

**Revised and Updated Curriculum  
PhD Economics Program  
2024**



**DEPARTMENT OF ECONOMICS  
UNIVERSITY OF KARACHI  
KARACHI-75270, PAKISTAN**

## Coursework and Residency Requirement

- **Credit Hours:**
  - **18 Credit Hours** of coursework are required if the student is from the same discipline.
  - These courses must be delivered through regular on-campus classes taught by full-time faculty members.
  - The courses should preferably be of the 800 level or higher.
  - The PhD degree should primarily focus on research rather than merely accumulating credit hours.

## 2. Comprehensive Examination

- **Completion Timeline:**
  - The coursework, comprehensive exam, and defense of the synopsis/research proposal must be completed within the first six semesters (3 years) of enrollment in the PhD program. The maximum duration allowed for completing the PhD, as per HEC policy, is 8 years.
  - Failure to comply may result in the cancellation of the student's registration, and transcripts for completed coursework may be issued.
  - In the event of noncompliance due to force majeure (unforeseen circumstances), the university may consider exceptions according to prescribed procedures.
- **Exam Guidelines:**
  - The comprehensive exam should assess the student's conceptual knowledge of the discipline.
  - The exam will cover courses studied, preferably at the graduate level, and will be conducted as one composite question paper.
  - The evaluation will be on an aggregate basis, expressed as pass/fail, and will not be graded.

## 3. Doctoral Dissertation

- **Research Area:**
  - The dissertation must reflect relevance, credibility, effectiveness, and legitimacy of the research.
  - The research area should:
    - Address community needs at regional and local levels and align with the national research agenda.
    - Focus on basic and pure research.
    - Include emerging areas of research, preferably aligned with sustainable development goals (SDGs).
- **Dissertation Requirements:**
  - The doctoral dissertation must be an original and innovative contribution to knowledge, aimed at solving socio-economic problems.

## Semester I

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
ECO801	Advanced Microeconomics	3
ECO803	Advanced Econometrics	3
ECO805	Research Seminar – I	3

## Semester II

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
ECO802	Advanced Macroeconomics	3
ECO804	Advanced Survey Data Analysis	3
ECO806	Research Seminar – II	3

**DEPARTMENT OF ECONOMICS**  
**UNIVERSITY OF KARACHI**  
**Course Outline: Advanced Microeconomics**  
**Course No. ECO 801**

**Course Description:**

The course delves deeper into microeconomic theory, with a focus on advanced topics such as dynamic games, mechanism design, contract theory, information economics, and advanced general equilibrium analysis. It emphasizes rigorous mathematical modeling, theoretical analysis, and the application of these theories to real-world economic problems. This course is designed to prepare students for research in microeconomic theory and its applications, equipping them with the tools necessary to contribute to scholarly research and policy analysis.

**Course Topics:**

- 1. Advanced Consumer and Producer Theory**
  - Duality in consumer and producer theory
  - Slutsky equation and applications in consumer theory
  - Roy's identity and Shephard's lemma
  - Profit functions, cost functions, and their properties
- 2. Dynamic Games and Applications**
  - Repeated games and folk theorems
  - Dynamic consistency and subgame perfection
  - Evolutionary game theory and learning in games
  - Applications in industrial organization and market regulation
- 3. Advanced General Equilibrium Theory**
  - Arrow-Debreu model with incomplete markets
  - Equilibrium under uncertainty and the role of financial markets
  - Core and equilibrium with differential information
  - Computational methods in general equilibrium analysis
- 4. Mechanism Design and Implementation Theory**
  - Revelation principle and incentive compatibility
  - Bayesian and dominant strategy incentive compatibility
  - Implementation in Nash and dominant strategies
  - Applications in auction theory and public goods provision
- 5. Contract Theory and Organizational Economics**
  - Complete vs. incomplete contracts
  - Multi-task principal-agent models
  - Relational contracts and their applications
  - Organizational design and incentive structures
- 6. Information Economics and Market Design**
  - Screening and signaling under asymmetric information
  - Auctions and bidding strategies under asymmetric information

- Design and regulation of matching markets
- Applications in labor markets and health economics
- 7. Behavioral and Experimental Economics**
  - Behavioral biases in decision-making: bounded rationality and heuristics
  - Time inconsistency and hyperbolic discounting
  - Laboratory and field experiments in microeconomic theory
  - Policy implications of behavioral economics
- 8. Advanced Mathematical Methods in Microeconomics**
  - Fixed point theorems and their economic applications
  - Topological methods in economic theory
  - Comparative statics and envelope theorems in optimization
  - Stochastic control theory in microeconomic models
- 9. Current Topics in Microeconomic Theory**
  - Information aggregation and herding behavior
  - Network economics and strategic interactions in networks
  - Market design in digital platforms
  - Recent advances in auction theory and spectrum allocation
- 10. Research Applications and Methodologies**
  - Formulating research questions in microeconomics
  - Literature review and gap analysis
  - Developing a research proposal in microeconomic theory
  - Case studies and applications in policy analysis

### **Textbooks:**

1. Mas-Colell, A., Whinston, M.D., & Green, J.R. (1995). *Microeconomic Theory*. Oxford University Press.
2. Jehle, G.A., & Reny, P.J. (2011). *Advanced Microeconomic Theory* (3rd ed.). Pearson Education.
3. Varian, H.R. (2014). *Microeconomic Analysis* (3rd ed.). W.W. Norton & Company.

### **Reference Books:**

1. Kreps, D.M. (1990). *A Course in Microeconomic Theory*. Princeton University Press.
2. Fudenberg, D., & Tirole, J. (1991). *Game Theory*. MIT Press.
3. Myerson, R.B. (1991). *Game Theory: Analysis of Conflict*. Harvard University Press.
4. Gibbons, R. (1992). *A Primer in Game Theory*. Prentice Hall.
5. Laffont, J.J., & Martimort, D. (2002). *The Theory of Incentives: The Principal-Agent Model*. Princeton University Press.

**DEPARTMENT OF ECONOMICS  
UNIVERSITY OF KARACHI  
Course Outline: Advanced Econometrics  
Course No. ECO 803**

**Course Description:**

This course is designed for PhD students to develop advanced econometric skills essential for conducting high-level research and writing a PhD thesis. The course covers a comprehensive range of econometric techniques, including time series analysis, panel data methods, generalized method of moments (GMM), and advanced topics in causal inference. Emphasis is placed on both theoretical understanding and practical application, preparing students to undertake empirical research with rigor and precision.

**Course Topics:**

- 1. Advanced Regression Analysis**
  - Review of Classical Linear Regression Model (CLRM)
  - Issues of Multicollinearity, Heteroscedasticity, and Autocorrelation
  - Model Specification and Selection Criteria
- 2. Maximum Likelihood Estimation (MLE)**
  - Theory of MLE and Its Properties
  - Likelihood Ratio Tests
  - Applications in Econometrics
- 3. Generalized Method of Moments (GMM)**
  - Methodology and Theory of GMM
  - Identification Issues and Over-Identification Tests
  - Applications of GMM in Econometric Modeling
- 4. Panel Data Econometrics**
  - Fixed Effects and Random Effects Models
  - Dynamic Panel Data Models: Arellano-Bond Estimator
  - Nonlinear Panel Models and Instrumental Variables
- 5. Time Series Econometrics**
  - Stationarity and Unit Roots
  - Cointegration and Error Correction Models (ECM)
  - ARIMA, ARCH, and GARCH Models
- 6. Advanced Topics in Causal Inference**
  - Difference-in-Differences (DiD) and Synthetic Control Methods
  - Instrumental Variables (IV) and Two-Stage Least Squares (2SLS)
  - Regression Discontinuity Design (RDD) and Matching Methods
- 7. Econometric Theory of Structural Models**
  - Structural Equation Modeling (SEM)

- Identification in Structural Models
- Simultaneous Equations Models
- 8. Nonparametric and Semiparametric Methods**
  - Kernel Density Estimation and Smoothing Techniques
  - Nonparametric Regression and Quantile Regression
  - Applications of Semiparametric Methods in Econometrics
- 9. Bayesian Econometrics**
  - Introduction to Bayesian Inference
  - Markov Chain Monte Carlo (MCMC) Methods
  - Applications of Bayesian Methods in Econometric Analysis
- 10. Advanced Econometric Software Applications**
  - Practical Use of Econometric Software (e.g., Stata, R, EViews, MATLAB)
  - Simulation-Based Econometric Methods
  - Data Handling and Model Implementation in Research

### **Textbooks:**

1. Wooldridge, Jeffrey M. (2010). *Econometric Analysis of Cross Section and Panel Data* (2nd ed.). MIT Press.
2. Greene, William H. (2018). *Econometric Analysis* (8th ed.). Pearson.
3. Hamilton, James D. (1994). *Time Series Analysis*. Princeton University Press.
4. Hayashi, Fumio. (2000). *Econometrics*. Princeton University Press.

### **Reference Books:**

1. Baltagi, Badi H. (2008). *Econometric Analysis of Panel Data* (4th ed.). Wiley.
2. Hansen, Bruce E. (2022). *Econometrics*. Princeton University Press.
3. Cameron, A. Colin, & Trivedi, Pravin K. (2005). *Microeconometrics: Methods and Applications*. Cambridge University Press.
4. Davidson, Russell, & MacKinnon, James G. (2004). *Econometric Theory and Methods*. Oxford University Press.
5. Angrist, Joshua D., & Pischke, Jörn-Steffen. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

**DEPARTMENT OF ECONOMICS**  
**UNIVERSITY OF KARACHI**  
**Course Outline: Research Seminar I**  
**Course No. ECO 805**

**Course Description:**

This course is designed for PhD students in their first semester to develop the essential skills needed to write academic research papers. The course emphasizes the process of constructing a well-organized and impactful research paper. Students will learn key components such as developing research questions, conducting a literature review, choosing the appropriate research methodology, and writing and presenting results. Students will be required to prepare and present draft sections of their research paper, with continuous feedback from faculty and peers. The course will prepare students for Research Seminar II, where they will further refine their skills and develop a research proposal for their PhD thesis.

**Course Structure:**

**Module 1: Introduction to Research and Writing a Research Paper**

- **Objective:** Understand the purpose and structure of a research paper.
- **Content:**
  - Overview of different types of research (qualitative, quantitative, and mixed methods).
  - Understanding the structure of a research paper: introduction, literature review, methodology, results, and conclusion.
  - Selection of a research topic and formulation of research questions.
- **Outcome:** Develop a clear understanding of research types and select a suitable research topic.

**Module 2: Literature Review and Developing Research Questions**

- **Objective:** Learn how to conduct a comprehensive literature review and formulate strong research questions.
- **Content:**
  - Finding and reviewing relevant literature using academic databases.
  - Identifying gaps in existing research and defining research questions or hypotheses.
  - Structuring a literature review to support the research focus.
- **Outcome:** Write a draft literature review and develop clear and focused research questions.

**Module 3: Research Methodology**

- **Objective:** Understand different research methodologies and their applications.
- **Content:**
  - Overview of research designs: experimental, survey, case study, etc.

- Choosing an appropriate research design and data collection method.
  - Ensuring reliability, validity, and ethical considerations in research.
- **Outcome:** Develop and present a draft research methodology section for the chosen topic.

#### **Module 4: Data Collection and Analysis Techniques**

- **Objective:** Learn the fundamentals of data collection and analysis for economic research.
- **Content:**
  - Primary and secondary data sources.
  - Techniques for data collection in economic research.
  - Introduction to basic data analysis using software (e.g., STATA, SPSS, R).
- **Outcome:** Prepare a data collection plan and outline the methods for data analysis.

#### **Module 5: Writing Results and Discussion**

- **Objective:** Develop skills to present findings and discuss them in the context of existing literature.
- **Content:**
  - Structuring the results section.
  - Techniques for presenting data (tables, graphs, etc.).
  - Writing the discussion section: interpreting findings and relating them to the research questions.
- **Outcome:** Draft the results and discussion sections based on hypothetical or actual data.

#### **Module 6: Conclusions, Abstract, and References**

- **Objective:** Learn how to effectively summarize research and provide references.
- **Content:**
  - Writing an effective conclusion and providing policy implications or future research directions.
  - Developing an abstract that summarizes the entire paper.
  - Proper referencing styles and avoiding plagiarism.
- **Outcome:** Write the conclusion, abstract, and reference list for the research paper.

#### **Module 7: Peer Review and Final Paper Presentation**

- **Objective:** Improve the quality of the research paper through peer feedback and final presentations.
- **Content:**
  - Peer review process: reviewing each other's work and providing constructive feedback.
  - Revising the paper based on feedback.
  - Final presentation of the research paper.
- **Outcome:** Submit a polished version of the research paper and present it to peers and faculty for final evaluation.

## Evaluation:

- **Draft Submissions:** Students are required to submit draft sections of their research paper throughout the course.
- **Seminar Presentations:** Presentation of different sections of the paper for peer and faculty feedback.
- **Participation:** Active participation in discussions and providing peer feedback.
- **Final Research Paper:** Submission of a completed research paper at the end of the semester.

## Recommended Resources:

- **Books:**
  - Creswell, John W. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). SAGE Publications.
  - Booth, Wayne C., Colomb, Gregory G., & Williams, Joseph M. (2016). *The Craft of Research* (4th ed.). University of Chicago Press.
  - Zinsser, William. (2006). *On Writing Well: The Classic Guide to Writing Nonfiction* (7th ed.). Harper Perennial.
- **Journal Articles:**
  - Phillips, Estelle M., & Pugh, Derek S. (2015). *How to Get a PhD: A Handbook for Students and Their Supervisors* (6th ed.). Open University Press.
  - Belcher, Wendy Laura. (2019). *Writing Your Journal Article in Twelve Weeks: A Guide to Academic Publishing Success* (2nd ed.). University of Chicago Press.

**DEPARTMENT OF ECONOMICS**  
**UNIVERSITY OF KARACHI**  
**Course Outline: Advanced Macroeconomics**  
**Course No. ECO 802**

**Course Description:**

This course is designed for students who have completed "Economic Dynamics" and "Macroeconomics" at the MPhil level. It provides an in-depth exploration of advanced topics in macroeconomic theory and policy, with a focus on dynamic modeling, growth theories, and macroeconomic stability. The course emphasizes both theoretical frameworks and empirical methods, equipping students with the analytical tools needed to engage in high-level research and policy analysis.

**Course Topics:**

- 1. Advanced Dynamic Macroeconomic Models**
  - Overlapping Generations Models (OLG)
  - Infinite-Horizon Models
  - Applications of Dynamic Programming in Macroeconomics
- 2. Intertemporal Consumption and Savings**
  - Theories of Consumption: Life-Cycle and Permanent Income Hypotheses
  - Intertemporal Budget Constraints and Consumption-Savings Decisions
  - Models of Consumption under Uncertainty
- 3. Endogenous Growth Theory**
  - R&D-Based Growth Models
  - Human Capital and Knowledge Spillovers
  - Innovation and Long-Run Growth
- 4. Real Business Cycle (RBC) Theory**
  - Foundations of RBC Models
  - Calibration and Simulation Techniques
  - Critiques and Extensions of RBC Models
- 5. New Keynesian Economics**
  - Price Stickiness and Wage Rigidity
  - New Keynesian Phillips Curve
  - Monetary and Fiscal Policy in New Keynesian Models
- 6. Macroeconomic Policy Design**
  - Rules vs. Discretion in Policy Making
  - Optimal Monetary and Fiscal Policies
  - Time Inconsistency and Commitment Issues
- 7. Monetary Theory and Policy**
  - The Role of Money in Macroeconomic Models
  - Money Supply, Demand, and Interest Rates
  - Monetary Policy in Open Economies

## **8. Fiscal Policy and Public Debt**

- Theories of Public Debt and Deficit Financing
- Ricardian Equivalence and Its Implications
- Fiscal Multipliers and Policy Effectiveness

## **9. Advanced Topics in Open Economy Macroeconomics**

- Exchange Rate Dynamics and International Capital Flows
- Global Imbalances and Macroeconomic Stability
- Currency Crises and Financial Contagion

## **10. Macroeconomic Aspects of Financial Markets**

- Financial Frictions and the Macroeconomy
- The Role of Banks and Financial Intermediaries
- Asset Pricing Models and Macroeconomic Implications

## **11. Behavioral Macroeconomics**

- Incorporating Behavioral Insights into Macroeconomic Models
- Expectations Formation and Macroeconomic Outcomes
- Behavioral Anomalies and Policy Implications

## **12. Empirical Methods in Macroeconomics**

- Time Series Econometrics in Macroeconomic Analysis
- Structural Vector Autoregressions (SVARs)
- Calibration and Estimation of DSGE Models

### **Textbooks:**

1. Romer, David. (2018). *Advanced Macroeconomics* (4th ed.). McGraw-Hill.
2. Obstfeld, Maurice, & Rogoff, Kenneth. (1996). *Foundations of International Macroeconomics*. MIT Press.
3. Ljungqvist, Lars, & Sargent, Thomas J. (2018). *Recursive Macroeconomic Theory* (4th ed.). MIT Press.
4. Blanchard, Olivier. (2017). *Macroeconomics* (7th ed.). Pearson.

### **Reference Books:**

1. Woodford, Michael. (2003). *Interest and Prices: Foundations of a Theory of Monetary Policy*. Princeton University Press.
2. Barro, Robert J., & Sala-i-Martin, Xavier. (2004). *Economic Growth* (2nd ed.). MIT Press.
3. Gali, Jordi. (2015). *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework* (2nd ed.). Princeton University Press.
4. Mankiw, N. Gregory. (2021). *Macroeconomics* (10th ed.). Worth Publishers.
5. Acemoglu, Daron. (2009). *Introduction to Modern Economic Growth*. Princeton University Press.

**DEPARTMENT OF ECONOMICS**  
**UNIVERSITY OF KARACHI**  
**Course Outline: Advanced Survey Data Analysis**  
**Course Code: ECO 804**

**Course Description:**

This course is designed for Ph.D. students conducting advanced research in marketing, management, human resource management (HRM), and other behavioral research areas. It focuses on modern multivariate analysis techniques, equipping students with the knowledge to handle complex data structures in their research. The course covers various methods including regression analysis, factor analysis, structural equation modeling, and survey data handling, with practical applications using software tools such as SPSS, SmartPLS, and STATA.

**Course Topics:**

**1. Introduction**

- Data types, models (mathematical vs. statistical)
- Measurement scales
- Nature of analysis (Univariate, Bivariate, Multivariate)
- Basic definitions

**2. Mean Comparison and Hypothesis Testing**

- Mean differences (between groups)
- One-sample T-test
- Independent sample T-test
- Paired sample T-test

**3. Analysis of Variance (ANOVA)**

- Introduction and principles of ANOVA
- One-Way and Two-Way ANOVA
- Assumptions and hypothesis testing
- Applications using SPSS

**4. Analysis of Covariance (ANCOVA)**

- Concepts and assumptions of ANCOVA
- Application using SPSS

**5. Regression Analysis**

- Introduction, estimation, and interpretation
- Hypothesis testing and model assumptions

**6. Factor Analysis**

- Principal Component Analysis
- Application with SPSS

**7. Reliability Analysis**

- Assessing and improving reliability of research instruments

**8. Structural Equation Modeling (SEM)**

- PLS-SEM vs. CB-SEM
- Mediation and moderation analysis
- Reflective and formative measurement models

**9. Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS**

- Overview, estimation, and data handling
- Performance map analysis and confirmatory tetrad analysis
- 10. Survey Data/Micro Data Handling**
  - Introduction to STATA
  - Variable creation and descriptive analysis
- 11. Binary Response Models**
  - Nature of dummy variables and interaction effects
  - Qualitative vs. quantitative regressors
  - Seasonal analysis
- 12. Qualitative Response Regression Models**
  - Linear Probability Model (LPM), Logit, and Tobit models
  - Multinomial Logit (MLOGIT) models

**Textbooks:**

1. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. SAGE Publications.
2. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate Data Analysis* (7th ed.). Pearson Prentice Hall.
3. Garson, G. D. (2016). *Partial Least Squares: Regression & Structural Equation Models*. Statistical Associates Publishing.

**Software:**

- SPSS (Statistical Package for the Social Sciences)
- SmartPLS
- STATA

**DEPARTMENT OF ECONOMICS**  
**UNIVERSITY OF KARACHI**  
**Course Outline: Research Seminar II**  
**Course No. ECO 806**

### **Course Description:**

This course is designed for PhD students who are in the process of developing their dissertation proposals. The course emphasizes the importance of presenting research ideas and receiving feedback from peers and faculty. Each student is required to deliver at least three seminars based on their proposed Ph.D. research work. The seminars will serve as platforms for refining research questions, methodologies, and the overall structure of the dissertation proposal. The proposed research supervisor will evaluate the student's performance and submit the result at the end of the semester.

### **Course Structure:**

#### **Seminar 1: Research Proposal Presentation**

- **Objective:** Introduce the research topic, outline the research questions, and present the proposed methodology.
- **Content:**
  - Background and significance of the research topic.
  - Clear articulation of the research questions or hypotheses.
  - Proposed research design and methodology.
  - Expected contributions to the field.
- **Outcome:** Receive feedback on the feasibility, relevance, and clarity of the proposed research.

#### **Seminar 2: Literature Review and Theoretical Framework**

- **Objective:** Present a comprehensive literature review and establish the theoretical foundation of the research.
- **Content:**
  - Review of key academic literature related to the research topic.
  - Identification of gaps in the existing literature.
  - Development of the theoretical framework guiding the research.
  - Justification of the chosen theoretical approach.
- **Outcome:** Refine the theoretical framework and ensure the literature review is exhaustive and relevant.

#### **Seminar 3: Methodology and Preliminary Findings**

- **Objective:** Discuss the research methodology in detail and present any preliminary findings or expected outcomes.
- **Content:**

- Detailed explanation of the research methods (e.g., data collection, analysis techniques).
- Presentation of any pilot study results or preliminary findings.
- Discussion of potential challenges and limitations.
- Outline of the next steps in the research process.
- **Outcome:** Obtain feedback on the robustness of the methodology and address any potential issues before proceeding.

### **Evaluation:**

- **Seminar Presentations:** Each seminar will be evaluated by the research supervisor and may include feedback from peers and other faculty members.
- **Participation:** Active participation in discussions during peers' seminars will also be considered in the evaluation.
- **Final Proposal Submission:** The course will culminate in the submission of a refined dissertation proposal, incorporating feedback from the seminars.

### **Recommended Resources:**

- **Books:**
  - Creswell, John W. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). SAGE Publications.
  - Booth, Wayne C., Colomb, Gregory G., & Williams, Joseph M. (2016). *The Craft of Research* (4th ed.). University of Chicago Press.
  - Yin, Robert K. (2017). *Case Study Research and Applications: Design and Methods* (6th ed.). SAGE Publications.
- **Journal Articles:**
  - Phillips, Estelle M., & Pugh, Derek S. (2015). *How to Get a PhD: A Handbook for Students and Their Supervisors* (6th ed.). Open University Press.
  - Maxwell, Joseph A. (2013). *Qualitative Research Design: An Interactive Approach* (3rd ed.). SAGE Publications.