – 640 Econometric Methods,
               ETS- 620 Quantitative Foundations for Econometrics

Course Outline:
The purpose of this course is to enable students to understand what asymptotic theory is and how is it
used to design and analyze the statistical tests and estimators. However, asymptotic could fail to perform
for two reasons (a) asymptotic theory is the large sample theory and could not be very good in
small/medium sizes (b) the asymptotic theory could be sometimes too complicated to be analytically
solved. Simulations could serve as a substitute for the asymptotic theory where it fails to perform. The
second half of the course is about simulation, where, the students will be taught how to solve econometric
problems using simulation methods.

Asymptotic Theory

This part will cover selected chapters from William H Greene (Econometric Analysis), Jhonston and
Dinardo (Econometric Methods) and Peter Kennedy (A Guide to Econometrics) including topics:
Maximum likelihood principal and applications, Properties of maximum likelihood estimators, Wald,
Lagrange Multiplier and Likelihood Ratio tests, Large sample theory, Central Limit theorem, Law of
Large Numbers, Convergence in Probability, Convergence in Distribution, Convergence of Function of
Random Variables, Large Sample Properties of Least Square, Instrumental Variables and GLS, More on
Maximum Likelihood, Estimating Asymptotic Variance of Maximum Likelihood Estimator, 2 step
maximum likelihood.

Simulations

This part will cover what is simulation? Simulating mean, median, mode and matching it with theoretical
properties of the random variables, Central Limit Theorem: Verification by simulations. Properties of
OLS using Monte Carlo simulations: Unbiasedness, and Consistency; biasedness in overs pecified and
underspecified models. Testing Correlation: Pearson and Rank Order Correlation, Computing Simulated
Critical Values and Power of correlation tests, comparison of power of the two tests and choice of test.
Introduction to MATLAB: How to write function and program files, loops, matrices, conditions, Using
MATLAB to simulate unit root tests and cointegration tests, Introduction to R programing: comparison of
features of MATLAB and R. Using built in packages of R
Helping Material: Excel Lecture Notes, MATLAB user manual, R-user manual

Recommended Books:
2. Johnston and DiNardo (1997), Econometric Methods
ETS-722 FINANCIAL ECONOMICS .......................................................................................... (CREDIT HOURS 3)

Pre Requisite: Nil

Course Outline:

Foundations of Risk Analysis; Measuring Risk; Application of Risk Analysis; the Portfolio Selection Problem; the Capital Asset Pricing Model; the Arbitrage Pricing theory; Common Stocks; Preferred Stocks; Bonds; Capital Structure theories; the goal of the Firm; the Economic Evaluation of Investment Proposals; the traditional Mundell Fleming Model; the Dynamic-Optimizing model with Price Flexibility; Intertemporal Model with Price Stickiness; Currency Crises; External Crises: Fiscal Policies and Taxation in the Open Economy; International Capital Flows under Asymmetric Information; and International Growth Convergence.

ETS-625 ELEMENTS OF STATISTICAL LEARNING .................................................................. (CREDIT HOURS 3)

Pre Requisite: Nil

Course Outline:

Introduction to Modern Statistical Learning Approaches, Summary of different methods we will cover in the course, what is Statistical Learning?, Inference vs. Prediction, Supervised vs. Unsupervised Learning Problems, Regression vs. Classification, Introduction to R, Basic Commands, Graphics, Indexing Data, Loading Data, Assessing the Accuracy of a Statistical Learning Method, Less Flexible vs. More Flexible Methods, Bayes Classifier, Bias/Variance ideas, Review of Linear Regression, Linear Regression, Logistic Regression, Using the Logistic Function for Classification, Linear Discriminant Analysis, Logistic Regression and LDA, Resampling Methods (Finite Sample Theory), The Cross-Validation and the Bootstrap (Finite Sample Theory), kNN, Best Subset Regression, Shrinkage and Dimension Reduction Methods, Shrinkage Methods, General Linear Methods, Generalized Additive Models, Polynomial Regression, Splines and GAM, Tree Methods, Bagging and Boosting, Tree Methods, Clustering Methods.

Reference Books:

1. Elements of Statistical Learning by James, Witten, Hastie, and Tibshirani
3. An Introduction to Statistical Learning with Applications in R by Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani, Springer Science&Business Media New York (2013)
ETS-745 AGENT BASED MODELING................................................................. (CREDIT HOURS 3)

Pre Requisite: Nil

Course Outline:

This course is designed to understand wide variety of complex adaptive systems using agent based modelling. During the course, power of ABM in understanding the real world behavior amenable to complex system analysis will be explored. This course will help students to learn studying economic and social phenomenon through ABM. NetLogo programming language which is developed at Northwestern University will be used for building ABM. No programming background/knowledge is required for student to register the course.


Recommend texts:

Additional Resources:

Online- Resources:
8. NetLogo software package and community models are available https://ccl.northwestern.edu/netlogo/ (https://www.youtube.com/channel/UCCqW98YlsST73jnB3WuUjbw).
9. The videos are freely available on YouTube (https://www.youtube.com/channel/UCCqW98YlsST73jnB3WuUjbw).
10. The Santa Fé institute also offers ABM and related courses (https://www.complexityexplorer.org/courses).
11. ABM by TU Delft (http://wiki-app1.tudelft.nl/bin/view/Education/SPM955xABMofCAS/Spm4530).
12. Other great resources are: the journal of artificial societies and social simulation (http://jasss.soc.surrey.ac.uk/JASSS.html).
13. A platform (https://www.openabm.org/)on which free working models are posted.
14. Agent Based Computational Economics: http://www2.econ.iastate.edu/tesfatsi/afinance.htm (ABCE)
DEPARTMENT OF BUSINESS STUDIES

M PHIL BUSINESS ECONOMICS

Academic Program:
Total Credit Hours: 36
Course Work: 24 Credit Hours
Thesis/ Research Work: 12 Credit Hours
Duration: 2 years (with the provision of one year extension)

Semester Wise Program Structure

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course Title</th>
<th>Credits</th>
<th>S. No</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester-I</td>
<td>Semester-II</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Microeconomic Theory/Issues in Business Management</td>
<td>3</td>
<td>5</td>
<td>Macroeconomic Theory/Regional and International Trade</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Quantitative methods in Business</td>
<td>3</td>
<td>6</td>
<td>Research Methodology</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Issues &amp; Challenges in Management</td>
<td>3</td>
<td>7</td>
<td>Modeling in Business</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Elective-I</td>
<td>3</td>
<td>8</td>
<td>Elective-II</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>Thesis</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Core Course Contents:

**BE-531 MICROECONOMICS:** ........................................................................................................................................................................... (CREDIT HOURS 3)

This course focuses on the following topics: basic theory of consumer behavior; production and costs; partial equilibrium analysis of pricing in competitive and monopolistic markets; general equilibrium; welfare; and externalities. It is recommended for students planning to apply to graduate school in economics, accounting, or finance.

**BE-501 QUANTITATIVE METHODS:** ........................................................................................................................................................................... (CREDIT HOURS 3)

This course develops basic competence and skills in problem solving and quantitative methods applied to public policy analysis. It emphasizes the art and skill of converting problem descriptions into quantitative models, and the analysis and interpretation of these models. This course develops basic competence and skills in problem solving and quantitative methods applied to public policy analysis. It emphasizes the art and skill of converting problem descriptions into quantitative models, and the analysis and interpretation of these models.
BE-502 ISSUES IN BUSINESS MANAGEMENT .........................................................(CREDIT HOURS 3)

This course encourages students to analyze the problems of managing the total enterprise in the domestic and international setting. The focus is on the competitive strategy of the firm, examining issues central to its long- and short-term competitive position. Students act in the roles of key decision-makers or their advisors and solve problems related to the development or maintenance of the competitive advantage of the firm in a given market. Students will learn concepts and tools for analyzing the competitive environment, strategic position and firm-specific capabilities in order to understand the sources of a firm's competitive advantage. In addition, students will address corporate strategy issues such as the economic logic and administrative challenges associated with diversification choices about horizontal and vertical integration.

BE-532 MACROECONOMIC THEORY: ............................................................. (CREDIT HOURS 3)

Introduction to the theories of economic growth. Topics will include basic facts of economic growth and long-run economic development; brief overview of optimal control theory and dynamic programming; basic neoclassical growth model under a variety of market structures; human capital and economic growth; endogenous growth models; models with endogenous technology; models of directed technical change; competition, market structure and growth; financial and economic development; international trade and economic growth; institutions and economic development. This is a half-term subject. The class size is limited.

BE-503 BUSINESS MODELING: .................................................................(CREDIT HOURS 3)

This course covers the development, implementation, and utilization of business models for managerial decision making. Various techniques for analytical modeling, such as forecasting, optimization, simulation, decision analysis, and classification, are discussed. Students gain mastery in developing complex financial models implemented in decision support systems that cover applications in strategic planning, financial management, operations/project management, and marketing research. These topics are covered in the context of emerging information technology architecture.

BE-504 BUSINESS ETHICS & LEGAL ENVIRONMENT...........................................(CREDIT HOURS 3)

Provides students with an understanding of the social and natural environments within which moral issues in business arise. Within this framework it introduces students to both the ethical concepts and ethical principles, and the reasoning and analytical skills needed to resolve those moral dilemmas.

This course examines the impact of ethics and culture on international business. Students focus on culture from a world view, examining cultural/ethical patterns by reference to specific existing cultures.
BE-621 ADVANCED RESEARCH METHODS: .......................................................... (CREDIT HOURS 3)

This course will provide an opportunity for participants to establish or advance their understanding of research through critical exploration of research language, ethics, and approaches. The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Participants will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global).

List of Elective Courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Business</strong></td>
<td></td>
</tr>
<tr>
<td>BE-651</td>
<td>Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>BE-681</td>
<td>Banks Management</td>
<td>3</td>
</tr>
<tr>
<td>BE-652</td>
<td>Investment &amp; Corporate</td>
<td>3</td>
</tr>
<tr>
<td>BE-682</td>
<td>Portfolio Management</td>
<td>3</td>
</tr>
<tr>
<td>BE-683</td>
<td>Taxation Management</td>
<td>3</td>
</tr>
<tr>
<td>BE-653</td>
<td>Financial Market &amp; Institutions</td>
<td>3</td>
</tr>
<tr>
<td>BE-661</td>
<td>International Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BE-662</td>
<td>Services Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BE-663</td>
<td>New Product Development</td>
<td>3</td>
</tr>
<tr>
<td>BE-671</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>BE-672</td>
<td>Industrial Relation</td>
<td>3</td>
</tr>
<tr>
<td>BE-673</td>
<td>Labor Law</td>
<td>3</td>
</tr>
<tr>
<td>BE-684</td>
<td>Change Management</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Economics</strong></td>
<td></td>
</tr>
<tr>
<td>BE-631</td>
<td>Econometrics Methods</td>
<td>3</td>
</tr>
<tr>
<td>BE-632</td>
<td>Public Policy</td>
<td>3</td>
</tr>
<tr>
<td>BE-633</td>
<td>Monetary Economics</td>
<td>3</td>
</tr>
<tr>
<td>BE-651</td>
<td>International Finance</td>
<td>3</td>
</tr>
<tr>
<td>BE-634</td>
<td>Industrial Policy</td>
<td>3</td>
</tr>
<tr>
<td>BE-635</td>
<td>Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>BE-636</td>
<td>Economics of Governance</td>
<td>3</td>
</tr>
<tr>
<td>BE-637</td>
<td>Agriculture Development</td>
<td>3</td>
</tr>
<tr>
<td>BE-683</td>
<td>Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>BE-684</td>
<td>Operations Management</td>
<td>3</td>
</tr>
</tbody>
</table>
MPhil Management Sciences

Academic Program:
Total Credit Hours: 36
Course Work: 24 Credit Hours
Thesis/ Research Work: 12 Credit Hours
Duration: 2 years (with the provision of one year extension)

Semester Wise Program Structure

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course Title</th>
<th>Credits</th>
<th>S. No</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Semester-I</strong></td>
<td></td>
<td></td>
<td><strong>Semester-II</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Issues in Business Management</td>
<td>3</td>
<td>5.</td>
<td>Research Methodology</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Thoughts and Philosophy of Management</td>
<td>3</td>
<td>6.</td>
<td>International Business</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Elective-I</td>
<td>3</td>
<td>7.</td>
<td>Elective-III</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Elective-II</td>
<td>3</td>
<td>8.</td>
<td>Elective-IV</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester-III</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Thesis</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Core Course Contents:

MS-581 Issues in Business Management........................................................(CREDIT HOURS 3)

This course encourages students to analyze the problems of managing the total enterprise in the domestic and international setting. The focus is on the competitive strategy of the firm, examining issues central to its long- and short-term competitive position. Students act in the roles of key decision-makers or their advisors and solve problems related to the development or maintenance of the competitive advantage of the firm in a given market. Students will learn concepts and tools for analyzing the competitive environment, strategic position and firm-specific capabilities in order to understand the sources of a firm's competitive advantage. In addition, students will address corporate strategy issues such as the economic logic and administrative challenges associated with diversification choices about horizontal and vertical integration.

MS-581 Theories and Philosophy of Management..............................................(CREDIT HOURS 3)

This course emphasizes on Management Classical theories. Comparisons of these theories and use in current changing environment.
MS-502 International Business

This course provides an overview of the international organizations and the effects of the foreign environment on international business. The course will focus on cultural differences; theories of international trade and economic development; international finance; marketing internationally and practical applications of starting and maintaining international business relationships.

MS-504 Business Ethics & Legal Environment

Provides students with an understanding of the social and natural environments within which moral issues in business arise. Within this framework it introduces students to both the ethical concepts and ethical principles, and the reasoning and analytical skills needed to resolve those moral dilemmas.

This course examines the impact of ethics and culture on international business. Students focus on culture from a world view, examining cultural/ethical patterns by reference to specific existing cultures.

List of Elective Courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Management HRM</strong></td>
<td><strong>Credits</strong></td>
<td></td>
</tr>
<tr>
<td>MS-671</td>
<td>Advanced Topics in Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>MS-672</td>
<td>Quantitative Methods in the Applied Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td>MS-673</td>
<td>Strategic HRM: Concepts and Applications</td>
<td>3</td>
</tr>
<tr>
<td>MS-674</td>
<td>Human Capital Management: Acquisition, Development and Retention</td>
<td>3</td>
</tr>
<tr>
<td>MS-675</td>
<td>Knowledge Management &amp; HRIS</td>
<td>3</td>
</tr>
<tr>
<td>MS-676</td>
<td>Legal Systems, Labor Relations, and Regulatory Practices</td>
<td>3</td>
</tr>
<tr>
<td>MS-678</td>
<td>HR Analytics</td>
<td>3</td>
</tr>
<tr>
<td>MS-679</td>
<td>Staffing and Performance Management</td>
<td>3</td>
</tr>
<tr>
<td>MS-670</td>
<td>Human Resource Development</td>
<td>3</td>
</tr>
<tr>
<td>MS-691</td>
<td>Leadership and Motivational Skills</td>
<td>3</td>
</tr>
<tr>
<td>MS-692</td>
<td>Organizational Development</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>MS-693</td>
<td>Industrial Psychology and Collective Bargaining</td>
<td>3</td>
</tr>
<tr>
<td>MS-694</td>
<td>Corporate Ethics</td>
<td>3</td>
</tr>
<tr>
<td>MS-695</td>
<td>Labor Laws</td>
<td>3</td>
</tr>
<tr>
<td><strong>Finance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS-651</td>
<td>Capital Risk Management</td>
<td>3</td>
</tr>
<tr>
<td>MS-652</td>
<td>Financial Modeling</td>
<td>3</td>
</tr>
<tr>
<td>MS-653</td>
<td>Basil I and II</td>
<td>3</td>
</tr>
<tr>
<td>MS-654</td>
<td>Investments</td>
<td>3</td>
</tr>
<tr>
<td>MS-655</td>
<td>International Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>MS-656</td>
<td>Derivative Markets</td>
<td>3</td>
</tr>
<tr>
<td>MS-657</td>
<td>Venture Capital and Private Equity</td>
<td>3</td>
</tr>
<tr>
<td>MS-658</td>
<td>Global Asset and Wealth Management</td>
<td>3</td>
</tr>
<tr>
<td>MS-659</td>
<td>Financial Theory</td>
<td>3</td>
</tr>
<tr>
<td>MS-637</td>
<td>Dynamic Asset Pricing Theory</td>
<td>3</td>
</tr>
<tr>
<td>MS-639</td>
<td>Empirical Finance</td>
<td>3</td>
</tr>
<tr>
<td>MS-638</td>
<td>Investment Analysis and Corporate Portfolio</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Management</td>
<td></td>
</tr>
<tr>
<td>MS-636</td>
<td>Financial Derivatives</td>
<td>3</td>
</tr>
<tr>
<td>MS-635</td>
<td>Islamic Banking and Finance</td>
<td>3</td>
</tr>
<tr>
<td><strong>Marketing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS-660</td>
<td>Behavioral Research in Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MS-661</td>
<td>Marketing Data Mining</td>
<td>3</td>
</tr>
<tr>
<td>MS-689</td>
<td>Marketing Strategy and Management</td>
<td>3</td>
</tr>
<tr>
<td>MS-663</td>
<td>Bayesian Inference: Methods and Applications</td>
<td>3</td>
</tr>
<tr>
<td>MS-664</td>
<td>Quantitative Research in Marketing: Models and</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Methods</td>
<td></td>
</tr>
<tr>
<td>MS-665</td>
<td>Topics in Advertising and Integrated Marketing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Communications (IMC)</td>
<td></td>
</tr>
<tr>
<td>MS-666</td>
<td>The Psychology of Judgment and Decision Theory</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>MS-667</td>
<td>Topics in Consumer Behavior</td>
<td>3</td>
</tr>
<tr>
<td>MS-668</td>
<td>Advanced Advertising and Media Planning</td>
<td>3</td>
</tr>
<tr>
<td>MS-688</td>
<td>Sales Management</td>
<td>3</td>
</tr>
<tr>
<td>MS-662</td>
<td>Applied Marketing Analytics</td>
<td>3</td>
</tr>
<tr>
<td>MS-669</td>
<td>Strategic Services Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MS-601</td>
<td>Business to Business Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MS-602</td>
<td>Consumer Behavior Models</td>
<td>3</td>
</tr>
<tr>
<td>MS-603</td>
<td>Strategic Brand Management</td>
<td>3</td>
</tr>
<tr>
<td>MS-604</td>
<td>Culture and Persuasion</td>
<td>3</td>
</tr>
<tr>
<td>MS-605</td>
<td>Marketing Models</td>
<td>3</td>
</tr>
</tbody>
</table>
MBA (2.5 YEARS) PROGRAM

Academic Program:
Total Credit Hours: 72
Core Course Credit hrs: 54
Elective Course Credit hrs: 18
Thesis/Research Work 06
Internship: Non Credit
Duration: 2.5 years (with the provision of six months extension)

Semester wise program structure:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course</th>
<th>Credits</th>
<th>S. No</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Semester-I</strong></td>
<td></td>
<td></td>
<td><strong>Semester-II</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>BUS-601 Business Communication</td>
<td>3</td>
<td>6.</td>
<td>BUS-650 Economy of Pakistan</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>BUS-630 Cost and Managerial A/C</td>
<td>3</td>
<td>9.</td>
<td>BUS-665 Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BUS-699 Internship</td>
<td>3 Non Credit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Semester-III</strong></td>
<td></td>
<td></td>
<td><strong>Semester-IV</strong></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>BUS-702 Entrepreneurship</td>
<td>3</td>
<td>17.</td>
<td>BUS-705 Advance Research Methodology</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>BUS-703 Total Quality Management</td>
<td>3</td>
<td>18.</td>
<td>BUS-706 Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>15.</td>
<td>Elective II</td>
<td>3</td>
<td>20.</td>
<td>Elective IV</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester-V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>BUS-799 Final Project / Theses*</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Can be replaced with two elective courses.
BUS-601 BUSINESS COMMUNICATION...............................................................(CREDIT HOURS 3)


BUS-610 HUMAN RESOURCE MANAGEMENT..............................................(CREDIT HOURS 3)

This course is basically designed to provide students the basic understanding of key HRM functions, which include HR planning, recruitment & selection, compensation, performance evaluation, and training & development. Since human resource provides a competitive advantage that ultimately has a vital role in success and effectiveness of any organization, this course emphasizes on the understanding of the basic concepts of managing human resource and their applications in today’s organizations.

Content: Introduction Meeting present human resource requirements What is HRM Why HRM is important Emerging Human resource management challenges. Trends in HRM Global vs local HRM practices HRM from Islamic and indigenous perspective Basic Islamic philosophy of managing human resource Conducting Job analysis. HR Planning Job Description Job Specification Staffing Recruiting and selecting employees Recruitment techniques Sources of recruitment

BUS-620 MARKETING MANAGEMENT..............................................................(CREDIT HOURS 3)

Marketing management course is geared toward providing an understanding of the rationale for marketing decisions from a managerial perspective and the manipulation of marketing mix to achieve business goals. Practically marketing management encompasses activities such as demand creation and Stimulation, positioning, product differentiation, and product and brand management among others. All these activities involve planning, analysis, and decision-making.

Content: Marketing: an overview definitions the evolution of marketing management, the marketing concept and social responsibility. The importance and scope of marketing. The basic functions of marketing. Marketing information systems. concept and components of marketing information systems. Marketing intelligence system. Marketing research system. Analytical marketing system. Marketing decision support system. Consumer markets and consumer behaviour analysis demographic dimensions of consumer market. Behavioural dimensions of consumer market. The consumer's decision process.
BUS-630-Cost and Management Accounting.................................................................(Credit Hours 3)

The course will introduce the various cost concepts and how they are related to costing of products, and services, which help in Management decision making. It will also cover cost accounting techniques related to various problem areas in accounting such as cost behavior analysis, cost-volume-profit analysis, break-even analysis, flexible budgets, and absorption/variable costing, process and Job order costing.


BUS-640 Financial Management ......................................................................................(Credit Hours 3)

The basic objective of the course is to introduce students to the basic concepts and applications of finance in the global environment. We will emphasize the theory and mechanics of finance through discussion of current business articles, review of problems in the text and case analysis. We will be covering a good deal of the material in the course as suggested by the textbook assignments and problems. Students are expected to keep up with the assignments; otherwise the classes will be not be very valuable.


BUS-650 Economy of Pakistan ..........................................................................................(Credit Hours 3)


BUS-655 Business Ethics & Legal Environment .............................................................(Credit Hours 3)

The course basically deals with the introduction of those commercial laws which are directly or indirectly related to Business. It includes a short study of contract law, partnership Act, companies ordinance and Negotiable instrument. The emphasis in this course is to introduce the students with the basic concepts of conventional business law and its implementation in the contemporary financial institutions. The course is outlined in such a way to show the basic philosophy of conventional Business Law along with some example from case study.

Content: Definition and classification of Laws, over view of general and commercial terms, Business Entities such as sole proprietorship, partnership and joint stock companies Definition of a contract, Essential elements of a valid contract, Legal provision governing offers, communication, acceptance or counter offer, consideration, agreement, lawful purpose, parties to the contract and their intent to create contractual obligations Rights and Duties of parties, specific performance of the contract
BUS-660 PRODUCTION & OPERATIONS MANAGEMENT ..................................................(CREDITOURS 3)

This course is designed to provide the student with an understanding of the foundations of the operations function in both manufacturing and services. The course will analyze operations from both the strategic and operational perspectives and highlight the competitive advantages that operations can provide for the organization. The goal of the course is to help students become effective managers in today’s competitive, global environment. The course will examine operations as a competitive weapon, demand forecasting, supply-chain management


BUS-665 ORGANIZATIONAL BEHAVIOUR..............................................................(CREDIT HOURS 3)


BUS-670 BUSINESS RESEARCH METHODS ..........................................................(CREDIT HOURS 3)

This course is designed to give an overview of the principles and methods of business research: identification of research question, development of theoretical framework and model, securing the respondents, making a test investigation sampling collecting data, types and errors of collected data, tabulating and analyzing the information, interpreting the findings and stating the conclusion through a series of class projects. Practical experience is offered to the students on how research techniques and procedures are applied to solve the business problems. This course is also designed to encourage the students to explore the application of theories that have been predominantly developed in Western cultures by using different research method technique

Content: The Role of Business Research, What is business research, Why it is important The relevance of Western theories and research for local managers How theories are developed Why context is important in social sciences The research process: An overview What are the key steps in research process Types of research Problem Definition and the Research Proposal Contents of research proposal
Writing effective research proposals Exploratory Research and Qualitative analysis Qualitative research and theory building Survey Research

BUS-701 PROJECT MANAGEMENT .................................................................................................................. (CREDIT HOURS 3)


BUS-702 ENTREPRENEURSHIP .................................................................................................................. (CREDIT HOURS 3)

This course of Entrepreneurship has been designed to provide the participants with an overall understanding of the concept of entrepreneurship and small business management. Participants will be prepared to start, survive, and succeed in their own businesses. For those who consider becoming part of a big traditional business, while working for someone else, as a viable career option, it is hoped that participation in this course will orient them towards thinking and acting more entrepreneurially and creatively in the big business ambiance. Thus, regardless of their future plans and hopes, this course can benefit them greatly in how they think and act, from an entrepreneurial viewpoint, in the future. The course puts a strong emphasis on the development of a real world, workable, implementable business plan that applies the proper methods, techniques and skills needed for successfully developing and growing a new venture.

Content: An Evolving Concept Entrepreneurship – A perspective Emerging Trends: The Internet and E-Commerce Entrepreneurial Opportunities The evolution of Entrepreneurship The myths & approaches to entrepreneurship Understanding Strategic Issues in Business Plan Development Comparative analysis entrepreneurship in other countries Strategic Objectives Competitor Analysis Understanding Strategic Issues In Business Plan Development Stp Strategies Marketing Mix Strategies Understanding The Entrepreneurial Perspective In Individuals The Entrepreneurial Perspective The Dark side of entrepreneurship entrepreneurial motivation entrepreneurial perspective in organizations

BUS-703 TOTAL QUALITY MANAGEMENT .................................................................................................. (CREDIT HOURS 3)


BUS-704 OPERATION RESEARCH..............................................................(CREDIT HOURS 3)


BUS-705 ADVANCE RESEARCH METHODOLOGY..............................................(CREDIT HOURS 3)


BUS-706 SUPPLY CHAIN MANAGEMENT.......................................................(CREDIT HOURS 3)

Supply Chain Management involves the flows of materials and information among all of the firms that contribute value to a product, from the source of raw materials to end customers. Elements of supply chain management have been studied and practiced for some time in marketing, logistics, and
operations management. This course will attempt to integrate these different perspectives to develop a broad understanding of how to manage a supply chain.

**Content:** Introduction to supply chain management. Supply chain strategy SCM Decisions SCM Drivers and obstacles Facility location Warehousing Forecasting Inventory Management Inventory Management Transportation Linear Programming – Excel Solver – Lab sessions Bullwhip effect Double Marginalization Job shop scheduling, ERP JIT and lean production Outsourcing and Supplier Relationships Project presentations
**MBA (1.5 YEARS) PROGRAM**

**Academic Program:**

**Total Credit Hours:** 36  
**Core Course Credit hrs:** 24  
**Elective Course Credit hrs:** 12  
**Thesis/Research Work** 6  
**Internship: Non Credit**  
**Internship: 3 Credit Hours**

**Duration:** 1.5 years (with the provision of six months extension)

**Semester wise program structure:**

<table>
<thead>
<tr>
<th>Semester-I</th>
<th>Semester-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BUS-701 Project Management</td>
<td>6 BUS-704 Operations Research</td>
</tr>
<tr>
<td>2. BUS-702 Entrepreneurship</td>
<td>7 BUS-705 Advance Research Methodology</td>
</tr>
<tr>
<td>3. BUS-703 Total Quality Management</td>
<td>8 BUS-706 Supply Chain Management</td>
</tr>
<tr>
<td>4. Elective I</td>
<td>9 Elective III</td>
</tr>
<tr>
<td>5. Elective II</td>
<td>10 Elective IV</td>
</tr>
<tr>
<td></td>
<td>6 BUS-799 Final Project / Theses*</td>
</tr>
</tbody>
</table>

*Can be replaced with two elective courses.

**BUS-701 PROJECT MANAGEMENT.................................................................(CREDIT HOURS 3)**


**BUS-702 ENTREPRENEURSHIP .................................................................(CREDIT HOURS 3)**

This course of Entrepreneurship has been designed to provide the participants with an overall understanding of the concept of entrepreneurship and small business management. Participants will be prepared to start, survive, and succeed in their own businesses. For those who consider becoming part of a big traditional business, while working for someone else, as a viable career option, it is hoped that participation in this course will orient them towards thinking and acting more entrepreneurially and creatively in the big business ambiance. Thus, regardless of their future plans and hopes, this course can benefit them greatly in how they think and act, from an entrepreneurial viewpoint, in the future. The course puts a strong emphasis on the development of a real world, workable, implementable business plan that applies the proper methods, techniques and skills needed for successfully developing and growing a new venture.
Content: An Evolving Concept Entrepreneurship – A perspective Emerging Trends: The Internet and E-Commerce Entrepreneurial Opportunities The evolution of Entrepreneurship The myths & approaches to entrepreneurship Understanding Strategic Issues in Business Plan Development Comparative analysis entrepreneurship in other countries Strategic Objectives Competitor Analysis Understanding Strategic Issues In Business Plan Development Stp Strategies Marketing Mix Strategies Understanding The Entrepreneurial Perspective In Individuals The Entrepreneurial Perspective The Dark side of entrepreneurship entrepreneurial motivation entrepreneurial perspective in organizations

BUS-703 Total Quality Management.................................................................(Credit Hours 3)


BUS-704 Operations Research.................................................................(Credit Hours 3)

Operations Research (OR) refers to the science of decision making. This course provides a survey of fundamental methods of Operations Research and their applications at an introductory level. The emphasis is on applications rather than the details of methodology. By the end of the course, students will be exposed to a wide variety of applications and problems that can be addressed using Operations

**BUS-705 ADVANCE RESEARCH METHODOLOGY** ............................................................... (CREDIT HOURS 3)

1. Introducing Research 2. Literature Review 3. Research Topic, Sample Size and Gaining Access to Data

**BUS-706 SUPPLY CHAIN MANAGEMENT** ................................................................. (CREDIT HOURS 3)

Supply Chain Management involves the flows of materials and information among all of the firms that contribute value to a product, from the source of raw materials to end customers. Elements of supply chain management have been studied and practiced for some time in marketing, logistics, and operations management. This course will attempt to integrate these different perspectives to develop a broad understanding of how to manage a supply chain.

**Content:** Introduction to supply chain management. Supply chain strategy SCM Decisions SCM Drivers and obstacles Facility location Warehousing Forecasting Inventory Management Inventory Management Transportation Linear Programming – Excel Solver – Lab sessions Bullwhip effect Double Marginalization Job shop scheduling, ERP JIT and lean production Outsourcing and Supplier Relationships Project presentations

**List of Elective Course:**

**FINANCE**

<table>
<thead>
<tr>
<th>Course Codes</th>
<th>Courses</th>
<th>Pre-Requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS-721</td>
<td>Financial Statement Analysis</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-730</td>
<td>Corporate Finance</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-735</td>
<td>Banks Management</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-741</td>
<td>Risk Management</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-750</td>
<td>Investment &amp; Portfolio Management</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-756</td>
<td>Financial Reporting &amp; Business Valuation</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-761</td>
<td>Taxation Management</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-770</td>
<td>Islamic Financial Systems</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-776</td>
<td>International Banking</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-780</td>
<td>Consumer Banking</td>
<td>BUS-640</td>
</tr>
<tr>
<td>BUS-786</td>
<td>Financial Market &amp; Institutions</td>
<td>BUS-640</td>
</tr>
<tr>
<td></td>
<td>Special Topic in Finance</td>
<td>BUS-640</td>
</tr>
</tbody>
</table>

**MARKETING**

<table>
<thead>
<tr>
<th>Course Codes</th>
<th>Courses</th>
<th>Pre-Requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS-722</td>
<td>Strategic Marketing</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-731</td>
<td>Consumer Behavior</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-736</td>
<td>International Marketing</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-742</td>
<td>Brand Management</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-751</td>
<td>Services Marketing</td>
<td>BUS-620</td>
</tr>
<tr>
<td>Course Codes</td>
<td>Courses</td>
<td>Pre-Requisites</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>BUS-757</td>
<td>Marketing Research</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-762</td>
<td>Export Marketing</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-771</td>
<td>New Product Development</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-777</td>
<td>Business Marketing</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-781</td>
<td>Advertising Marketing</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-787</td>
<td>Industrial Marketing</td>
<td>BUS-620</td>
</tr>
<tr>
<td>BUS-789</td>
<td>Integrated Marketing Communications</td>
<td>BUS-620</td>
</tr>
<tr>
<td></td>
<td>Special Topic in Marketing</td>
<td>BUS-620</td>
</tr>
</tbody>
</table>

**HUMAN RESOURCE**

<table>
<thead>
<tr>
<th>Course Codes</th>
<th>Courses</th>
<th>Pre-Requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS-723</td>
<td>Change Management</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-732</td>
<td>Organizational Development</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-737</td>
<td>Human Resource Development</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-743</td>
<td>Performance Management</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-752</td>
<td>Compensation Management</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-758</td>
<td>Recruitment &amp; Selection</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-763</td>
<td>Leadership</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-772</td>
<td>Industrial Relation</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-778</td>
<td>Labor Laws</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-782</td>
<td>Knowledge Management</td>
<td>BUS-610</td>
</tr>
<tr>
<td>BUS-788</td>
<td>Conflict Management</td>
<td>BUS-610</td>
</tr>
<tr>
<td></td>
<td>Special Topic in HR</td>
<td>BUS-610</td>
</tr>
</tbody>
</table>

**INFORMATION TECHNOLOGY**

<table>
<thead>
<tr>
<th>Course Codes</th>
<th>Courses</th>
<th>Pre-Requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS-724</td>
<td>Programming Fundamentals for Business</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-733</td>
<td>Computer Networking</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-738</td>
<td>Management Information System</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-744</td>
<td>Operating System Management</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-753</td>
<td>E-Business</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-759</td>
<td>Database Management</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-764</td>
<td>Software Management</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-773</td>
<td>Industrial IT</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-778</td>
<td>System Analysis &amp; Design</td>
<td>BUS-560</td>
</tr>
<tr>
<td>BUS-783</td>
<td>Expert System and Artificial Intelligence</td>
<td>BUS-560</td>
</tr>
<tr>
<td></td>
<td>Special Topic in IT</td>
<td>BUS-560</td>
</tr>
</tbody>
</table>
M.Phil Development Studies

Academic Program:
Total Credit Hours: 36
Core Course Credit hrs: 12
Elective Course Credit hrs: 12
Thesis/Research Work 12
Duration: 3 years (with the provision of six months extension)

Content of Core Courses

Development: History, Theory and Policy .......................................................... (Credit Hours 3)
- Definitional Issues
- Major broader approaches to Development
- Economic development Vs. Development Economics
- Development through History
- Colonialism and Development
- Colonialism and Postcolonialism
- Postdevelopmentalism and Postmodernism
- Major theories of Development
- Contemporary Debates
- Deconstructionist Approaches
- Institutions and Development
- Globalisation and Development
- Culture and Development
- Human Rights and Development
- Contemporary debates in Development
- Conflict and Development
- Policy Framework and Development

Research Methods for Development Studies ....................................................... (Credit Hours 3)
Introduction to social research
- Philosophical Foundation of Social Research: Some basic Concepts.
- The Key Epistemological Paradigms
- Basic research strategies in social research.
- Principles of Quantitative research
- Principles of Qualitative research
- Research designs in Quantitative Research
- Research designs in Qualitative Research
- Tools of data collection
- Sampling
- Literature review & problem formulation
- Writing the research proposal

**Anthropology and Development** .................................................................................. (CREDIT HOURS 3)

- Anthropology: Definition and Branches
- Development: Origin and Development of the field
- Articulation of Anthropology and Development
- Anthropology of Policy
- Anthropology of Social Change & modernization
- Anthropology and Development: Confronting Globalization
- Anthropology and Development: Indigenous People and Development Processes.
- Anthropology and Development: Development Exercise re-examined.

**Development Economics** ................................................................................................. (CREDIT HOURS 3)

- Principles and Concepts
- Economics, Institutions and Development
- Structures and Characteristics of Developing Countries
- Growth and Development
- Theories of Development
- Classical theories of economic development
- Structural Change Models
- International-dependence revolution
- The Neoclassical Counterrevolution
- The new Growth theory
- Coordination Failure
- Poverty, Inequality and Development
- Intersection of Population Growth and Economic Development
- Urbanization and Rural-Urban Migration
- Human Capital
- Education and Health in Economic Development
- Agriculture and Economic Development
- Environment and Development
- Trade and Development
- Economic Policy and Development
M.Sc Development Studies

Academic Program:
Total Credit Hours: 60
Core Course Credit hrs: 36
Elective Course Credit hrs: 24
Thesis/Research Work 6
Internship: Non Credit
Internship: 3 Credit Hours
Duration: 2 years (with the provision of one year extension)

Introduction to Anthropology ........................................................................................................ (CREDIT HOURS 3)

Introduction
This course is designed to highlight the many facets of human behaviour discursively and to theorise and conceptualise the discourse of Anthropology and its relation with Development. The broader areas of thematic focus will cover the meanings of Anthropology, role of culture and community, Ethnography, Kinship, Identity, Anthropology as a Social Science, methods in Anthropology, Anthropology of Development, Anthropology of Religion and Anthropology of Health.

Meanings of Anthropology
1. What is Anthropology?
2. History of Anthropology
3. Scope of Anthropology

Fields of Anthropology
1. Physical Anthropology
   - Paleontology
   - Epidemiology
   - Genetics
2. Socio-cultural Anthropology
   - Political Anthropology
   - Medical Anthropology
   - Economic Anthropology
   - Educational Anthropology
   - Psychological Anthropology
   - Urban Anthropology
   - Anthropology of Globalisation
3. Linguistic Anthropology
   - Structural Linguistics
   - Historical Linguistics
   - Socio Linguistics
4. Archaeological Anthropology
   - Pre-historic
   - Historic
   - Contemporary

Theories of Anthropology
1. Evolutionism
2. Diffusionism
3. Functionalism
4. Marxist Anthropology
5. Structuralism
6. Ethnoscience
7. Symbolic Anthropology

Methods
1. Inductive and Deductive Approaches
2. Data Collection Methods in Anthropology

Culture
1. Concept and Features of Culture
2. Ethnocentrism and Cultural Relativism
3. Components of Culture
4. Language and Culture

Kinship
1. Kinship and Marriage
2. Definition, Types and Rules of Marriage

Gender, Ethnicity, and Race
1. Gender roles and Stratification
2. Gender and Socialisation
3. Gender Stereotypes

Anthropology of Religion
1. Meanings and Contestations
2. Definition of Religion
3. Types and Functions of Religion

Anthropology of Health
1. Medical Anthropology
2. Health, Culture, and Society

Key Readings

Introduction to Economics

Introduction
This course is designed to introduce students to the understanding of Economics as a social theory and as an analytical tool and to develop students’ understanding of organisational and policy implications.

Economics
1. Economics as a Theory
2. Fundamental Economic Problem

**Individual Choice**
1. The Role of Demand
2. Rationality
3. Economic Goods
4. Market Demand

**Production**
1. Production Functions
2. Behaviour of Firm
3. Producer Behaviour
4. Firm as an Organisation

**Market Structures**
1. Concept of Equilibrium
2. Determinants of Market Structure
3. Perfect Competition
4. Monopoly
5. Oligarchy

**Market for the Factors of Production**
1. Capital, Labour, and Distribution
2. Demand for Factors
3. Supply of Labour
4. Market Equilibrium

**Welfare Economics**
1. General Equilibrium
2. Pareto Efficiency

**Externalities and Public Goods**
1. Externalities and the Incomplete Market
2. Public Goods and their Efficient Provision

**Macroeconomics**
1. Problem of Aggregation
2. Gross Domestic Product
3. Gross National Income
4. Unemployment
5. Closed Economy
6. Open Economy
7. Money and Banking
8. Prices, Inflation and Unemployment

**Key Readings**

**Introduction to Development Studies**

Introduction to Development Studies is an introductory-level course with an emphasis on the socio-political and economic issues of the developing world. Multiple meanings of
Development, theories of Development, Colonialism, Modernisation Theory, Dependency Theory, Structuralism, Neo-liberalism, Grassroot Development, Postmodernism, Postcolonialism, and Postdevelopmentalism are the broader areas of focus in this course.

Meanings of Development
1. Economic Meanings
2. Non-economic Factors
3. North/South Divide
4. Developing/Developed World Divide
5. First/Third World Divide

Geography of Development
1. Spatial Meanings
2. The Power of Representation

Theories of Development
1. Colonial Economics
2. Classical and Neo-liberal Development Theories
3. Structuralism
4. Marxism
5. Socialism
6. Modernisation
   ➢ Industrial Revolution

Social and Cultural Dimensions
1. Gender and Development
2. Rights-based Development
3. Ethno-development

Rural Development
1. Rural Context and Development
2. Rural Poverty
3. Rural Livelihoods
4. Rural Migration
5. Economic Sector: Agriculture
7. Land Policies
8. Rural Governance and Power
9. Rural Tourism

Sustainable Development
1. Meaning of Sustainable Development
2. Dimensions of Sustainable Development

Institutions and Development
1. Meanings of Institutions
2. Inclusive/Extractive Institutions
3. Political and Economic Institutions

History of Development
1. Colonialism
2. Neo-colonialism
3. Imperialism
4. Colonial Capitalism
5. Post-colonialism

**Grassroot Development**
- Participatory Development
  - Bottom-up Approach
  - Community-based Development

**Globalisation and Development**
1. Theories of Globalisation
2. Economic Globalisation
3. Cultural Globalisation
4. Indigenisation

**Conflict and Development**
1. Theories of Conflict
2. Securitisation of Development
3. Human Security

**Key Readings**

**Theories of Development Studies**

**Introduction**
This course is designed to cover major historical, social, political, and economic theories of Development Studies. This course will also cover political economy, theory, policy, and practice of Development. A course designed to focus on major decentred and deconstructionist approaches of Development Studies will cover theories of Critical Modernism, Democratic Development, Feminist Theories of Development, and other Contemporary Debates.

**Political Economy of Development**
1. Theories of Economic Development
2. Structure of the World Economy
3. International Trade and Finance
4. Capital flows to less Developed Countries
5. Issues of Employment, Equity and Income Distribution
6. Place of Market and the Public Sector

**Theory, Policy, and Practice**
1. Historical understanding of Sociological and Political theories of Development
2. Enlightenment Origins
3. The Classical Economics
4. Neoclassical Economics
5. Keynesian Economics
6. The Developmental State
7. Structuralism
8. Development Economics
9. World Bank Policy
10. Neoliberalism
11. Development as Modernisation
12. Dependency Schools
13. Critical Theories
   ➢ Marxist, Socialism, and Development
   ➢ Poststructuralism, Postcolonialism and Postdevelopmentalism

**Critical Modernism**
1. Marxist and Neo-Marxist Theory
2. Poststructural Theory
3. Feminist Theories
4. Democratic Development

**Contemporary Debates**
1. Grassroots Development
   ➢ Basic Needs
   ➢ Decentralisation
   ➢ NGOs and Development
   ➢ Empowerment, Agency, and Participation
   ➢ Civil Society
   ➢ Social Capital
2. Social and Cultural Perspectives
   ➢ Development as Social Evolution
   ➢ Ethnodevelopment
   ➢ Gender and Development
   ➢ Rights-based Development
3. Environment and Development
   ➢ Population and Environment
   ➢ Modernisation Theory and Environment
   ➢ Sustainable Development
   ➢ Poverty and Environment
   ➢ Ecotourism
4. Globalisation and Development
   ➢ New International Division of Labour
   ➢ World Trade Organisation
   ➢ Globalisation and Cultural Homogenisation
   ➢ Transnational Political Organisation

**Key Readings**
Introduction to Political Science

Introduction

This course is designed to identify the structure and operation of the Western and Eastern political systems. Through imparting knowledge of concepts and theories of politics students should be able to distinguish among the diversity of traditions in the field. This course presents an overview of the discipline, including the basic theories, concepts, approaches, and enduring questions of political science. It provides students with a foundation of knowledge and the analytical skills necessary to understand modern politics in historical context.

Politics

1. What is Politics?
2. Role of Politics in Society.
3. What is political science and what is the role of political scientists?

Power and Politics

1. Conceptions and Theories of Power
2. Karl Marx
3. Michelle Foucault
4. Politics and Power

Political Philosophy and Ideologies

1. Political Philosophies
2. Aristotle
3. Stoics
4. Thomas Hobbes
5. John Locke
6. Karl Marx
7. Political Philosophies and Modern Forms of Governance

Political Systems

1. The Origins of the State
2. Nationalism and the Modern Nation-State
3. Justice, Politics and the State
4. Authoritarianism
5. Liberalism and Capitalism

The Practice of Politics

1. Public Policy
2. Political Participation
3. Authoritarian and Liberal States
4. International Politics

Readings


**Introduction to Sociology**

**Introduction**

The course is designed to impart knowledge on the nature, scope, and relevance of Sociology to the students in the broader Development context. Historical development of Sociology, introduction to society and community, processes of social interactions, research methods of Sociology, theories of Sociology and social change, and social policy are the areas specified to be taught in this course.

**Sociology and Society**

1. Sociology as a Science
2. Development of Sociology
3. Perspectives in Sociology
   - The Evolutionary Perspective
   - The Interactionist Perspective
   - The Functionalist Perspective
   - The Conflict Perspective
   - Comparison of Perspectives

**Society and Individual**

1. The Cultural Context
2. Processes of Socialisation
3. Role and Status
4. Sexuality and Sex Roles
5. Social Order and Social Control

**Social Organisation**

1. Groups and Association
2. Social Institution
   - The Family
   - Religious Institutions
   - Education, Science, and Technology
   - Political-Economic Institutions

**Social Stratification**

1. Social Class
2. Social Mobility
3. Race and Ethnic Relations

**Social Change and Social Policy**

1. The Changing Community
2. Behaviour and Social Movements
3. Collective Social and Cultural Change
Key Readings:

Colonial History and Development (3 Credit Hours)
Introduction
Despite being hotly debated, continually contingent, context-laden and politically charged the Colonial History had (and still has) serious ramifications for the dwellers of the once-colonised and now-apparently-decolonised states when viewed within the domain of socio-economic and socio-political change and development. In order to highlight the impact of these changes this course has been included to the list of Core Courses. The broader thematic areas will include Colonial History, Colonial Economics, Colonial Capitalism, Post-colonial Theories, Dependency School of Thought, and Colonial Institutions.

Colonialism
1. British Colonialism: History and Economics
2. Coloniser and Colonised
3. Colonisation of Archives
4. Colonisation of Education

Economic Contexts
1. East India Company
2. Trade
3. British Institutions
4. Inclusive Vs. Extractive Institutions

Historiography
1. Historians’ Methodology
2. Power of Representation
3. Analysis of the text on Economic History of Indo-Pak
4. Imperial Archive

Urbanisation and Migration
1. Colonisation and Urbanisation
2. Frontier, Metropolis and Core
3. Rural-urban Interactions
4. Migration and Migrants
5. Challenges and Riots

Governance
1. Socio-political Structures
2. Governmental Structures
3. Inclusive Institutions
4. Extractive Institutions
5. Pre-colonial Institutions
6. Post-colonial Institutions
Education

1. Schooling Development
2. Politicising Education
3. Colonial Education
4. Pre-colonial Education
5. Postcolonial Education

Identity of the Locals

1. Colonial Identity
2. Conflicted Identity
3. Other and Othering
4. Indigenous People
5. Power
6. Identity Formation

Economics and Infrastructure Development

1. Economic History
2. Development
3. Dependency
4. Institutions and Colonialism

Social and Political Resistance

1. Resistance
2. Decolonisation
3. Anti-colonialism
4. Anti-imperialism
5. Force and Revolution.

Colonial Policy

1. Historical Background
2. Colonial Practices
3. Integration
4. Direct Rule
5. Indirect Rule
6. Legal System
7. Labour Policies
8. Education and Religion
9. Development and Investment

Key Readings

**Research Methods**

(3 Credit Hours)

**Introduction**

This course is designed to cover the characteristics of theoretical and research underpinnings of qualitative approaches in social research, data elicitation techniques and research writing.

**Research Problem**

1. Research Problem
2. Review of Relevant Literature (Types of Literature Review)
3. Theoretical Framework
4. Research Question
5. Research Hypotheses
6. Research Assumptions
7. Temporal Components (Cross-sectional and Longitudinal Studies)
8. Unit of Analysis (Individual, Group or Organisation)

**Qualitative Research Design**

1. Definition of Research Design
2. Characteristics of Research Design
3. Types of Research Design
4. Components of Research Design

**Qualitative Sampling**

1. Sampling Design
2. Sampling Techniques
3. Sampling Frame

**Data Elicitation**

1. Types and Methods of Data Collection
2. Questionnaire Development
3. Types of Interviews
   - Episodic Interviews
   - Narrative Interviews
   - Oral History
   - Life History
   - Dramaturgical Interviews
4. Interview Schedule
5. Types of Observational Techniques
   - Participant and Non-participant Observation
   - Structured and Unstructured Observations
   - Importance of Environment
6. Focus Groups
   - Group Dynamics
7. Pre-testing and Revision
8. Field Problems in Data Collection
9. Reporting and Editing

**Ethnography**
1. Ethnomethods
2. Field Setting
3. Role of a Researcher
4. Emic and Etic Approaches
5. Reflections, Reflectivity, and Reflexivity

**Ethics in Research**
1. Research Ethics
2. Regulations on the Research Process
3. Institutional Review Boards (IRBs)
4. Ethical Codes
5. Informed Consent
6. Implied Consent
7. Ethical Concerns in Behavioural Research
8. Physical and Ethical Dangers in Covert Research

**Key Readings**

**Optional Courses**

**Applied Anthropology**

**Introduction**

Applied anthropology is a rapidly growing field which has been changing with time. This course will aim to help students with the application of anthropological skills and knowledge.

**Applied Anthropology: Introduction**
1. Definitions of Applied Anthropology
2. Historical Overview

**Components of Applied Anthropology**
1. Advocacy Anthropology
2. Participatory Research
3. Research with Social Movements
Programmatic Strategies for Applied Anthropology

Social Analysis Techniques
- Rapid Rural Appraisal
- Participatory Rural Appraisal
- Needs Assessment and Programme Evaluation
- Social Impact Assessment

Environmental Anthropology
1. Historical Context
2. Major Research on the domain
3. Ethnoecologies of Indigenous Populations
4. Globalisation and Cultural Relativism
5. Political Ecology
6. Role of Media, Governments, and NGOs

Policy and Basic Anthropological Constructs
1. Anthropology of Public Policy
2. History of Anthropology and Policy
3. Colonialism, Development and Anthropology
4. Development Policy and Development

Anthropology and Media
1. Comparative Media Studies
2. Euro-American Media and Cultural Studies
3. Media in Asia, Africa and Middle East
4. Ethnographic Approaches to Media

Developmental Anthropology
1. Anthropology and Development
2. Anthropology of Development

Anthropology and Education
1. Institutions and Communities: Anthropological Perspectives
2. Education and Cultures (folk, popular and elite)
3. Muticultural Education
4. Sociolinguistics
5. Public Advocacy
Medical Anthropology
1. Anthropology of Medicine
2. Cultural and Phenomenological Approaches
3. Cultural understanding of Health

Anthropology of Travel and Tourism
1. Cultural Heritage
2. Travel Writing: Anthropological Perspectives
3. Ecotourism
4. Political Economy of Tourism
5. Representation and Meanings
6. Space and Place
7. Commodification

Readings:

Cultural Economics (3 Credit Hours)

Introduction
The course designed to focus on the cultural aspects of economics and economic outcomes will cover the thematic areas of economic context of culture, cultural goods, economics of cultural heritage, consumption and commoditisation of culture, and cultural policy.

Concepts
1. Definitional issues
2. Culture and Economy
3. Individualism and Collectivism

Value
1. Theories of Value
2. Cultural Goods
3. Economic Valuation of Cultural Goods and Services

Cultural Capital
1. Cultural Capital
2. Cultural and Natural Capital
3. Sustainability and Natural Capital

Culture and Economic Development
1. Culture in Economic Performance
2. Culture in Third World Development
3. Culture, Development and Sustainability

**Economic Contexts**
1. Heritage as Cultural Capital
2. Cost-benefit Analysis and Cultural Values
3. Sustainability in Heritage Management

**Economics of Creativity**
1. Theories of Creativity
2. Creativity as Rationality
3. Creativity and Irrationality

**Cultural Industries**
1. Creative Arts as an Industry
2. Cultural Industries in Urban Spaces
3. Cultural Industries in the Economies of Developing Countries
4. Cultural Tourism
5. Cultural Exception and Trade Policy
6. Consumption of Culture
7. Commodification of Culture

**Cultural Policy**
1. What is a Cultural Policy?
2. The Economics of Cultural Policy
3. The Politics of Cultural Policy
4. Economic and Cultural Value in Policy Formation
5. Institutions of Culture and Economy
6. Economics of Music and Film Industry
7. Economics of Festivals
8. Economics of Cultural Tourism

**Key Readings**

**Diasporas and Development**

(3 Credit Hours)

**Introduction**

This course will take an interdisciplinary approach to develop a knowledge base of students for the transnational cultures in the contemporary world. This course will help students to explore ideas of migration, globalisation, postcolonial world and cultural renovations. It places importance on cultural flow and international migration to ground students in the historical basis of these issues.

1. Diaspora as a Concurrent Issue
2. Linking Diaspora to Development
3. Diasporas’ Economic activities and Development
4. Participation and Empowerment within Diasporas
5. Institutionalised Communication with Migrant Community
6. Policy Arenas
7. Business Competition
8. Outreach
9. Banking and Investments
10. Hometown Associations
11. Tourism and Trade
13. The Multilateral Investment Fund of the Inter-American Development Bank
15. The United States Agency for International Development (USAID)
16. Issues and Impediments

**Key Readings**


**Economic Anthropology**

*Introduction*

The course is designed to cover social and cultural aspects of economics, production, profit-seeking, saving, investment, and borrowing. Critique on mainstream economic discourse, intersection of anthropology with economic discourse, and economic behaviours and choices of individuals and communities expounded by anthropological insights are the areas to be taught in this course.

*Intersection of Anthropology with Economics*

1. Human Behaviour- Anthropological Perspectives
2. Anthropology, Economics, and Choice

*Egalitarianism and Power*

1. Affluent Societies
2. Scarce Societies

*Households and Markets*

1. Labour Markets
2. Division of Labour

*Exchange and Transactions*

1. Gift Economy
2. Moral Economy
3. Informal Economy
4. Subsistence Economy
5. Economics of Religion
Reciprocity
1. Anthropological Perspectives
2. Social Reciprocity

Key Readings

Introduction to Globalisation (3 Credit Hours)

Introduction
This course is designed to critically examine the contemporary process of globalisation and how it affects the developing world.

Globalisation
1. Theories of Globalisation
2. Empire and Imperialism
3. Disintegration and Hegemonic Wars
4. Regional and Global Challenges
5. Cultural Imperialism
6. Cosmopolitanism
7. Economics of Globalisation
8. Transnational Companies, Economic Sovereignty, and the Global Markets
9. The Consequences: Inequality, poverty, labour migration, industrial and agrarian labour and gender relations

Globalisation and Development
1. Competing Perspectives of Globalisation
2. Competing Perspectives and Contemporary Development Perspectives
3. Social Actors and Global Processes
4. Global Trends and Trajectories (local, national and regional)

Globalisation and Identity
1. Globalisation and Cultural Identity
2. Identity as Cultural Power
3. Identity and Modernity
4. Identity and Deterritorialisation
5. Identity Formation
6. Identity Politics
7. Cultural Hybridisation
8. Cultural Creolisation
9. Indegenisation and Homogenisation
10. Gender and Global Networks
11. Informal Work and Global Networks
12. Popular Culture and Political Identity

**Key Readings**

**Issues in Public Health**

This course is designed to cover major health challenges, programmes and policies and to develop their link to development enterprise. This course proposes an overview of current local and global health challenges drawing on the insights of development theory and policy. This interdisciplinary approach will guide the student into core global health issues. Students will be introduced to the world’s vast diversity of determinants of health and disease. Students will analyse current and emerging global health priorities: health poverty, conflicts and emergencies, health inequity, health system reforms, and major global initiatives for disease prevention and health promotion.

**Introduction to health systems**
1. What is a health system?
2. How do we measure health system performance?
3. Why do some health systems perform so much better than others?
4. What does it mean to strengthen a health system?

**Options for improving health service delivery at the national level**
1. Individual vs. Population Health Services
2. The Role of Primary Health Care vs. Tertiary Health Care
3. Horizontal vs. Vertical Health Service Delivery
4. Public vs. Private Health Care

**The role of international actors in the delivery of health services**
1. What role do international actors play in health service delivery in developing countries?
2. How are national priorities influenced by international priorities?
3. How has development assistance for health evolved?
4. What is the role of non-governmental actors (both international and domestic) in health service delivery?

**Health service delivery**

**Demand side issues**
1. What factors affect the demand for health services in developing countries?
2. How do households select among health care providers?
3. How does quality affect the demand for health care services in developing countries?

**Supply side issues**
1. The distribution of human resources for health
2. Incentives of health care providers
3. Quality of health care providers
4. The migration of health care providers

**Access to pharmaceuticals and technologies**
1. The concept of access: Frost and Reich Framework
2. Intellectual property law and the global intellectual property regime
3. Neglected tropical diseases
4. Maternal mortality

**Key Readings**

**Development and Post-Colonial Era**

**Introduction**
This course is designed to introduce students to some of the key terms, texts and concepts within the field of colonial and post-colonial studies through critical readings.

**Post-Colonial Theories**
1. The Inception
2. Poststructuralism
3. Key Contexts and Histories of Post-colonial Studies
4. Orientalism
5. Subalternity and Representation/Articulation
6. Hybridity
7. Constructs of the Global and Transnational
8. Constructs of the Cosmopolitan and the International
9. Literature of South Asia
10. Importance of Literary and Filmic Texts and Imagery
11. Post-colonial Studies and Human Rights

**Post-Colonialism and Development**
1. Post-colonial Critique of Development
2. Development's critique of Post-colonial Theory
3. Importance of Indigenous Knowledge for Development
4. Intersection of Development with Nationalism, Migration, Gender and Race: Post-Colonial Perspectives

**Pakistan and Development: Post-Colonial Perspectives**
1. Interdisciplinary Approaches to Pakistan Studies
2. Contemporary Critical and Historical debates on Pakistan
3. History, Politics, Relations between Islam, gender, culture and state

**Key Readings**

**Quantitative Research in Development Studies** (3 Credit Hours)

**Introduction**
The course will cover the quantitative ways of Data Synthesis, Processing, Measurement, Scaling, and Analysis. Statistical Techniques, Scaling Methods, and Econometric Techniques are the areas which will be covered in this course.

**Processing of Data**
1. Statistical Techniques
2. Interpretation of Data using Technical Language
3. Software Techniques

**Measurement and Scaling**
Types of Scales
- Thurston Scale
- Rating Scale
- Likert Scale
- Internal Consistency Scale
- Paired Comparison

**Presentation of Data and Report Writing**
1. Basic Format
2. Graphic Presentation
3. Pictorial Presentation
4. Essentials of Report Writing (Bibliography, Footnotes, and References)

**Sampling Techniques**
1. Probability Sampling
2. Simple Random Sampling
3. Systematic Random Sampling
4. Stratified Sampling
5. Quota Sampling
6. Cluster Sampling

**Econometrics**
1. Introduction
2. Types of Economic Data
Cross-sectional Data
- Time Series Data
- Panel Data

3. Descriptive Statistics
4. Mean, Median, Mode
5. Standard Deviation
6. Simple Linear Regression
7. Least Squares Estimation
8. The Ordinary Least Squares
9. Properties of Least Squares
10. Hypothesis Testing and Confidence Intervals
11. Goodness of Fit
12. Multiple Regression Analysis
13. R-Squared
14. R-Bar-Squared
15. Dummy Variables
16. Violation of Classical Assumptions
17. Instrumental Variable Equation
18. Two-Stage Least Squares
19. Logit/Probit Models

Key Readings

Religion and Development (3 Credit Hours)

Introduction
This course is designed to examine articulation of Religion and Development with a focus on the intersection of Islam with Politics and Political and Politicised Islam with Development. The thematic areas will cover Religious Values and Economic Change, Faith Based Organisations, Religion and Civil Society, and Extremism. Within Islamic discourse this course will cover the themes of Islam conceptualised in Western theories and methodologies, Islam as a socio-political force in the contemporary world, and the diversity of social sciences (Sociology, Anthropology, Cultural Studies, Islamic Studies, and International Relations) in explaining a more layered and a dynamic understanding of Islamic discourse and its relation with Development.

Intersection of Religion with Development
1. Historical Context
2. Religious Values and Economic Change
3. Faith Based Organisations
4. Religious Professionals
5. Religion Vs. Development
6. Religion and Civil Society
7. Religious Extremism: Conflict, Violence, and Poverty
8. Sectarianism
Islamic Discourse
1. Theoretical and Methodological Issues in the Study of Muslim Societies
2. Islamic Movements, Governments and Ideologies
3. Islam, Modernity, and Globalisation
4. Salafism and Pop Islam
5. Transnational Islam
6. Islam and Gender Politics

Islam in Contemporary World
1. Intersection of Islam with State
   - Authority
   - Expertise
   - Education
2. Islam in Colonial and Post-colonial History
   - Sectarianism
   - Colonialism
3. Islam and the production of political and social identities, and conflicts
   - Nationalism
   - Ethnic Identity
   - Violence
   - War on Terror
   - Islam and Neoliberalism
   - Politicisation of Religion
   - Secularism
   - Counter Terrorism and Security
   - Gender

Islam and Development
- An Uneasy Relationship?
- Politics of Aid and Islamic States
- Culturally Sensitive Approaches
- Islamic Economics
- Green Islam
- State and Civil Society

Key Readings

Social Change and Development (3 Credit Hours)
Introduction

Divided into two cohesive parts this course will enrich students with the Sociological take on Change and Development. The broader areas will cover the study, components, and engines of change, and the theoretical, political, and gendered components linked with Social
Change. The second component will cover Sociology of Development expounding Development on theoretical, definitional, and political grounds. The course will also cover the critique of Sociological discourse on the hegemonic discourse of Development.

**Social Change**

1. The components of change
   - Population Change
   - Social and Cultural Aspects of Population Change
   - Demographic Transition Theory
   - The Marxist Critique
   - Population Policies

**Engines of Change**

1. Nature of Collective Behaviour
2. Crowd Behaviour
3. Mass Behaviour
4. Publics and Public Opinion
5. Social Movements
   - Theories of Social Movements
   - Kinds of Social Movements
   - Life cycles of Social Movements

**Social and Cultural Change**

1. Theories of Social Change
   - Evolutionary Theories
   - Cyclical Theories
   - Functional and Conflict Theories of Change
2. Processes of Social Change
3. Factors in the Rate of Change
4. Resistance to and Acceptance of Social Change
5. The Consequences of Change

**Social Development**.............................................................. (3 Credit Hours)

**Basic Concepts**

1. Themes and Issues in Sociology of Development
2. GDP, GNP concepts and their relation with the socio-economic status.

**Theoretical Perspectives on Development**

1. Modernisation Theory
2. Underdevelopment Theory

**Political Development**

1. Third World Politics
2. Political Instability
3. Democratic Vs. Military Regimes

**Rural Development**

1. Definitions
   - Rural Context and Development
   - Rural Poverty
Food Insecurity
Rural Livelihoods
Rural Development Vs. Urban Development

2. Migration
   Internal Migration: From rural to rural areas
   Internal Migration: From rural to urban areas
   Migration as a cause of Instability of rural societies

3. Rural Poverty Dynamics
   Chronic Poverty
   Poverty and Risk
   Poverty and Saving

4. Agricultural Development
   Agriculture and Finance
   Agriculture and Risk
   Growth in non-farm Incomes
   Sustainable Livelihoods

5. Policies in relation with Rural Non-farm Employment
   Sustainable Growth
   Good Governance
   Rural and Urban Dwellers: Livelihood Options and Opportunities
   Land Fragmentation and Development
   Property Rights and Privatisation
   Institutions and Land Administration

Rural Governance and Power
1. Participation in Decision Making
2. Capacity for Action
   Bottom-up Development
   Social Development
   Implications for the
3. Rural Vs. Urban Governance

Rural Tourism
1. Rural Tourism: An Alternative Source of Jobs and Incomes
2. Tourism and Rural Economy: Prospects and Links

Water
1. Institutions and Water Sources
2. Water Scarcity

Development Planning and Aid
1. Post-development Critique
2. Failure of Development Aid
3. Transitional Practices in the LDCs
4. Socialist Societies in the Global System
5. Models of Case Studies of Development
6. The Role of Development Aid in Development
7. Role of Non-Government Organisations in Development

Key Readings

**Social Policy**  
**(3 Credit Hours)**

**Introduction**

A course designed to highlight the need for and importance of social policy in the so-called developing world will include thematic areas of introduction to social policy, social control, social movements, resistance and power, contemporary debates, politics in social policy, and economics in social policy.

**Introduction to Social Policy**

1. Welfare States  
2. History and Characteristics of Welfare States  
3. Welfare Economics

**Social Policy and Economic Development**

1. Sociology of Change  
2. Sociology of Development  
3. Social Policy and Economic Growth

**Social Pluralism**

1. Social Collective Behaviour  
2. Theories of Crowd and Mass Behaviour  
3. Social Movements

**Communities in Transition**

1. The Rural Community  
   - Traditional Characteristics of Rural Life  
   - Rural Revolution  
2. The Urban Community  
   - The Development of Cities  
   - The Antiurban Bias  
   - Urban Life and Personality  
3. Rural and Urban Convergence

**The Political Economy of Social Policy**

1. Politics of Policies  
2. Politicization of Public Services

**New Approaches**

1. Capability Approach  
2. Social and Cultural Change

**Gender and Social Policy**

1. Gender and Development
2. Gender and Social Rights
3. Gender and Human Rights

**Population and Social Policy**
1. Demographic Transition
2. Demographic Dividend
3. Changing Population Composition
   - Migration
   - Push, Pull, and Channels
   - International Migration
   - Internal Migration

**Social Poverty and Emerging Frameworks**
1. Income Poverty
2. Non-income Poverty
3. Poverty Line
4. Headcount Ratio
5. Human Poverty Index
6. Multidimensional Poverty: Framework and Index
   - Capability Approach
   - Measures of wellbeing and inequality
   - Inclusion of the measures of health, education, living standards and quality of life
   - Missing Dimensions: Quality of work, empowerment, physical safety, ability to go about without shame, and psychological wellbeing.

**Key Readings**

**Gender and Development**

*Introduction*

This course will examine the gendered impact of the development and its processes both on theoretical and practice grounds. The debates in gender and development, women and development, women of the South, and policy approaches will be covered.

*Development*

1. Contested Meanings
2. The Concept of Development and its impacts on understanding of Gender Issues

*Women and Development*

1. Basic Concepts/Definitions in Women and Development
2. Larger Perspectives within Development addressing Women Issues
3. Policy Approaches addressing Women’s Issues
4. Women and Education
5. Women and Employment
6. Women and Political Participation
7. Women Empowerment
8. Women and Land Rights

**Women Empowerment**
1. Meanings of Empowerment
2. Economic Empowerment
3. Social Empowerment
4. Political Empowerment

**WID, WAD and GAD**
1. Difference between Women in Development, Women and Development, and Gender and Development
2. Practical Gender Needs and Strategic Gender Needs

**Health and Welfare**
1. Health Education
2. Maternal and Child Health
3. Reproductive and Child Health

**Population Policies**
1. Women in Population Programmes
2. Coercion and Human Rights
3. Contraceptive Safety
4. Population Control
5. Family Planning
6. Informed Consent

**Ecofeminism**
1. Feminist Environmentalism
2. Gender and Climate Change

**Gender and Conflict**
2. Humanitarian Assistance
3. Livelihood Support
4. Protection and DRR (disarmament, demobilisation, and reintegration)

**Women Work**
1. Women employment
2. Gender and inequality

**Literature and Women**
1. Women and Colonial Subjugation
3. Women Roles.
4. Textual Analysis
5. Colonial Literature

**Key Readings**

**Qualitative Research in Development Studies**

**Introduction**

This course is designed to explain the analysis of data elicited through interviews, observations, focus groups, informal discussions, field notes, diaries, social networking sites, newspapers, magazines, and images (still and moving).

**Qualitative Approaches**

1. Inductive Approach
   - Grounded Theory
2. Deductive Approach

**Qualitative Data Analysis**

**Qualitative Content Analysis**

1. Theory and Logic
2. Qualitative Content Analysis as an Interpretative Approach
3. Qualitative Content Analysis as a Social Anthropological Approach
4. Qualitative Content Analysis as a Technique
5. Manifest and Latent Content Analysis
6. Communication Components
7. Units and Levels of Analysis
8. Coding and Categorizing
9. Coding Frames in Content Analysis
10. Strengths of using Qualitative Content Analysis
11. Limitations of using Qualitative Content Analysis

**Discourse Analysis**

1. Theory and Logic
2. Empirical Discourse Analysis (Conversation and Genre Analysis)
3. Critical Discourse Analysis (Foucauldian Analysis)
4. Political Discourse Analysis (Marxist Discourse Analysis)
5. Vocal and Non-vocal Discourse Analysis (Linguistics)
6. Strengths and Limitations

**Rhetorical Analysis**

1. Theory and Logic
2. Analysis of the Text
3. Rhetorical Features of the Text: Capturing author’s positionality, logic for writing, potential audience, evidence, and claims.
4. Capturing the author’s explicit and implicit reasons for writing that text.
5. Strengths and Limitations
**Case Studies**
1. Theory and Logic
2. Case Study as a Method
3. Types of Case Study Design
4. Individual Case Study
5. Instrumental Case Studies
6. Intrinsic Case Studies
7. Collective Case Studies
8. Strengths and Limitations

**Narrative in Research**
1. Theory and Logic
2. Narrative Data: Collection and Analysis
3. Structural and Thematic Analysis
4. Constructions in Narrative Analysis

**Thematic Analysis**
1. Constructing a Thematic Framework
2. Data Transcription
3. Verbatim and Translation
4. Indexing/Coding Data
5. Generating Themes and Categories
6. Strengths and Limitations

**Semiotic Analysis**
1. Theory and Logic
2. Analysis of the Text and Narratives
3. Importance of Signs in texts (Signs as Signifiers and as Signified)
4. Importance of Language
5. Connotation and Denotation
6. Synchronic and Diachronic Distinctions
7. Syntagmatic Analysis
8. Paradigmatic Analysis
9. Metaphors and Codes
10. Semiotic Analysis of Photographic Images
11. Strengths and Limitations

**Film Analysis**
1. Film Theory
2. Characterisation
3. Narrative
4. Production Elements
5. Performance  
6. Meanings  
7. Interpretations  
8. Voice  

**Key Readings**  

---

**Economy of Pakistan**  
(3 Credit Hours)  

**Introduction**  
This course is designed to develop understanding of the key sectors of economy of Pakistan and contemporary issues in industry, agriculture, financial, and social sectors.  

**Development**  
1. Structural Change  
2. Five Decades and Five Epochs  
6. The Era of Structural Adjustment: 1988 onwards  

**Pakistan’s Agricultural Sector**  
1. Significance of Pakistan’s Agricultural Sector  
2. Agriculture Pricing Policy  
3. Mechanisation  
4. Agriculture Credit (Formal and Informal Credit)  
5. Agriculture Taxation  
6. Green Revolution  
7. Land Reforms  
8. Agriculture Policy and Perspective  
9. Different Crop Situation  

**Manufacturing Sector of Pakistan**  
3. Nature and Extent of Growth  
4. Industrial Policy  
5. The Age of Structural Adjustment 1988  

**Banking Sector of Pakistan**  
1. The role of State Bank, functions performed  
2. Role of commercial banks, challenges faced, ways to overcome  
3. Evaluation, nationalization and privatization of Banks
Fiscal Side of Pakistan
1. Fiscal Deficits. The IMF and World Bank
2. Objectives, tools to overcome inflationary and deflationary gap
3. Government sources of Revenues and Expenditure
4. Fiscal Policy of Pakistan the lags between the revenues and expenditure
5. Public Sector Development Programme

Social Sector
1. Planning for the social sector
2. Health sector
3. Education sector
4. Population welfare and family planning
5. Urbanization and Housing

Key Readings

Political Anthropology (3 Credit Hours)
Introduction
This course is designed to explore the interplay between Politics, Anthropology and Development. The major areas of thematic focus will cover the theoretical and conceptual underpinnings of the course, the evolution and role of the State, major political systems, and the concept and culture of power.

Introduction to the Course
1. Relationship between Politics and Anthropology
2. The Development of Political Anthropology
3. Marxist Communist Manifesto
4. The Evolution of the State
5. Religion in Politics
6. Structure and Process

Political Systems
1. Bands
2. Tribes
3. The Evolution of the State
4. States and Colonialism

Language and Power
1. Concepts and Techniques of Power
2. Domination and Resistance
3. The Politics of Identity: Ethnicity and Nationalism
4. Globalisation and Transnational Politics
5. Crime and Punishment
6. Culture and Power
7. Politics and Ethics of Anthropology
8. The Power of the People: Resistance and Rebellion
9. Gender and Power
10. Modernism, Postmodernism and the State
11. From Modernisation to Globalisation

Key Readings

Media and Development
(3 Credit Hours)

Introduction
This course is designed to explore growing intersectionality of role of Media with Development practice. The thematic areas will focus on Development Communication, Media and Rural Development, Media and Aid, Media and Social Change, Media and Political (In)stability, Political Economy of Mass Media and Development, Environmental Conservation and Communication and Health Communication.

Media and Development
1. Media and Power
2. Media and Developing Countries
3. Media and Millennium Development Goals
4. Media Development and Fragile States
5. Media and Representation of the Developing World

Development Communication
1. The concept and meaning of Development Communication
2. Cultural Nationalism and Development
3. Media Globalisation and Economic Growth

Communication and Rural Development
1. Rural Development and Media
2. Print Media in Development
3. Community Radio
4. Media in Rural Development

Communication and Social Movements
1. Folk media for Social Mobilisation
2. Theatre for Development
3. Right to Information Movement
4. Women’s Movement

Political Economy of Mass Media and Development
1. Capitalism and Media
2. Foreign Direct Investment in Media
3. Public and Private Sectors
Communication for Women’s Development and Empowerment
1. Mass Media and Women Empowerment
2. Mass Media Images of Women
3. National Communication Policy and Women’s Empowerment
4. Women and Politics
5. Violence against Women
6. Employment and Economic Empowerment of Women

Health Communication
1. Women’s Health status and Child Survival
2. Communication Strategies for Child Survival
3. Communication Strategies for HIV/AIDS Prevention
4. Theatre for Health Prevention
5. Implications for Health Communication Policies

Environmental Conservation, Communication and Development
1. Mass Media and Sustainable Development
2. Effects of Development on Environment
3. Environment and Development
4. Powerful Communication in South Asia

Key Readings

New Poor Economics (3 Credit Hours)
This course is designed to educate students with the alternative explanations for widespread poverty among people residing in the less developed countries. The areas of thematic focus will include economic lives of the poor, their consumption patterns, their access to markets and publicly provided infrastructure and state response to their needs.

Issues
1. Poverty Trap
2. Health Trap
3. Hunger
4. Low Consumption and Saving

Institutions
1. Insurance companies and poor
2. Microcredit and poor

Policies and Politics
1. Political Economy
2. Decentralisation and Democracy

Key Readings
## Department of Economics and Finance

### Academic Program
- Total Credit Hours: 36 Credit Hours
- Course Work: 24 Credit Hours
- Thesis: 12 Credit Hours
- Program Duration: 2 years (with the provision of one year extension)
- Core Courses: 7
- Elective Courses: 2

### Semester wise program structure

<table>
<thead>
<tr>
<th>1st semester (Fall)</th>
<th>2nd semester (Spring)</th>
<th>3rd Semester (Fall)</th>
<th>4th Semester (Spring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFN-600: Microeconomics Theory (3 Credit hrs)</td>
<td>EFN-610 Macroeconomics Theory (3 Credit hrs)</td>
<td>EFN-670 Seminar Series in Applied Economics and Finance Research Methods Non Credit Core</td>
<td>Thesis</td>
</tr>
<tr>
<td>EFN-640 : Financial Theory (3 Credit hrs)</td>
<td>EFN-650 : Financial Econometrics (3 Credit hrs)</td>
<td>Thesis Proposal (12 Credit hrs)</td>
<td></td>
</tr>
<tr>
<td>EFN-620: Quantitative Methods in Economics and Finance (3 Credit hrs)</td>
<td>EFN-630: Financial Institutions and Markets (3 Credit hrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective I (3 Credit hrs)</td>
<td>Elective II (3 Credit hrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credit hrs 12</strong></td>
<td><strong>Total Credit hrs 12</strong></td>
<td><strong>Total Credit hrs 12</strong></td>
<td></td>
</tr>
</tbody>
</table>
## List of Elective Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFN-700</td>
<td>Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-703</td>
<td>Monetary Economics</td>
<td>3</td>
</tr>
<tr>
<td>EFN-706</td>
<td>Advance Monetary Economics</td>
<td>3</td>
</tr>
<tr>
<td>EFN-709</td>
<td>Financial Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EFN-712</td>
<td>Project Management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-715</td>
<td>Advanced Financial Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>EFN-718</td>
<td>Advance Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>EFN-721</td>
<td>International Finance</td>
<td>3</td>
</tr>
<tr>
<td>EFN-724</td>
<td>Advance Portfolio Management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-727</td>
<td>Financial Risk Management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-730</td>
<td>Behavioral Finance</td>
<td>3</td>
</tr>
<tr>
<td>EFN-733</td>
<td>Banking Operations and Risk Management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-736</td>
<td>Insurance and Risk Management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-739</td>
<td>Financial Derivatives</td>
<td>3</td>
</tr>
<tr>
<td>EFN-742</td>
<td>Corporate Governance</td>
<td>3</td>
</tr>
<tr>
<td>EFN-745</td>
<td>Multinational Corporate &amp; Finance</td>
<td>3</td>
</tr>
<tr>
<td>EFN-748</td>
<td>Regulation of Money Laundering and Finance crimes</td>
<td>3</td>
</tr>
<tr>
<td>EFN-751</td>
<td>Economic Development and Finance</td>
<td>3</td>
</tr>
<tr>
<td>EFN-754</td>
<td>Emerging issues in Finance</td>
<td>3</td>
</tr>
<tr>
<td>EFN-757</td>
<td>Venture Capital and Private Equity Finance in a Global Context</td>
<td>3</td>
</tr>
<tr>
<td>EFN-760</td>
<td>Banks Management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-763</td>
<td>International Business Strategy</td>
<td>3</td>
</tr>
<tr>
<td>EFN-766</td>
<td>Treasury and Funds management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-769</td>
<td>Foreign Exchange Management</td>
<td>3</td>
</tr>
<tr>
<td>EFN-772</td>
<td>Islamic Banking and Finance Markets</td>
<td>3</td>
</tr>
</tbody>
</table>
CORE COURSES

EFN 600: Microeconomic Theory ................................................................. [Credits 3]
Pre Requisite: Nil

Course Contents

Consumer choice and demand under uncertainty, utility theory, firms' corporate goals, production and costs, market structure: competition, monopoly oligopoly and game theoretic concepts with reference to oligopoly, factor market - the pricing of labor and capital services and assets, economic efficiency and equity, sources of market failure, government and public choice nexus between market structure and firm pricing, dividend decisions, cost and value addition.

Suggested Readings:

1. Varian, Hall R. - Microeconomic Analysis – Norton & Company

EFN 640: Financial Theory................................................................................. [Credits 3]
Pre Requisite: Nil

Course Contents

Risk and return analysis, financial decisions, consumption decisions, investment decisions, Investment in capital market, sources of long term and short term finance, debt, equity, portfolio selection and portfolio analysis, capital asset pricing models, dividend decisions, capital structure decisions, cost of capital and taxation issues, capital market efficiency.

Suggested Readings:

EFN 620: Quantitative Methods for Economics and Finance ............................... [Credits 3]

Pre Requisite: Nil

Course Contents

Observational Studies vs. Experimental Studies, Quasi Experiments, Time Series Data and Longitudinal/Panel Data. Review: linear algebra, CDF and Histogram, binomial probabilities, theoretical distributions, random variables and hypothetical populations. discrete distributions: uniform, binomial, Poisson continuous distributions: Uniform, normal distributions, central limit theorem, matching samples to populations, exact distributions, asymptotic and simulated distribution, testing simple hypothesis, tests for normality, two random variables: conditional and marginal distributions, correlations: ecological correlations and limitations of correlation, Regression: basic concepts, deep structure of regression models, interpreting regression results, heteroscedasticity and autocorrelation, GQ, BP and Eicker White test for heteroscedasticity, dummy variables, unit roots and spurious regressions, T statistics and Significance of regressors, F-test for Joint Significance of Regressors, Modeling Volatility: ARCH, GARCH, The ARCHM Model, State-Space Models and the Kalman Filter, G2S and S2G modeling strategy for Model Selection, Monte Carlo Simulation and Bootstrap Simulation.

Suggested Readings:

EFN 610: Macroeconomic Theory ................................................................. [Credits 3]

Pre Requisite: Nil

Course Contents

Suggested Readings:

5. Main Textbook and is available in the USP Book Centre.

EFN 630: Financial Institutions and Markets.............................................................. [Credits 3]

Pre Requisite: Nil

Course Contents

The financial markets and the economy, depository institutes, investment banks, insurance companies, pension funds and investment companies, derivative market: futures and options and instruments, equity markets and instruments, Interest rate, debt markets and instruments, foreign exchange markets, global financial markets

EFN 650: Financial Econometrics.............................................................. [Credits 3]

Pre Requisite: EFN 620 Quantitative Methods

Course Contents

Basic conventional econometrics: Development and Analysis, univariate Time Series modeling and forecasting, multivariate analysis, modeling long Run relationship, modeling the variance, forecasting, simultaneous Equation Model, Penal data estimation and factor analysis.

Suggested Readings:


ELECTIVE COURSES:

EFN 700: Financial Management................................................................. [Credits 3]

Pre Requisite: Nil

Course Contents

Objectives of financial management, financial management environment, management of working capital, sources of finance, capital expenditure and investment, various methods or financing a company, and application of funds. Short term and long term financing, profit planning, capital budgeting, working capital management, management of assets and cost of capital, financial planning and control, dividend policy, bond and stock valuation, risk and return analysis, income administration and creation of value, agency theory, capital methods and asset portfolio theory, preparation of feasibility studies.

Suggested Readings:
1. Essentials of Corporate Finance, 6/e by Ross, Westerfield, and Jordan.

EFN 703: Monetary Economics................................................................. [Credits 3]

Pre Requisite: Macroeconomic Theory

Course Contents

Output inflation relationship, Dynamic programming, money in utility function, Cash in Advance Model (CIA with certainty and uncertainty), Shopping Time model, Friedman Rule. Friedman rule with money, Government budget constraint, Staggered price model, Baumol Tobin Model, Lucas Model, Taylor Model, Calvo Model, Financial Crisis modeling, monetary policy and lending channel, inflation targeting evidence, Habit Persistence, Financial integration, real interest parity conditions.

EFN 706: Advanced Monetary Economics.................................................. [Credits 3]

EFN 709: Financial Analysis........................................................................... [Credits 3]

Pre Requisite: Nil

Course Contents

This is a specialization course in finance, designed to develop the ability to use basic tools of analysis
required by financial managers. Financial Statement analysis, serves the essential function of converting data, of which, in this age of the computer, there are a bewildering quantity and variety, into useful information, which is always in scarce supply. The course will be useful to students contemplating careers in investment banking, credit lending, public accounting, security analysis, consulting, corporate management and anyone interested in personal investment.

This course on financial statement analysis provides students, advanced conceptual understanding and analytical skills necessary to evaluate financial statements issued by publicly held enterprises. The course is meant to complement related studies in accounting, finance, economics, business policy, and statistical analysis. It focuses on understanding the uses and the limitation of both the financial statements and the traditional and on-traditional methods used in analyzing them. We will discuss the financial statement, the accounting disclosure rules, the differential effects of alternative accounting principals, and the interpretation of financial information. Emphasis is placed on the interpretation of financial data by means of comparative statements, trend percentages, detailed analysis of working capital and extensive use of various generally accepted ratios.

**Suggested Readings:**


**EFN 712: Project Management ................................................................. [Credits 3]**

**Pre Requisite: Nil**

**Course Contents**

Overview of Project Management, Resource Allocation, Simulation of crashing by CPSIM, Managing Project Risks, Using Decision trees in risk analysis, Life cycles - end stage assessments - Controlling the big picture, Levels of responsibility for control - Business and product quality controls, Integrated change control during the life of the project, Performance reporting - monitoring and control, Exceptions - technical and management Technical, Risk monitoring and control, including issues, Quality Management, Earned value concept, Critical Chain, Closing a project, Review and Case Presentations by Participants, Using MS Project to plan a real project

**Suggested Readings:**

EFN 718: Advance Corporate Finance ................................................................. [Credits 3]
Pre Requisite: Nil

Course Contents
Valuation and financial decisions in perfect capital market, principal-agent conflict and financial policies, information asymmetry and market for corporate securities, efficient markets, investment value and market price, leverage decisions, dividend decisions, cost of capital and taxation issues, Initial Public Offerings, internal equity and seasonal equity offerings, mergers and acquisition, take over, buyouts, financial distress and restructuring.

Suggested Readings:

EFN 721: International Finance .................................................................................. [Credits 3]
Pre Requisite: Nil

Course Contents
This course covers selected topics in international macroeconomics and finance. The course starts with the exploration of the major sources of data on international macroeconomics, and the main stylized facts contained in this data. Then the course will apply economic theory to the macroeconomic problems and policies of open economies. The main economic linkages between countries of the world are through the trade balance and capital movements. The course therefore covers an extensive discussion of how these relationships are determined. In this context, exchange rate and the workings of the foreign exchange market are at the center stage. The interdependencies in the world economy and the transmission of shocks between countries will be studied. A central policy issue has been the choice between fixed and flexible exchange rates, in these context different aspects of monetary policy and fiscal policy will be examined.

Suggested Readings:
EFN 724: Advance Portfolio Management ................................................................. [Credits 3]

Pre Requisite: EFN 700 Financial Management

Course Contents

Introduction, Financial markets and their role in global economic system, Emerging trends in global financial markets, Stock market indices, Risk and return Relationship, Functioning of stock markets, Mean variance uncertainty, Markowitz efficient portfolio Theory, Application of theory, Market Equilibrium, Capital asset pricing model (CAPM), Inter temporal capital asset pricing model(ICAPM), Application of models, Arbitrage pricing theory (APT), Fama and French three factor model, Macroeconomic based multifactor models, Application of model, Comparison between assets pricing model, Recent Research (paper will be distributed for discussion, Fundamental analysis, Technical analysis, Bond portfolio management strategies, Equity portfolio management strategies, Evaluation of portfolio Performance, Intro to Derivatives Structures.

Suggested Readings:

1. Elton and Gruber, Modern portfolio theory and Investment Analysis Fifth Edition John Wley and sons ,Inc

EFN 727: Financial Risk Management .............................................................................[Credits 3]

Pre Requisite: Nil

Course Contents

Risk categories, risk management process, derivative markets and instruments and hedging: forward contracts, futures options, swaps, caps, floors collars, types of risk incurred by financial Institutions, managing credit risk on the balance sheet, managing liquidity risk on the balance sheet, Managing risks on balance sheet: interest rate risk, insolvency risk, managing risk with derivative securities, managing risk with loan sales and securitization, managing risk in foreign exchange market.

Suggested Readings:

EFN 730: Behavioral Finance ................................................................. [Credits 3]

Pre Requisite: EFN 700 Financial Management

Course Contents

Foundations and Challenges of Standard Finance

Prospect Theory, Heuristics and Biases, and Emotions, Group Thinking and Social Forces

Aggregate Market and Cross-Sectional Asset Returns
- Equity premium puzzle. Small vs. big. Value vs. growth. Winner vs loser. Post earnings announcement drift

Behavioral Investing

Limits to Arbitrage and New Institutional/Frictional Finance
- Why is arbitrage limited? What is the new institutional/frictional finance?

Suggested Readings:
7. Markets: Islamic Economics, banking, and finance, investments, takaful, and financial planning. Bloomington,

EFN 733: Banking Operations and Risk Management ................................................ [Credits 3]

Pre Requisite: Nil

Course Contents


EFN 736: Insurance and Risk Management ......................................................... [Credits 3]

Pre Requisite: Nil

Course Contents


Suggested Readings:


**EFN 739: Financial Derivatives** ............................................................................................................................................. [Credits 3]

**Pre Requisite: Nil**

**Course Contents**


**Suggested Readings:**

2. Don Chance. Analysis of Derivatives for CFA Program.

**EFN 742: Corporate Governance** ............................................................................................................................................. [Credits 3]

**Pre Requisite: Nil**

**Course Contents**

Corporate governance deals with the complex set of relationships between the corporation and its board of directors, management, shareholders, and other stakeholders. In the recent years, the regulators and legislators have intensified their focus on how businesses are being run. They are endeavoring to create a template for new corporate governance and disclosure measures, which is beneficial for both the stakeholders and controllers. This course intends to review the aforementioned aspects and take stock of progress in the area of corporate governance locally as well as globally. Issues in corporate governance: concepts, ethics, role of company and history. Directors and shareholders: powers and rights, balance of power on the board: non-executive directors, relation with shareholders, financial reporting and auditing, director’s remuneration. Risk management and corporate governance.

**EFN 745: Multinational Corporate & Finance** .................................................................................................................. [Credits 3]

**Pre Requisite: Nil**

**Course Contents**

Valuation and financial decisions in perfect capital market, principal-agent conflict and financial policies, information asymmetry and market for corporate securities, efficient markets, investment value and market price, leverage decisions, dividend decisions, cost of capital and taxation issues, Initial Public Offerings, internal equity and seasonal equity offerings, mergers and acquisition, take over, buyouts, financial distress and restructuring.

**Suggested Readings:**


**EFN 748: Regulation of Money Laundering and Financial Crimes** ........................ [Credits 3]

**Pre Requisite:** Nil

**Course Contents**

Understanding the Regulatory Environment (The need for, and objectives of, regulation, Sources of regulation, Prevention of money laundering and financial crime, Understanding money laundering offences, Designing an effective reporting system, Terrorist financing, The USA PATRIOT Act and US extraterritoriality, Money laundering and tax evasion, Financial crime, Preventing fraud, Corruption, Market manipulation/misleading statements, insider dealing, and market abuse), Industry Knowledge and Awareness (Financial services organizations: background, Codes of corporate governance, regulatory principles, Overview of commercial laws and mechanisms governing legal persons and arrangement), The Role of the Compliance Officer, Compliance in practice (Compliance governance, Internal and external relationships, Links between compliance, culture and ethics, Specific internal compliance control issues, Risk management

**EFN 751: Economic Development and Finance** ................................. [Credits 3]

**Pre Requisite:** Nil

**Course Contents**

This course focuses on financing tools and program models to support local economic development. It includes an overview of private capital markets and financing sources to understand capital market imperfections that constrain economic development; business accounting; financial statement analysis; federal economic development programs; and public finance tools. Program models covered include revolving loan funds, guarantee programs, venture capital funds, bank holding companies, community development loan funds and credit unions, micro enterprise funds, and the use of the Community Reinvestment Act to leverage bank financing.

**EFN 754: Emerging Issues in Finance** ................................. [Credits 3]

**Pre Requisite:** Nil
Course Contents

Capital Budgeting: incorporating risk analysis, the cost of capital and problems in measurement and estimation, the capital structure: practical issues in capital structure policy, asset pricing models: theory and evidence, portfolio management strategies, equity valuation models, valuing fixed income securities, fixed income. Portfolio management, option trading strategies and hedging with derivatives, hedge funds: organization and strategies, sub-prime meltdown in US financial market, lessons from financial disasters, analysis of real estate investment, financial instruments of Islamic banking.

EFN 757: Venture Capital and Private Equity Finance in a Global Context ....... [Credits 3]

Pre Requisite: Nil

Course Contents

Venture capital operations, raising and structuring Venture Capital Funds, asset allocation and the perspective of limited partners; strategy and focus of venture capital firm; managing global private equity firms; valuation and investing assets, corporate strategy, entrepreneurial finance, nonprofit marketing, strategic planning, and venture capital; evaluation of a Business Model and Due Diligence, transaction structuring and term sheet negotiations, contracts and VC monitoring, exit strategies.

Suggested Readings:
1. Venture Capital Analyst (Dow Jones) http://www.venturecapital.dowjones.com
Asia Pacific Venture Capital Alliance (APVCA) British Venture Capital Association www.bvca.co.uk
China Venture Capital Association www.cvca.com.hk

EFN 760: Banks Management ........................................................................................................ [Credits 3]

Pre Requisite: Nil

Course Contents

Introduction, Why are banks special?; Bank Performance Analysis; Principles of Asset/Liability Management; Interest Rate Forecasting, Term Structure and NL Management; Asset Management: Reserve and Liquidity Positions; Asset Management: Commercial and consumer Loans; Asset Management: Investment Account Liability Management: Investments, Costs Control.

EFN 763: International Business Strategy ...................................................................................... [Credits 3]

Pre Requisite: Nil

Course Contents

Theoretical perspectives on strategic management in the international business arena; The interface
between the firm's internal and external environments; SWOT Analysis: External and Internal Factors; Country Selection; Mergers and acquisitions; Management of strategic alliances; The role of government in international strategy; Emerging technologies and intellectual property; Strategic use of international standards; International entrepreneurship. Mergers, Acquisitions, and Divestiture, Strategic Leadership, Managing Accelerating Change, and Innovation.

**EFN 766: Treasury and Funds Management** ................................................................. [Credits 3]

**Pre Requisite: Nil**

**Course Contents**


**EFN 769: Foreign Exchange Management** ................................................................. [Credits 3]

**Pre Requisite: Nil**

**Course Contents**


**EFN 772: Islamic Banking and Finance Markets** ........................................................... [Credits 3]

**Pre Requisite: Nil**

**Course Contents**

To familiarize students with developments in global financial and capital markets in relation to Islamic banking and finance; Provide students with an overview of Islamic finance law, regulations and aspects of the Islamic banking system: Provide students with an understanding of Islamic banking products and concepts; Challenges faced by Islamic banks.

Riba, Gharar, the Existing model of Islamic Banking, Shariah Compliant Financial Instruments for Routine Banking Operations, Deposit Mobilization by Banks, Bank Financing, Islamic Banking in practice (Sudan, Iran, Malaysia, Pakistan, Other Muslim Countries), Divisible and Tradable Financial Instruments for Business Industry and Government Needs, International Transactions without Riba, Pricing of Islamic Financial Products, Risk Management in Islamic Banking, Inter-bank Money Market, Islamic capital market, Zakah and Islamic Banking,
Review of AAOIFI Standards, Insurance in the Islamic Framework, Selected Issues in Accounting for Islamic Banking

**Suggested Readings:**

1. Ausaf Ahmad (1997), Towards an Islamic financial market: a study of Islamic banking and finance in Malaysia. Islamic Development Banks, Islamic Research and Training Institute
2. Saiful Azhar Rosly (2005), critical issues on Islamic banking and financial
# Department of Environmental Economics

## Academic Program:

**Total Credit Hours:** 39  
Core Course Credit hrs: 21  
Elective Course Credit hrs: 06  
Thesis/Research Work: 12  
**Duration:** 2 years (with the provision of one year extension)

## Semester wise program structure:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course</th>
<th>Credits</th>
<th>S. No</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Semester-I</td>
<td>Semester-II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>ENV-600 Economics of Environment and Natural Resources</td>
<td>3</td>
<td>1.</td>
<td>ENV-605 Measurement and Valuation in Environmental Economics</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>ENV-601 Microeconomic Theory</td>
<td>3</td>
<td>2.</td>
<td>ENV-610 Estimation Techniques for Environmental Valuation</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>ENV-602 Macroeconomic Theory</td>
<td>3</td>
<td>3.</td>
<td>Elective-I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Semester-III</td>
<td>Semester-IV</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Areas of Specialization for Environmental Economist

<table>
<thead>
<tr>
<th>S.No</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td><strong>Environment and Socioeconomic Well being</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>ENV 700</td>
<td>Population Dynamics and Environment</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>ENV 710</td>
<td>Urbanization and Environment</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>ENV 712</td>
<td>Poverty and Environment</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>ENV 718</td>
<td>Environment and Health</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>ENV 725</td>
<td>Economics of Climate Change</td>
<td>3</td>
</tr>
<tr>
<td>•</td>
<td><strong>Environment, Trade and Industrial Development</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>ENV 702</td>
<td>International Economics and Environment</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>ENV 706</td>
<td>Industrial Economics and Environment</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>ENV 716</td>
<td>Environment and Technology</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>ENV 731</td>
<td>Science and Environment</td>
<td>3</td>
</tr>
<tr>
<td>•</td>
<td><strong>Agriculture and Natural Resource</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>ENV 704</td>
<td>Agricultural Economics and Environment</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>ENV 722</td>
<td>Environmental Economics: Water</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>ENV 724</td>
<td>Environmental Economics: Forests</td>
<td>3</td>
</tr>
<tr>
<td>14.</td>
<td>ENV 728</td>
<td>Remote Sensing and GIS for Environmental Economists</td>
<td>3</td>
</tr>
<tr>
<td>15.</td>
<td>ENV 730</td>
<td>Ecological Economics</td>
<td>3</td>
</tr>
<tr>
<td>•</td>
<td><strong>Environmental Laws and Governance-National and Global Issues</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>ENV 708</td>
<td>Governance and Global Environmental Issues</td>
<td>3</td>
</tr>
<tr>
<td>17.</td>
<td>ENV 714</td>
<td>Environmental Laws—National and International</td>
<td>3</td>
</tr>
<tr>
<td>18.</td>
<td>ENV 726</td>
<td>Public Finance and Environmental Policy Instruments</td>
<td>3</td>
</tr>
<tr>
<td>19.</td>
<td>ENV 734</td>
<td>Environmental Issues, Policies and Institutions in Pakistan</td>
<td>3</td>
</tr>
<tr>
<td>20.</td>
<td>ENV 732</td>
<td>Environmental Quality and Standards</td>
<td>3</td>
</tr>
</tbody>
</table>
Core Courses

ENV 600: Economics of Environment and Natural Resources ................................... (3 credits)

Following topics are covered in this course: Concept of Resources, Types of Resources (Exhaustible Resources, Flow Resources, Fund Resources, Biological Resources), History of Economic Thought about Resource Scarcity, Economic Indicators of Scarcity, Market Equilibrium in Natural Resource Economics (Water, Air and Others), Economic Efficiency (Production, Consumption and Pareto Efficiency), Criteria for Economic Policy, Market Failure and Inefficiency, Benefit-Cost Analysis, and Inter-temporal Allocation of Resources.

ENV601: Microeconomic Theory .................................................................................. (3 credits)

The course will discuss basic concepts of economic theory used environmental economics. The topics are: Consumer theory, Production Theory, Markets, General Equilibrium and Welfare Analysis, Externalities, Public Goods, Economic growth and genuine savings. All these topics are discussed in context of environmental economics.

ENV602: Macroeconomic Theory .................................................................................. (3 credits)

The course will discuss basic concepts of economic theory used environmental economics. The topics are: Consumer theory, Production Theory, Markets, General Equilibrium and Welfare Analysis, Externalities, Public Goods, Economic growth and genuine savings. All these topics are discussed in context of environmental economics.

ENV 605: Measurement and Valuation in Environmental Economics .................. (3 credits)

This course covers critical issues of measurement and valuation of environmental goods and services. Following topics are discussed in the course: Externalities, Public Goods, Types of Values/Motives for Valuation, Valuation and Measurement Techniques (like Stated Preferences, Contingent Valuation Method, Travel Cost Method, Hedonic Price Method), Valuation under Uncertainty, Valuation over Time, Economic Incentive and Environmental Protection, Survey Design and Administration.

ENV-610 Estimation Techniques for Environmental Valuation ................................. (3 credits)

This course covers basic estimation techniques and related issues. It covers the following: Testing of Hypotheses, Analysis of Variance, Regression analysis, Issues in Multivariate Models, Qualitative Response Models, Panel Data Techniques, Time Series Techniques (basic issues).

ENV 615: Sustainable Development and Economic Policy ................................. (3 credits)

ENV 631: Research Methodology for Environmental Economists .............................. (3 credits)

The course is designed to provide an overview of research methods in important fields of social sciences especially environmental economics. The emphasis is on the practical application of research methods to both quantitative and qualitative evidence.

The course will assist the students in identifying a practical research issue with identifying and using suitable sources of data or evidence, and interpreting source material using best-practice techniques workable research proposal (including research questions, hypotheses, data and model), to give robust research findings that policy-makers can use with confidence. For the statistical analysis following areas will be covered in the course: sampling techniques, data collection, statistical analysis and interpretation of results of the estimated model.

The focus of application will be on environmental linkages with material and energy use; urbanization and technological transition; economic growth and social vulnerabilities; development and governance of social networks; the role of history, culture and science itself in carrying out meaningful analysis for guiding policy makers.

**Elective Courses**

**ENV 700: Population Dynamics and Environment................................................... (3 credits)**


**ENV 702: International Economics and Environment............................................. (3 credits)**


**ENV 704: Agricultural Economics and Environment................................................. (3 credits)**

The course is expected to cover following topics: Sectoral Transformation and Economic Development, Agro ecosystems and sustainable agriculture, Agricultural output and input pricing policies, Green revolution and agricultural transformation, Role of technology, Agricultural inputs (water, capital, fertilizer, pesticides and others) use and environmental issues, Land use patterns, Property rights issues, Tenancy contracts, risks, moral hazards and agricultural resources degradation issues, Economics of precision farming technologies, Role of governments and markets (Input and Output Markets), Degradation of renewable resources like fishery and forestry.
ENV 706: Industrial Economics and Environment .......................................................... (3 credits)

Industrial Revolution and Impact on Environment, Industrial Growth and its Determinants, Share of Natural Resources in Industrial Growth, Industrial Structure and Environment, Natural Resource Degradation and Industrial Growth, Sources of Industrial Pollution, Energy Use and Industrial Pollution, Technology and Industrial Pollution, Market Structure and Environmental Pollution, Industrial Regulations and Environmental Pollution, Governance Issues, Role of Industrial and Investment Policies, Industrial Pollution in Pakistan.

ENV 708: Governance and Global Environmental Issues ........................................ (3 credits)

Global Environmental Issues include: Climate Change, Trans-boundary issues, Marine Life Issues, Natural Resource Issues, Ozone layer Depletion and Loss of Biodiversity, Various protocols and Conventions are adopted at the international level to protect the environment. These agreements cover atmosphere, freshwater resources, hazardous substances, marine environment, biodiversity, climate change and others. Adoption and Implementation in Developed and Developing Countries, Governance Issues in Adoption and Implementation, Pakistan’s commitments under various agreements, Impact of MEAs on Developing Countries, particularly Pakistan.

ENV 710: Urbanization and Environment ................................................................. (3 credits)


ENV 712: Poverty and Environment ....................................................................... (3 credits)

Assessment of Poverty, Link between Poverty, Inequality and Sustainable Economic Development, Link between Poverty, Inequality and Natural Resource Degradation, Link between Protection of Ecosystems and Poverty Reduction, Climate Change and Poverty, Deforestation and Poverty, Role of Communities, Property Rights and Poverty, Public Policy, Poverty Reduction and Environment Nexus.

ENV 714: Environmental Laws – National and International ...................... (3 credits)


ENV 716: Environment and Technology ................................................................. (3 credits)

Concept of Technological Change, Invention and Innovation, Role of Markets, Invention/ Innovation and Optimal Environmental Policy, Diffusion of Technology (green technology), Role of Information Technology, Uncertainty and Technology Adoption, Choice of Instruments and Technology Diffusion, Mitigation and Adaptation and Technology, Technology Creation, Technology Transfer and Technology Trade, Role of Markets, Financing of Technology (Creation, transfer and trade), Role of Technology in Economic Growth.

ENV 718: Environment and Health ....................................................................... (3 credits)

Health and Productivity, Vector of Diseases, Environmental Degradation and Incidence of Disease (like Air Pollution and Respiratory Illness, Water Quality and Health Sustainability, Environmental degradation and
Morbidity/Mortality, Climate Change and Health, Waste Management and Health, Value of Saving Life, Role of Information Dissemination and Public Policy.

ENV 720: Environment Economics: Energy Issues............................................. (3 credits)


ENV 722: Environment Economics: Water ......................................................... (3 credits)

The course deals with two important natural resources. The issues covered are: Defining water scarcity, Ecological health of water systems, Water pollution, Water resource degradation and limited access to potable water, Surface water pollution, Ground water depletion, Water pollution and trans-boundary issues, Glaciers melting, Water use efficiency and conservation practices, Coastal erosion, Measures to control water pollution and resource degradation, Land degradation and desertification, Soil erosion, Loss of Biodiversity, Measures to control land degradation and to regulate changes in the land use pattern, Role of public policy, Role of collective action.

ENV 724: Environmental Economics: Forests.................................................... (3 credits)

Role of forests in Economic Development, Climate Change and Forests, Forests as source of Livelihood, Valuation of Forest Products, Environmental Services of Forest Products, Sources of Forest Degradation, Measures to Preserve Forests, Role of Property Rights, Communities, and NGOs, Governance Issues, Forests and Environment in Pakistan.

ENV 725: Economics of Climate Change ......................................................... (3 credits)

Defining climate change, Implications for economic development, implications for developed and developing countries, Adaptation and Mitigation Strategies, Impact on critical natural resources like water, forests, fisheries and others, Need for financing and Insurance, Role of Donors, Clean Development Mechanism, Linking Human Development Goals and Climate Change, Climate Change and Food Security, Link between climate change and ecological disasters, Link between climate change, vulnerability, underdevelopment, political exclusion, and marginalization, Rethinking Development.

ENV 726: Public Finance and Environmental Policy Instruments........................ (3 credits)


ENV 728: Remote Sensing and GIS for Environmentall Economics............... (3 credits)

ENV 730: Ecological Economics................................................................. (3 credits)
**Course Rationale:**

Economic activities to accomplish human material needs are causing ecosystem disruption. Economic growth through technological advancement and per capita rise in consumption triggered land degradation, deforestation and freshwater depletion. Most prominent impacts of these activities on ecosystem include climate change, biodiversity loss, ozone depletion and the spread of persistent organic pollutants. The main objective of this course is to review and understand the relationship between human economic activities and ecology. It helps to realize the extent we are compromising the natural and regular functions of our ecosystem through economic growth. This course serves the students to understand the interdependent of basic ecological systems as well as the interdependence of ecology and economy. The student will have the opportunity to acquire knowledge of ecological footprints and eco-efficiency and also learn the ecological-economic applications in terms of addressing the global and regional threats.

**Course Outline:**

I. An introduction to ecological economics
   1. The economics and ecology interface
   2. Economic principle in ecology
   3. Environmental economics versus ecological economics


II. Interdependent ecological systems: a brief
   1. Four interacting environmental systems (lithosphere, hydrosphere, atmosphere and biosphere)
   2. Energy and nutrients flow
   3. Ecosystem (population dynamics and system dynamics)
   4. The containing and sustaining ecosystem
   5. From empty-world to full-world economics

   Readings: Common & Stagl. (2005). (Chapter 2); Daly and Farley. (2010). (Chapters 4, 5 6 & 7)

III. Principles and objectives of ecological economics
   1. Sustainable scale, fair distribution, and efficient allocation
   2. Ecosystems, biodiversity, and ecosystem services
   3. Natural, human and social capital
   4. Population and carrying capacity


IV. Economy-ecology interdependence
   1. Population, affluence, technology and impact relationship
   2. Modelling economic growth and the environment
   3. Global ecosystems and economics subsystems
   4. Evidences of limits to growth

   Readings: Common & Stagl. (2005). (Chapter 7); Costanza, et al. (2015). (Chapter 1, selected topics)

V. Natural capital stock and sustainable development: conceptual foundation
   1. Indicators and measures of natural capital
   2. Ecological footprints accounts: Measuring human demand on natural capital
   3. Ecosystem health
   4. Eco-efficiency indicators, theory and practice.

VI. Ecological economics applications: global and regional threats
   1. Climate change
   2. Biodiversity loss: methods for evaluating ecosystems
   3. Sustainable cities
   4. Waste management

Readings: Common & Stagl. (2005), (Chapters 13 & 14);
           Shmelev, (2012). (Chapters, 9, 10 & 11)

References:
Note: Related research articles will be provided during class lectures.

ENV 731: Science and Environmental Science .......................................................... (3 credits)
The course covers the definitions of scientific terms for environmental and natural resource degradation. For example, pH value, BOC, COD, Algae bloom, Biosphere, acid rain, GHGs and various others.

ENV 732: Environmental Quality and Standards ..................................................... (3 credits)

ENV 734: Environmental Issues and Policies of Pakistan ........................................... (3 credits)

ENV 799: Thesis
The research thesis should include:
   • Clear discussion of an environmental issue and its impact on economic development
   • Appropriate review of literature highlighting the links with proposed study
   • A clear set of testable hypotheses
   • Discussion of methodology for data collection and analysis
   • Discussion of results and well reasoned conclusions
   • Policy Implication
   • Issues for further research.
PIDE School of Public Policy

Structure of Program
A comprehensive coursework, practical exercises and field work will equip the students with the toolkit necessary to not only understand policy problems but solve them as well.
Total Credit Hours: 36
Core Credit Hours: 18
Elective Credit Hours: 06
Total Course Work: 24
Thesis: 12
Program Duration: 2 - 3 years

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits Hours</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>SEMESTER-I</strong></td>
<td></td>
<td><strong>SEMESTER-II</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PP-601</td>
<td>Microeconomics for Public Policy</td>
<td>03</td>
<td>PP-620</td>
<td>Macroeconomics for Public Policy</td>
<td>03</td>
</tr>
<tr>
<td>PP-606</td>
<td>Governance and Public Policy</td>
<td>03</td>
<td>PP-631</td>
<td>Evaluation and Monitoring of Policy Initiatives</td>
<td>03</td>
</tr>
<tr>
<td>PP-616</td>
<td>Public Policy Analysis</td>
<td>03</td>
<td>PP-610</td>
<td>Research Methods</td>
<td>03</td>
</tr>
<tr>
<td>Elective-I</td>
<td>03</td>
<td></td>
<td>Elective 2</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SEMESTER-III</strong></td>
<td></td>
<td><strong>SEMESTER-IV</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PP-636</td>
<td>Workshop for Proposal Development*</td>
<td>00</td>
<td></td>
<td>Thesis</td>
<td></td>
</tr>
<tr>
<td>Proposal Defense**/Thesis</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Non-credit compulsory course; Rule for minimum attendance will be followed
** Students will be required to submit their proposal at the end of third semester
Course Content:

PP 601: Microeconomics for Public Policy ................................................................. (3 credits)

The course covers the principles and techniques of microeconomic theory most relevant to the economic aspects of public policy. The topics covered in this course include; consumer theory, firm theory, resource allocation, welfare consequences associated with policies such as taxes, subsidies, regulation, and government transfers. Besides competitive models, the course will also cover deviations due to market failures. Case studies of government intervention in the economy will be used to illustrate the concepts and theories examined.

PP 601: Governance and Public Policy ................................................................. (3 credits)

The course provides an Introduction to Public Policy and introduces participants to the theories of public policy. The political institutions and processes through which public policy is formulated generally in democratic countries and particularly in Pakistan, are studied in this course. The models and tools of policy analysis are applied to study specific policy areas like, economic policy and its various subcomponents, including fiscal, monetary and trade policy, mining and exploration, decentralization, social policy, including health care and education and the policy on environment and climate change.

The second important part of this course contains discussion on the Governance Issues. It will introduce the structure of Public and Civil Service in Pakistan and how these influence policy formulation and implementation. The inter linkages among rent seeking, corruption, patron-client relationship and the structure of public and civil service in Pakistan are discussed in this course. Salient ideas in institutional economics including; the role of institutions in determining the growth performance of a country, evolution of institutions, institutional change, transaction cost and the link between organization in public and private sector are also discussed in this course.

PP 610: Research Methods .................................................................................. (3 credits)

This course has two components; the Quantitative Analysis and Qualitative Analysis. The first component focuses on techniques for the analysis of quantitative data. The course covers three main topics: (i) Introduction to statistics and analysis of data using a range of quantitative methods and practical exercises using statistical software packages; (ii) strengths, limitations and applications of specific quantitative techniques, (iii) the interpretation of quantitative data and the manner of dissemination to influence policy and practice.

The second part of the course develops an understanding of qualitative research skills through critical exploration of research techniques, management and analysis of the qualitative data, and the use of relevant software. This course enables students to review literature relevant to the field
of study, to collect information (data) and analyse it to transform into knowledge, and then present it in written and oral form. The contents include, Introduction to Social Research Methods, Doing Qualitative Research, Nature of Qualitative Research, Sampling in Qualitative Research, Data Collection in Qualitative Research, Qualitative Data Management & Analysis, and Writing & Presenting Research

**PP 616: Public Policy Analysis** .................................................................................................................. (3 credits)

The course introduces participants to the theories of public policy processes; critically reviews the key ‘stages’ of the policy process including agenda setting, policy formulation, implementation, monitoring and policy evaluation. The influence of political power at every stage of the policy process forms a central strand running through the entire course. This course explains preparing, designing and selection of public policy. It is mainly focused on analytical approaches and methods that are intended to guide policy design and structure policy choice: argumentation analysis to understand, evaluate and construct policy arguments, including the consideration of values and other assumptions that are used and method to promote critical and creative thinking.

**PP 620: Macroeconomics for Public Policy** ................................................................. (3 credits)

This course focuses on the working of the aggregate economy. One of the objectives of the course is to build understanding of the key determinants of business cycle fluctuations and of development and long-run growth. It will draw on the current economic research on the determination of macroeconomic variables such as output, employment, prices, and the interest rate—in the short, medium, and long run. The main emphasis of the course is on the impact of government policies on the macro economy.

**PP 631: Evaluation and Monitoring of Policy Initiatives** .................................................. (3 credits)

This course provides students the background in evaluation and will discuss: The major concepts of program evaluation (PE), Apply the principles of conducting PE, Explore qualitative and quantitative data collection methods for evaluation, Understand the processes of evaluation and best practices for participation of stakeholders

The course will also cover the project planning, implementation and monitoring process in Pakistan especially with reference to public sector projects - Stages of project planning, implementation and monitoring (PC-I to PC-V) – Conceiving a project, financial plan, use of capital budgeting techniques like BCR, NPV and IRR. The course will frequently use cases available with the Planning Commission of Pakistan to study the contents.

**PP 636 Workshops for Proposal Development** ................................................................. (3 credits)
The series of seminars will mainly include, Introduction to Social Research Methods, Published Research as Case Studies, Sampling, Data Collection techniques, Data Management & Analysis via NVivo, EViews and Stata, and Workshops for Writing & Presenting Research

**PP 711: Public Finance and Devolution** .......................................................... (3 credits)

This course will comprise of two components. The first part will discuss topics from Public Finance including; The Role of Public Sector in Economics; Size and Scope of Government; Efficiency and Equity; Distribution; Economic Welfare; Externalities; Analysis of Expenditure Policy; Budget Analysis; Budgetary Process in Pakistan; Taxation; the Tax system in Pakistan; Tax Evasion;

The second component consists of topics from devolution and local development. Here the course focuses on the political, administrative and fiscal devolution in Pakistan. The course will cover the history of devolution in Pakistan, its consequences for governance and public sector efficacy, and empirical evidence on the effects of devolution on economic growth and public policy. Students will learn about the principles of fiscal federalism, multi-level government, political economy of fiscal decentralization, accountability, risk sharing, problems of multi-jurisdictional taxation, and intergovernmental fiscal transfers.

**PP 714: Public Financial and Tax Management** ........................................... (3 credits)

This course deals with the accounting aspects of public finance. Public Financial Management discusses the fiscal sustainability and appropriateness of various fiscal allocations. This course will discuss the operational management of public finance focusing on value for money, outcome of spending and strategic financial planning and management. The transparency and accountability aspects as well as the controls, compliance and oversight mechanisms in place are discussed with special reference to Pakistan hence topics like deficit financing, debt and debt management, PRSP, MTDF, MTBF would be discussed.

This course also discusses the recourse mobilization aspects and the matters related to taxation. The core will be to discuss the elasticities, incidence, impact and coping strategies. In addition, students will also be familiarized with the loopholes in the process. The course will discuss the experience from Pakistan and an international comparison.

**PP 717: International Finance and Development** ........................................ (3 credits)

This course focuses on the role of development partners in international development. The course will cover the history of international development finance, emergence and role of the multilateral institutions, the role of private sector and NGOs, and the transformation of
international aid architecture and aid delivery system. This course will enable the participants to understand and evaluate issues related to aid including; modalities, policy networks, fragmentation, proliferation, volatility, fungibility, conditionality, transaction costs, visibility, and donor-donor coordination, etc. Pakistan, as a case, will be used to elaborate concepts and analyze policies.

**PP 720: Private Sector and Regulatory Policy** ................................................................. (3 credits)

This course is based on the role of the private sector and the settings conducive to make private sector efficient. This course introduces the students to the role of private sector in the development of economy. In addition, it will explain the role and conduct of political and state institutions including; courts, legislatures, executives, bureaucracies and social movements. It will also highlight the demands for specific policies and interest groups. The role of different regulatory authorities in Pakistan like ORGA, NEPRA, PEMRA, PPRA, PTA etc. will be discussed.

**Field of Specialization- II**

**PP 723: Social Policy** ................................................................................................................. (3 credits)

This course will also introduce student to the economic concepts and analysis relevant to social policy especially health, education and social security. Topics will touch upon: the role of health/education in the production models; socio-economic effects of under-provision of health and education; the economic rationale of investing in human capital, the behaviour and influence of various participants (social service providers and users) on social service utilization and provision, the role of NGOs in the social sector services.

**PP 726: Poverty Reduction and Sustainable Development** ............................................. (3 credits)

This course will examine the nature and extent of poverty in the Pakistan, its causes and consequences, and the antipoverty effects of existing and proposed government programs and policies. Course content will include both qualitative and quantitative aspects of poverty-related research. The topics to be discussed include: poverty and its persistence; the interrelationships among poverty, family structure, inner city neighbourhoods, crime, labour market conditions and public policies; policies/approaches adopted to address poverty. The course will also discuss the issue of food security and the situation around the world; malnutrition and its effects in the economy. Measures taken in the context of global response like MDGS and its progression to SDGs
PP 729: Environmental and Natural Resource Management

Market failures and externalities, under and over-provision of goods with externalities, Environment and Issues related to its sustainability, the availability and quality of natural resources and services derived from it, issues concerning the availability and sustainability of land, water, air quality, energy, and minerals for basic human needs and sustained economic growth, pollution control, management of ecosystem, biodiversity, climate change, potential technologies of resource exploitation and maintaining environmental balance, the political, legal, and social dimensions of the management of resources and the environment.

PP 732: Urban Development

This course concerns the policy-making and governance with reference to urban areas to understand the opportunities for the economy and challenges to sustainability and social inclusion. The course covers economic analyses of issues related to urbanization including; health, education, labour, poverty, crime, housing, slums, land-use planning, well-being of the members of society, mega cities and vulnerability of children, elderly and families living at society’s margin. The opportunities that urbanization provides for prosperity through vertical expansion, networking, scale and clusters etc. will be the special focus of the course.

PP 735: Transport and Infrastructure Development

This course will provide basics introduction to the concepts and tools used in transports economics. It will discuss the role of transport in improving connectivity, better access to services and its relationship with economic performance and efficiency of agents. Elasticises, optimal speed, congestion and capacity utilization will be discussed. Informal and modern innovations (like Careem and Uber) will be analysed. Techniques for analysis will also be discussed. Similarly, analysing the role of infrastructure will also be a part of this course. The part played by government, private sector and the Public-Private partnership will be discussed. The theories, tools and techniques to explain the importance of infrastructure for development will be discussed.

PP 738: Network Governance

This course considers a network approach to problem solving and decision-making in the public sector. The concept of policy networks and meta-governance forms a central strand of the course. The course introduces participants to the theories of network governance; network management strategies; steering and managing networks; complex decision-making processes; and measuring the effectiveness of network governance.
PP 741: Law and Public Affairs .................................................................................. (3 credits)

The course is designed to convey how laws should be used to correct market failures, protect property and encourage economic development. The contents include laws and institutions to Correct Market Failures; Contracts; Property Rights, Regulation of Externalities, The Coase Theorem, the Economics of Litigation, Motive to Commit Crimes, and the Optimal Governmental Response to Crime, the Trade-off between the Certainty and Severity of Punishment; the Choice between Ex-ante and Ex-post Sanctions; Negligence versus Strict Liability.

The course will also cover topics on the applied side like; Crime, insecurity, violence and terrorism; Justice as deterrence against crime, the use of force versus the threat of force. The economic, social and psychological effects of different types of insecurity and their intensity; historical trends in violence; the rationale and effects of punishment; what is the role of society, courts, law enforcing agencies, the government and the international community in taking care of injustices; how justice facilitates peaceful coexistence

PP 744: Political Economy and Institutions .................................................................. (3 credits)

This course provides an introduction to public policy making, its characteristics and consequences in the context of political economy of developing countries. The course will provide the theoretical foundations from economics of different approaches to looking at the growing literature on topics such as governance, corruption and rent seeking, role of the state, and different strategies for catching up. New institutional approaches to these issues and the mainstream policy agenda will be covered in this course. The course will also cover; Private Predation versus Public Predation, Limited Access Order versus Open Access Order, Parliament, Political Process and Policy Making, Constitutional Rules versus Operating Rules, Political Institutions as a Cause of Economic Institutions, Dictatorship versus Democracy, Democracy and Economic Incentives, Incentives and Economic Development, Civil Rights

PP 747: Conflict Management and Peace Building .................................................. (3 credits)

The topics covered include; different types of conflicts (ethnic, racial, sectarian etc.) and their consequences; public policy used or required to handle conflicts. Terrorism; use of violence to achieve political goals, history, transformation of conflicts into terrorism; public interaction of terrorism and public policy.

The course will then discuss polices adopted for peace building. The foundations of negotiations including; negotiation strategy; planning and framing; the phases of a negotiation-identification and preparation etc. similarly, mechanisms in place for minor conflicts resolution like within organisations and with the clients; customers, and other stakeholders; hence the approaches available to resolve minor conflict.
PP 750: Government and Foreign Policy ................................................................. (3 credits)

This course focuses on strategic decisions made by Pakistan government in the field of politics and international relations. Led by course conven or and policy experts from relevant fields, participants of this course will explore the foreign policy related events, analyse the context and evaluate the socio-economic consequences.

Thesis
CORE
Note: Any deviation from the given Fields of Specialization may be allowed on special demand from the students with approval from the Department Council
DEPARTMENT OF HEALTH ECONOMICS

M. Phil Health Economics

Academic Program
Total Credit Hours: 45
Core Course Credit hrs: 24
Elective Course Credit hrs: 06
Research Work/Thesis 15
Duration: 2 years (with the provision of one year extension)

Semester wise program structure

<table>
<thead>
<tr>
<th>S. No</th>
<th>Courses</th>
<th>Credits</th>
<th>S. No</th>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Semester-I</td>
<td></td>
<td></td>
<td>Semester-II</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>HE-603 Economic Theory</td>
<td>3</td>
<td>6.</td>
<td>HE-660 Health care Financing and Health Insurance</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Elective I</td>
<td>1.5</td>
<td>10.</td>
<td>Elective II</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11.</td>
<td>Elective III</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Semester-III</td>
<td></td>
<td></td>
<td>Semester-IV</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Research Methods</td>
<td>3</td>
<td>11.</td>
<td>Thesis</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>Thesis</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

List of Elective Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE-700</td>
<td>Health and Population Dynamics</td>
<td>1.5</td>
</tr>
<tr>
<td>HE-704</td>
<td>Health and Epidemiology</td>
<td>1.5</td>
</tr>
<tr>
<td>HE-708</td>
<td>Economics of Social Policy</td>
<td>1.5</td>
</tr>
<tr>
<td>HE-710</td>
<td>Environment and Health</td>
<td>1.5</td>
</tr>
<tr>
<td>HE-715</td>
<td>Occupational Health</td>
<td>1.5</td>
</tr>
<tr>
<td>HE-720</td>
<td>Hospital Management</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Core Courses

HE-603: Economic Theory .......................................................... (3 credits)

This course will introduce the economic theory concepts to first semester level students of Mphil Health Economics. It will be comprised of two sections. First section will deal with the Microeconomics and second Macroeconomics. In the first section post-graduate level concepts for theory of consumer behaviour and demand analysis; market demand and elasticity; production functions; cost of production; profit maximisation and supply; theory of market behaviour; and market structures. In this section students will learn to apply microeconomic theories and tools to health systems, to health care consumer behaviour and to healthcare providers. In the second section concepts of national income accounting; theories of consumption and their implications; savings and investment; long run economic growth; the IS-LM analysis; economic fluctuations and business cycles will be discussed. This course will also discuss macroeconomic concepts for health including performance, and structure of national or regional economy and its effect on health.

HE-610: Statistics and Econometrics .............................................. (3 credits)

This course provides training on application of statistical and econometric techniques for problems solving and decision making. The students will be provided training on measures of averages and dispersion; probability theory; distribution and expectations; probability distribution of mean and percentages; sampling and estimation; hypothesis testing; analysis of variance; non-parametric and Bayesian statistics. The econometric component provides an introduction to the econometric techniques that are available to estimate economic relationships and are used in best practice empirical research, and considers problems that may be encountered when applying these techniques. It examines simple and multiple regression models, the incorrect choice of explanatory variables, autocorrelation and heteroskedasticity. This module provides experience in the use of modern econometric software to apply appropriate techniques to empirical problems.

HE-625 Issues in Public Health ......................................................... (3 credits)

HE-635: Economic Evaluation Methods............................................ (3 credits)

This course explores the nature, purpose and limitations of economic analysis and evaluation, public and private perspectives, measurement and valuation, analysis of costs, performance and effectiveness, cost-effectiveness, cost benefit analysis and cost utility analysis. The course will also address risk adjustment, concepts of QALYs and DALYs and valuation of human life.
HE-650: Healthcare Organisation, Analysis and Management ................................................. (3 credits)

This course introduces the concept of a health system, its various components, and the influences of the surrounding socioeconomic and cultural environment. Participants shall become familiar with the methods used to assess the health system in general and healthcare delivery system in particular. The role of various private and public sector agencies (including NGOs) and their interrelationship with respect to their impact on the improvement of health systems at all levels will be analysed. The course also aims to give a broad overview of problems facing the management of health care services, and a more detailed examination of several key topics of current concern, such as the management of information, capital and nursing resources, and resource allocation by formula. Particular emphasis is placed on the detailed application of the principles of sound economic analysis and financial management to problems of health care management.

HE-660: Healthcare Financing and Health Insurance ......................................................... (3 credits)

This course provides a critical analysis of different models of financing health systems. The topic includes: asymmetric information and agency; adverse selection and moral hazards; role and rationale of non-profits firms in health care; health insurance; social health insurance; comparative health care systems and health system reforms; theory and practice of regulated (managed) competition. The course will also cover topics in the financial management of health care institutions.

HE-680: Health Policy and Planning .................................................................................... (3 credits)

This course will build upon their existing Health Systems concepts. The focus of this course is on the tools and techniques of operational planning as well as the strategic planning. It will provide the participants a basis on how to critically analyse, develop and improve health policies. Participants will develop an understanding of the need for a health policy, and be equipped with the methods and tools of policy. This course will also introduce participants to the means and methods of planning at the central level. Participants will be given an insight into how macro-plans relate to district plans and be able to identify constraints, limitations and problems with implementing macro-plans for improving peripheral health services.

HE-690: Research Methods ................................................................................................. (3 credits)

This course will provide an opportunity for students to establish or advance their understanding of research through critical exploration of research approaches and methods. The course introduces the elements of the research process within quantitative, qualitative, and mixed methods approaches. Participants will use these theoretical underpinnings to begin to critically review literature relevant to the field of study, analyse it and then present it in written and verbal form. Upon completion of this course the students are expected to have the knowledge and skills to plan, and take on, an independent critical investigation and evaluation of a chosen research topic relevant to the field of health economics. The course plans to inculcate the skills to systematically identify relevant theory and concepts, relate these to appropriate methodologies, both quantitative and qualitative, and draw appropriate conclusions. Engage in systematic discovery and critical review of appropriate and relevant information sources and communicate research concepts and contexts clearly and effectively both in writing and orally.

Elective Courses

HE-700: Health and Population Dynamics ........................................................................... (1.5 credits)

This course develops students understanding on demographic profile of the population and population dynamics. The topics include population theories; population growth and economic development; fertility trends; labour market
behaviour; mortality and issues of population ageing; population growth and the environment; spatial distribution of population; internal migration and urbanisation; population policies and health sector.

**HE-704: Health and Epidemiology** ................................................................. (1.5 credits)

This course in epidemiology is designed with the objective of introducing the subject and its fundamental principles, uses and methods. The students will become familiar with principles of screening, surveillance, measures of disease frequency and associations. They will be able to understand epidemiological study design and interpret data in a scientific manner.

**HE-708: Economics of Social Policy** ............................................................ (1.5 credits)

This course provides an overview how instruments of economics can be usefully employed to analyse social policy. This course addresses key issues as economic aspects of social policy; social health policy; economics of pensions; access to health services; pension programmes; unemployment; economic demography; immigration; discrimination; impact of unemployment and inflation; poverty and family support. It examines the objectives of social policy, and alternative concepts and measures of equity, poverty and welfare, and alternative instruments and schemes for achieving these objectives.

**HE-710: Environment and Health** ............................................................... (1.5 credits)

This course provides an overview of linkages between environment and health; human activities which are damaging to the environment and human health; and how much the environment contributes to the burden of major diseases. Topics covered include issues in environment, health and safety, such as safe drinking water, environmental transmission of infectious diseases, allergies, food quality and contamination, nutrition, waste management, occupational disease and injury, risk assessment and management. The course will examine health issues, scientific understanding of causes, and possible future approaches to control of the major emerging environmental health problems in industrialized and developing countries.

**HE-715: Occupational Health** .................................................................... (1.5 credits)

This course specifically focuses on occupational health problems. The emphasis is on problems encountered in developing countries, in the rural and urban setting. It begins by describing exposure-disease relationships in the workplace and then goes on to discuss the various control measures available to minimize such exposures. Ergonomics and acute and chronic injuries are also discussed. Other issues that are covered include occupational epidemiology, industrial hygiene, workers’ compensation, and the mechanism for delivery of occupational health services.

**HE-720: Hospital Management** ................................................................. (1.5 credits)

This course is aimed at enhancing the skills of participants in hospital management in order to improve the quality of services being provided in hospitals. Participants will familiarize themselves with the essential components of a hospital system, and the fundamental principles of management of hospitals with respect to financial, physical and personnel resource management.

**HE-725: Advanced Econometrics** ............................................................ (1.5 credits)

This is an advanced level econometrics course and improves students’ knowledge base on use of econometrics. The topics include: non-linear models and estimation algorithms; simultaneous equations; estimation with limited dependent variables; data censoring and selectivity bias; concept of stationarity; ARIMA, ARCH and VAR models;
forecasting and time series decomposition; causality and response analysis; multivariate decomposition and co-integration and error correction analysis.

**HE-730: Health Technology Assessment** ......................................................... (1.5 credits)

This course is designed to provide an overview of process of systematically reviewing existing evidence on medical technologies, procedures and services. It also covers topics on evaluation of health interventions, their safety, effectiveness, cost effectiveness and impact on the health system.

**HE-735: Pharmaceutical Economics** ............................................................. (1.5 credits)

This course acquaints students with essential concepts and tools of pharmaceutical policy and economics with application to developing countries. Topics include: the role of international agencies and organisations; patents and access to medicines; public private partnerships and medicines developments; pharmaceutical regulation and legislation; economics for medicines management; financing strategies; quality of pharmaceutical care.

**HE-736: Poverty and Health** ................................................................. (1.5 credits)

This course introduces students to the history of the concept of poverty, the causes of poverty and its effects, and intersections between poverty and health. Policies designed to alleviate poverty will be analysed at both the global or international level and from community perspectives. Health has association with poverty at both micro and macro levels. Investment in health is linked with improvement in life expectancy, more time for work, more earnings, and improvement in well-being and prosperity. The course will also focus on issues of global health inequality and nature and extent of global inequalities in health, and the possible policy responses to improving health and well-being, and reducing observed disparities. The implications of the health crisis that afflicts the poorest countries, especially in Asia and Africa will be also examined. The course will mainly focus on following topics: poverty and inequality, health inequality: concepts, measurement and patterns, intra-household inequality, global inequality in burden of disease, effectiveness of programs and policy, food and nutrition, and macroeconomics and health.

**HE-740: Modeling in Health Economics** ....................................................... (1.5 credits)

This course imparts training on the practical application of mathematical modelling to support and inform evidence-based healthcare decision problems. The course develops professional level analytical skill-base to evaluate and improve the efficiency and effectiveness of healthcare systems.

**HE-775: Ethics in Health Care** ................................................................. (1.5 credits)

As healthcare ethics is an interdisciplinary field, the issues range from broad theological and philosophical considerations to more technical considerations of medicine, the delivery of healthcare and health law, as well as issues and considerations that are unique to the field of healthcare ethics. This course therefore provides an introduction to ethics in health management. It analyses issues of values in health systems, health actors, health policies, health values and power with a behavioural perspective. It also analyses issues of rational decision-making.