

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS, ISLAMABAD

Department of Econometrics and Statistics



Self-Assessment Report

For

MSc Econometrics and Statistics

Faculty Members

Dr. Abdul Qayyum	Head of Department
Dr. Muhammad Iqbal	Chief of Research
Dr. Sofia Ahmed	Research Economist
Ms. Amena Urooj	Assistant Professor
Ms. Saba Anwar	Assistant Professor
Ms. Saima Bashir	Assistant Professor
Dr. Zamir Hussain	Lecturer
Ms. Hafsa Hina	Lecturer

Programme Team

Ms Amena Urooj,	Assistant Professor
Dr. Zamir Husair,	Lecturer

PIDE VISION

PIDE to Function as a World Class Centre of Excellence
for Research and Teaching

PIDE MISSION

A world-class research and teaching institute building on
the strengths and high standards it has achieved over the
last fifty years.

CRITERION 1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES (S: 4)

Standard 1.1: The program must have documented measurable objectives that support college and institution mission statements.

Vision:

To develop a department as a world class center of excellence in econometrics

Mission:

To produce highly skilled econometricians by imparting state of the art knowledge in econometric theory, statistical methods and their applications in diversified fields.

Objectives:

1. To provide theoretical knowledge: these include basic econometric theory, applied econometrics, time series analysis, financial econometrics and micro econometrics.
2. To teach application of theories: there is an emphasis on the application of econometrics and statistics, through exercises and seminars, to policy issues and empirical questions.
3. To provide skills to use Econometrics and Statistical packages.
4. Awareness about the different national and international sources of data.

Standard 1.2: The program must have documented outcomes for graduating students. It must be demonstrated that the outcomes support the program objectives and that graduating students are capable of performing these outcomes.

Table 1.1: Program Objective Assessment

S. No.	Objective	How Measured	When measured	Improvement Identified	Improvement Made
1.	To Provide Theoretical Knowledge	Appendix (C) Performa 03; Question (4, 8, 9, 10) Performa 05; Question (15, 16) Performa 07; (Sec 1, Question 03, Section 05)	Spring 2012 (25 May 2012)	Satisfied	
2.	To Teach Application of Theories	Appendix (C) Performa 03; Question (4, 8, 9, 10) Performa 05; Question (15, 16) Performa 07 See 1, Question (02, 03, 04, 06), Section 05, Sec 7, Question 1	-Do-	Satisfied	
3.	To Provide Skills To Use Econometrics And Statistical Packages	Appendix (C) Performa 03; Question (5, 8, 9, 10, 11, 12) Performa 0;5 Question (15, 16) Performa 07; Sec 1, Question (02, 03, 04, 06), Section 05 ,Sec 7 Question 1	-Do-	Need for separate computer labs for econometrics with latest Statistical Packages.	Purchase of Statistical Packages •E- Views •Ox-Metrics 6
4.	Awareness About The Different National And International Source Of Data	Appendix (C) Performa 3; Question (5, 8, 9, 10, 11, 12) Performa 05, Question (15, 16) Performa 07, Sec 1, Question (02, 03, 04, 06) Section 05, Sec 7; Question 1	-Do-	Satisfied	

Standard 1.3: The results program's assessment and the extent to which they are used to improve the program must be documented.

Table 1.2: Action Taken Based on The Periodic Assessment

Program	Strengths	Weaknesses	Future Development	Activities taken for improvements
M.Sc Econometrics and Statistics	Student Teacher ratio	Low Student enrollment		
	Highly qualified faculty	No Departmental Library Facilities	Proposal for HEC grant for the construction of departmental library is under process	
	Curricula in line with international standards			
	Well established computer labs, lecture room and video conferencing lab	Advance Statistical Packages are needed to cater future needs		Recently purchase Eviews 7, OxMetrics 6 and MiFit
	Very good infrastructure to support teaching and research program	More space is required to accommodate the need of increased number of students		Two new Academic Blocks are constructed.

Standard 1.4: The department must assess its overall performance periodically using quantifiable measures.

Table 1.3: Student's Enrollment

Year	Graduate	Student Faculty Ratio	Average GPA
2008	7	7:5	2.99
2009	13	13:7	3.14
2010	10	10:8	3.1

Did the department conduct employer survey? (Use employer survey form)

(1) No; Department of Econometrics and Statistics was established with an initial enrollment of 7 students in 2008. So employer survey is not possible at this stage as department is newborn.

Did the department get filled out student's course evaluation form by the students? (Use of Student Course Evaluation Form)

(2) Yes

Table 1.4: Departmental Overall Performance

Name of Faculty member	Journal Publications (HEC Recognized only) and Conference publications
Dr. Abdul Qayyum	<ol style="list-style-type: none"> 1. Qayyum, Abdul and Faisal Nawaz, 2012, Measuring Financial Risk using Extreme Value Theory: Evidence from Pakistan, Journal of Basic and Applied Scientific Research (JBASR) 2. Javid, Muhammad, Umair Arif and A. Qayyum, 2012, Impact of Remittances on Economic Growth and Poverty, Academic Research International, Vol.2, Number 1 3. Raheman, Abdul, A. Qayyum and Talat Afza, 2011, Sector-wise Performance of Working Capital Management Measures and Profitability Using Ratio Analysis, Interdisciplinary Journal of Contemporary Research in Business, Vol. 3, No. 8 4. Amjad, R., Musleh ud Din and A. Qayyum, 2011, Pakistan: Breaking – out of Stagflation into Sustained Growth, The Lahore Journal of Economics, 16: SE (September 2011) 5. Khan, Muhammad Arshad and A. Qayyum, 2011, Exchange Rate Determination in Pakistan: Role of Monetary Fundamentals, the Journal of Economic Cooperation and Development, Volume 32, Number 2 6. Qayyum, A. and Saba Anwar, 2011, Impact of Monetary Policy on the Volatility of Stock Market in Pakistan, International Journal of Business and Social Science, Vol. 2 No. 11

	<ol style="list-style-type: none"> 7. Raheman, A., A. Qayyum, T. Afza and M. A. Bodla, 2010, Sector-Wise Analysis of Working Capital Management and Firm Performance in Manufacturing Sector of Pakistan, <i>Interdisciplinary Journal of Contemporary Research in Business</i>, Vol. 2, No. 7. 8. Raheman, A., A. Qayyum, T. Afza and M. A. Bodla, 2010, Working Capital Management and Corporate Performance of Manufacturing Sector in Pakistan, <i>International Research Journal of Finance and Economics</i>, Issue No. 47, 9. Khan, M. A. and Abdul Qayyum, 2009, The Demand for Electricity in Pakistan, <i>OPEC Energy Review</i>, Vol. 33, No. 1. 10. Ahmed, Imtaiz and Abdul Qayyum, 2009, Role of Public Expenditures and Macroeconomic Uncertainty in Determining Private Investment in Large Scale Manufacturing Sector of Pakistan, <u>International Research Journal of Finance and Economics</u>, No. 26. 11. Raheman, A., A. Qayyum, and T. Afza, 2009, Efficiency Dynamics of Sugar Industry of Pakistan, <i>The Pakistan Development Review</i>, No. 48:4, pp 921-938. 12. Raheman, A., A. Qayyum, T. Afza, and M. A. Bodla, 2008, Estimating Total Factor Productivity and its Components: Evidence from Major Manufacturing Industries of Pakistan, <i>The Pakistan Development Review</i>, Vol-47:4, pp. 677-694. 13. Ahmed, Imtaiz and Abdul Qayyum, 2008, Dynamic Modeling of Private Investment in Agriculture Sector of Pakistan, <i>The Pakistan Development Review</i>, No. 47:4, pp 517-530. 14. Qayyum, Abdul and Muhammad Arshad Khan, 2008, Trade Growth Linkages in South Asia, <i>European Journal of Scientific Research</i>, Vol. 21, No. 1, pp 13-144. 15. Ahmed, Imtaiz and Abdul Qayyum, 2008, Effect of Government Spending and Macro-economic Uncertainty on Private Investment in Services Sector: Evidence from Pakistan, <i>European Journal of Economics, Finance and Administrative Sciences</i>, Issue 11. 16. Qayyum, Abdul, M. Idrees and Asma Hayder, 2008, Growth Diagnostics in Pakistan, <i>European Journal of Scientific Research</i>, Vol. 24, No.3, pp.433-450. 17. Khan, Muhammad Arshad and Abdul Qayyum, 2008, Long-Run and Short-Run Dynamics of the Exchange Rate in Pakistan: Evidence from Unrestricted Purchasing Power Parity Theory, <i>The Lahore Journal of Economics</i>, , Vol. 13, No. 1, pp 29-56. 18. Ahmed, Imtaiz and Abdul Qayyum, 2007, Do Public Expenditures and Macroeconomic Uncertainty Matters for Private Investment? Evidence from Pakistan, <i>Pakistan Development Review</i>, Vol. 46:2, pp. 145-161. 19. Khan, Muhammad Arshad and Abdul Qayyum, 2007, Dynamic Modeling of Energy and Growth in South Asia, <i>The Pakistan Development Review</i>, Vol. 46:4, pp 481-498.
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	<p>20. Zahid, Muhammad Sarwar, Abdul Qayyum and Wasim Shahid Malik, 2007, Dynamics of Wheat Market Integration in Northern Punjab, Pakistan, <i>The Pakistan Development Review</i>, Vol. 46:4, pp. 817-830.</p> <p>21. Kemal, A. R, Abdul Qayyum and M. Nadim Hanif, 2007, Financial Development and Economic Growth: Evidence from a Heterogeneous Panel of High Income Countries, <i>The Lahore Journal of Economics</i>, Vol. 12, No. 1.</p> <p>22. Khan, Muhammad Arshad and Abdul Qayyum, 2007, Exchange Rate Determination in Pakistan: Evidence Based on Purchasing Power Parity Theory, <i>Pakistan Economic and Social Review</i>, Vol. 45, No. 2, pp. 211-232.</p> <p>23. Hussain, Fazal and Abdul Qayyum, 2007, Stock Market Liberalisations: The South Asian Experience, <i>Journal of Management Science</i>, 1:1</p> <p>24. Qayyum, Abdul, and Sajawal Khan, 2006 X-efficiency, Scale Economies, Technological Progress, and Competition: The Banking Sector in Pakistan, <i>The Pakistan Development Review</i>, Vol. 45:4, pp. 733-748</p> <p>25. Muhammad Arshad Khan and Abdul Qayyum, 2006, Trade Liberalisation, Financial Sector Reforms, and Growth, <i>The Pakistan Development Review</i>, Vol. 45:4, pp 711-731.</p> <p>26. Haque, Nadeem Ul and Abdul Qayyum, 2006, Inflation Everywhere is a Monetary Phenomenon: An Introductory Note, <i>The Pakistan Development Review</i>, Vol. 45:2, pp. 179-183.</p> <p>27. Qayyum, Abdul, 2006, Money, Inflation and Growth in Pakistan, <i>The Pakistan Development Review</i>, 45:2, 203-212</p> <p>28. Qayyum, Abdul, and Faiz Bilques, 2005, P-star Model: A Leading Indicator of Inflation for Pakistan, <i>The Pakistan Development Review</i>, Vol. 44:2, pp. 117-129</p> <p>29. Qayyum, Abdul, 2005, Modelling the Demand for Money in Pakistan, <i>The Pakistan Development Review</i> , Vol. 44:3, pp. 233-252</p> <p>30. Qayyum, Abdul, Sajawal Khan and M. Idrees Khawaja, 2005, Interest Rate Pass-through in Pakistan: Evidence from Transfer Function Approach, <i>The Pakistan Development Review</i>, Vol. 44:4, pp. 975-1001.</p> <p>31. Qayyum, Abdul, M. A Khan and S A Sheikh, 2005, Financial Development and Economic Growth: The Case of Pakistan, <i>The Pakistan Development Review</i>, 44; 4, 819-837</p> <p>32. Qayyum, Abdul, M. A Khan and K Zaman, 2004, Exchange Rate Misalignment in Pakistan: Evidence from Purchasing Power Parity Theory, <i>The Pakistan Development Review</i>, Vol. 43:4, pp. 721-735</p>
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	<ol style="list-style-type: none"> 33. Qayyum, Abdul, and M. A Khan, 2003, Capital Flow and Money Supply: The Degree of Sterilization in Pakistan, The Pakistan Development Review, Vol. 42:4, pp. 975-985 34. Qayyum, Abdul, 2002, Demand for Bank Lending by the Private Business Sector in Pakistan, The Pakistan Development Review, Vol. 41:2, pp. 149-159 35. Qayyum, Abdul, 2002, Monetary Conditions Index: A Composite Measure of Monetary Policy in Pakistan, The Pakistan Development Review, Vol. 41:4, pp. 551-566 36. Qayyum, Abdul, 2002, An Error Correction Model of the Demand for Narrowly Defined Money in Pakistan, Research Journal Social Sciences, Vol. 1, No.1, pp. 8-19. 37. Qayyum, Abdul, 2001, Sectoral Analysis of the Demand for Real Money Balances in Pakistan, The Pakistan Development Review, Vol. 40:4, pp. 953-966. 38. Qayyum, Abdul, and Usman, A, 2001, Money Supply Function in Pakistan: An Econometric Investigation, Journal of Islamic Banking & Finance, No. 2. 39. Qayyum, Abdul, 2000, Demand for Real Money Balances by the Business Sector: An Econometric Investigation, The Pakistan Development Review, Vol. 39:4, pp 857-873. 40. Qayyum, Abdul, 1999, Demand for Money by Business Sector in a Developing Country: Evidence from Pakistan, The Kashmir Economic Review, Vol. VII, No. 1 41. Qayyum, Abdul, 1998, Error Correction Model of Demand for Money in Pakistan, The Kashmir Economic Review, Vol. 6, No. 1-2 42. Qayyum, Abdul, and S. Cameron, 1998, Unit Roots, Cointegration, and Error Correction: Review of Literature, The Kashmir Economic Review, Vol. 6, No. 1-2
<p>Dr. Muhammad Iqbal</p>	<ol style="list-style-type: none"> 1. "Total Factor Productivity and Agricultural Research Relationship: Evidence of Crops Sub-sector of Pakistan's Punjab". Adiqia Kiani, Muhammad Iqbal, and Tariq Javed. European Journal of Scientific Research Vol. 23, No. 1 (2008). Pp 87-97 2. "Environment Friendly Cotton Production through Implementing Cotton-IPM Approach". Muhammad Azeem Khan, Muhammad Iqbal, and Iftikhar Ahmad. The Pakistan Development Review, Vol. 46, No. 4 (2007). pp 1119-1135. 3. "Livestock Farming in Cholistan Desert of Pakistan: Setting the Development Strategies". Umar Frooq, Muhammad Iqbal and Munir Ahmad. Annals of Arid Zone Vol. 46, No. 2 (2007). pp 111-132. 4. "Sustainable Cotton Production through Skill Development among Farmers:Evidence from Khairpur District of Sindh,

	<p>Pakistan". Muhammad Azeem Khan and Muhammad Iqbal. The Pakistan Development Review, Vol. 44, No. 4 (2005). pp 695-716.</p> <ol style="list-style-type: none"> 5. "Impact of Institutional Credit on Agricultural Production in Pakistan". Muhammad Iqbal, Munir Ahmad and Kalbe Abbas. The Pakistan Development Review, Vol. 42, No. 4 (2003). pp 469-485. 6. "Zero-Tillage Technology and Farm Profits: A Case Study of Wheat Growers in the Rice Zone of Punjab". Muhammad Iqbal, M. Azeem Khan and M. Zubair Anwar. The Pakistan Development Review, Vol. 41, No. 4 (Winter 2002). pp 665-682. 7. "Economic Evaluation of Pesticide use Externalities in the Cotton Zone of Punjab, Pakistan". M.Azeem Khan, Muhammad Iqbal, Manzoor H. Soomro and Iftikhar Ahmad. The Pakistan Development Review, Vol. 41, No. 4 (Winter 2002). pp 683-693. 8. "Wheat Productivity, Efficiency and Sustainability: A Stochastic Production Frontier Analysis". Munir Ahmad, Ghulam Mustafa Chaudhry and Muhammad Iqbal. The Pakistan Development Review, Vol. 41, No. 4 (Winter 2002). pp 643-663 9. "Adoption of Recommended Varieties: A Farm Level Analysis of Wheat Growers in Irrigated Punjab". Muhammad Iqbal, M. Azeem Khan and Munir Ahmad. The Pakistan Development Review, Vol. 41, No. 1, 2002. pp 29-48. 10. "Land Distribution and Renewal of Sustainable Economic Activities for Rural Poverty alleviation in Pakistan". The International Journal of Agriculture and Biology, Vol. 4 No. 3, (2002). Muhammad Sharif, Usman Mustafa, W. Malik and Muhammad Iqbal. pp 413-419. 11. "Determinants of Higher Wheat Productivity in Irrigated Pakistan". Muhammad Iqbal, M.Azeem Khan and Munir Ahmad. The Pakistan Development Review, Vol. 40, No. 4, 2001. pp 753-766. 12. "The Supply Response of Basmati Rice Growers in Punjab, Pakistan: Price and Non-Price Determinants". Umar Farooq, Trevor Yong, Noel Russell and Muhammad Iqbal. Journal of International Development, 13, 2001. pp 227-237. 13. "Attaining and Maintaining Self Sufficiency in Wheat Production: Institutional Efforts and Farmers Limitations". Umar Farooq and Muhammad Iqbal. The Pakistan Development Review. Vol. 39, No. 4, winter 2000. pp 487-514. 14. "Allocation of Household Labour Time in the Rice-Wheat Cropping System of Punjab, Pakistan". Umar Farooq, Trevor Yong, Noel Russell and Muhammad Iqbal. The Journal of Rural Development, Vol. 29, No. 2, July 1999. BARD, Comilla,
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	<p>Bangladesh pp. 1-23.</p> <ol style="list-style-type: none"> 15. "An Investigation into the Farm Households Consumption Patterns in Punjab, Pakistan". Umar Farooq, Trevor Yong and Muhammad Iqbal. The Pakistan Development Review. Vol. 38, No. 3, autumn 1999. pp 293-305. 16. "Factors Affecting Adoption of Hybrid Maize Varieties in the Irrigated Punjab". The International Journal of Agriculture and Biology, Vol. 1 No. 3, July 1999. Muhammad Iqbal, Arshed Bashir and Umar Farooq. pp 149-151. 17. "Cost and Revenue Statistics of Paddy Production: Farmers' Perspective". International Journal of Agriculture and Biology, Vol. 1 No. 1&2, January-April, 1999. Umar Farooq, Muhammad Iqbal and Arshed Bashir. pp 13-18. 18. "Farmers Use, Knowledge and Perceptions about Wheat Varieties in the Mardan District". Journal of Rural Development and Administration, Vol. XXV, No. 3, summer, 1993. Shaukat Hayat, Nawab Khan, M. Iqbal and Jahan Zab. pp 122-129. 19. "An Analysis of the Financial Characteristics and Requirements of Rice-Wheat Farming Systems of Punjab: A Case Study". Journal of Rural Development and Administration, Vol. XXV No. 1, winter, 1993. Shahid Zia and Muhammad Iqbal. pp 104-117
<p>Dr. Muhammad Arshad Khan</p>	<ol style="list-style-type: none"> 1. Muhammad Arshad Khan, 2010. "Testing of money multiplier model for Pakistan: does monetary base carry any information?," Economic Analysis Working Papers (EAWP), Colexio de Economistas de A Coruña, Spain and Fundación Una Galicia Moderna, vol. 9, pages 1-20, February. 2. Khan, M.A. & Samad, G., 2010. "Intellectual Property Rights And Foreign Direct Investment: Analysis Of 14 South And South East Asian Countries, 1970-2005," Applied Econometrics and International Development, Euro-American Association of Economic Development, vol. 10(1). 3. Muhammad Arshad Khan & Abdul Qayyum, 2009. "The demand for electricity in Pakistan," OPEC Energy Review, Organization of the Petroleum Exporting Countries, vol. 33(1), pages 70-96, 03. 4. KHAN, Muhammad Arshad, 2008. "Long-Run And Short-Run Dynamics Of Foreign Exchange Reserves Flows And Domestic Credit In Pakistan," International Journal of Applied Econometrics and Quantitative Studies, Euro-American Association of Economic Development, vol. 5(1), pages 61-78. 5. Muhammad Arshad Khan & Usman Ahmad, 2008. "Energy Demand in Pakistan: A Disaggregate Analysis," The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 47(4), pages 437-455. 6. Arshad Khan, Muhammad & Ahmed, Usman, 2009. "Energy

	<p>Demand in Pakistan: A Disaggregate Analysis,"MPRA Paper 15056, University Library of Munich, Germany.</p> <p>7. Khan, Muhammad Arshad & Ahmed, Usman, 2009. "Energy Demand in Pakistan: A Disaggregate Analysis,"MPRA Paper 15369, University Library of Munich, Germany.</p> <p>8. Muhammad Arshad Khan & Abdul Qayyum, 2007. "Dynamic Modelling of Energy and Growth in South Asia,"The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 46(4), pages 481-498.</p> <p>9. Muhammad Arshad Khan & Ayaz Ahmed, 2007. "Foreign Aid-Blessing or Curse: Evidence from Pakistan,"The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 46(3), pages 215-240.</p> <p>10. Muhammad Arshad Khan & Muhammad Abdul Qayyum, 2007. "Trade, Financial and Growth Nexus in Pakistan,"Economic Analysis Working Papers (EAWP), Colexio de Economistas de A Coruña, Spain and Fundación Una Galicia Moderna, vol. 6, pages 1-24, December.</p> <p>11. Arshad Khan, Muhammad & Qayyum, Abdul, 2007. "Trade,Financial and Growth Nexus in Pakistan,"MPRA Paper 6523, University Library of Munich, Germany.</p> <p>12. Muhammad Arshad Khan & Abdul Qayyum, 2006. "Trade Liberalisation, Financial Sector Reforms, and Growth,"The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 45(4), pages 711-731.</p> <p>13. Khan, M. Arshad & Qayyum, Abdul, 2006. "Trade Liberalization, Financial Sector Reforms and Growth,"MPRA Paper 2655, University Library of Munich, Germany, revised 2006.</p> <p>14. Muhammad Arshad Khan & Abdul Qayyum & Saeed Ahmed Sheikh, 2005. "Financial Development and Economic Growth: The Case of Pakistan,"The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 44(4), pages 819-837.</p> <p>15. Khan, Arshad & Qayyum, Abdul & Sheikh, Saeed, 2005. "Financial Development and Economic Growth: The Case of Pakistan,"MPRA Paper 2145, University Library of Munich, Germany, revised 2005.</p> <p>16. Abdul Qayyum & Muhammad Arshad Khan & Khair-U-Zaman, 2004. "Exchange Rate Misalignment in Pakistan: Evidence from Purchasing Power Parity Theory,"The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 43(4), pages 721-735.</p> <p>17. Qayyum, Abdul & Khan, Arshad & Zaman, Kair-u, 2004. "Exchange Rate Misalignment in Pakistan: Evidence from Purchasing Power Parity Theory,"MPRA Paper 2148, University Library of Munich, Germany, revised 2004.</p>
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	<p>18. Abdul Qayyum & Muhammad Arshad Khan, 2003. "Capital Flows and Money Supply: The Degree of Sterilisation in Pakistan,"The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 42(4), pages 975-985.</p> <p>19. Qayyum, Abdul & Khan, Arshad, 2003. "Capital Flows and Money Supply: The Degree of Sterilisation in Pakistan,"MPRA Paper 2150, University Library of Munich, Germany, revised 2003.</p>
Ms. Amena Urooj	<p>1. Aslam, M. and Urooj, Amena (2010), "Bayesian Analysis of Glenn-David Model for Paired Comparisons", Journal of Statistical Theory and Applications, Gowas Publishers, 91 Stallion Circle, Upper Holland, PA 19053, USA.</p> <p>2. Asghar, Z. Attique, Nazia and Urooj, Amena (2009), "Measuring Impact of Education and Socio-economic Factors on Health for Pakistan" The Pakistan Development Review, Vol 48, No.4, Pp 653-673.</p> <p>3. Arif, G.M. and Urooj, Amena (2008), "Absorption of growing labour force in Pakistan: Actualizing the full potential of demographic dividend" Policy recommendations of Population Council</p>
Mr. Muhammad Javid	<p>1. Attiya Y. Javid & Muhammad Javid & Umiam Arif, 2010. "Fiscal Policy and Current Account Dynamics in the Case of Pakistan,"The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 49(4), pages 577-592.</p> <p>2. Muhammad Javid & Kashif Munir, 2010. "The Price Puzzle and Monetary Policy Transmission Mechanism in Pakistan: Structural Vector Autoregressive Approach,"The Pakistan Development Review, Pakistan Institute of Development Economics, vol. 49(4), pages 449-460.</p>
Ms. Saima Bashir	
Dr. Zamir Hussain	<p>1. Hussain, Z. and Pasha, G.R., 2009. Regional flood frequency analysis of the seven sites of Punjab, Pakistan, using L-moments. Water Resour. Manage., 23(10), 1917-1933. DOI:10.1007/s11269-008-9360-7.</p> <p>2. Hussain, Z., 2011. Application of regional flood frequency analysis to the upper and lower basins of the Indus River, Pakistan. Water Resour. Manage., DOI 10.1007/s11269-011-9839-5</p>

CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION

- A. Programme Title:**
M. Sc Econometrics and Statistics
- B. Definition of Credit Hour**
It is three hour teaching per week.
- C. Scheme of Studies for the Degree of M. Sc Econometrics and Statistics**

Table 2.1: Scheme of Study

Course code	Course Title	Pre- Requisite	Core/Optional
ETS-501	Microeconomic Theory		Core
ETS-504	Macroeconomic Theory		Core
ETS-510	Probability Theory I		Core
ETS-515	Statistical Methods		Core
ETS-530	Mathematical Methods		Core
ETS-511	Probability Theory II	ETS-510	Core
ETS-516	Statistical Inference I		Core
ETS-540	Basic Econometrics		Core
ETS-520	Sampling Techniques		Core
ETS-533	Stochastic Processes		Core
ETS-541	Econometrics Methods	ETS-540	Core
ETS-517	Statistical Inference II	ETS-516	Core
ETS-543	Time Series Econometrics I	ETS-540	Core
ETS-544	Time Series Econometrics II	ETS-543	Core
ETS-522	Simulation Techniques		Core
ETS-546	Applied Financial Econometrics		Core
ETS-561	Bayesian Econometrics		Optional
ETS-519	Multivariate Statistics		Optional
ETS-562	Micro-Econometrics		Optional
ETS-550	Statistical Packages		Optional
ETS-555	Non-Parametric Statistics & Categorical Data		Optional
ETS-523	Official Statistics		Optional
ETS-571	Panel Data Analysis I		Optional
ETS-572	Panel Data Analysis II		Optional
ETS-552	Exploratory Data Analysis		Optional
ETS-599	Thesis		Optional

D. Curriculum Course Requirement for the Degree of M. Sc Econometrics and Statistics

Table 2.2: Course Requirements

Semester	Course code	Core Course Title	Optional Course Title
I	ETS-501	Microeconomic Theory	
	ETS-504	Macroeconomic Theory	
	ETS-510	Probability Theory I	
	ETS-515	Statistical Methods	
	ETS-530	Mathematical Methods	
II	ETS-511	Probability Theory II	
	ETS-516	Statistical Inference I	
	ETS-540	Basic Econometrics	
	ETS-520	Sampling Techniques	
	ETS-533	Stochastic Processes	
III	ETS-541	Econometrics Methods	
	ETS-517	Statistical Inference II	
	ETS-543	Time Series Econometrics I	
	ETS-		Optional Course
	ETS-		Optional Course
IV	ETS-544	Time Series Econometrics II	
	ETS-522	Simulation Techniques	
	ETS-546	Applied Financial Econometrics	
	ETS-		Optional Course
	ETS-		Optional Course
List of Optional Courses			
	ETS-561		Bayesian Econometrics
	ETS-519		Multivariate Statistics
	ETS-562		Micro-Econometrics
	ETS-550		Statistical Packages
	ETS-555		Non-Parametric Statistics & Categorical Data
	ETS-523		Official Statistics
	ETS-571		Panel Data Analysis I
	ETS-572		Panel Data Analysis II
	ETS-552		Exploratory Data Analysis
Total		16	9
Minimum Requirement		16	4

E. Course Contents

Department of Econometrics and Statistics Course Contents

CORE COURSES:

ETS-501 **Microeconomic Theory **[credits 3]****

Pre Requisite: Nil

Theory of consumer behavior and demand analysis; Market demand and elasticity; production functions; cost of production; profit maximization and supply; the theory of market behavior; monopoly; monopolistic competitive conditions; oligopolistic conditions; pricing of factors of production.

Text Book

1. Walter Nicholson, Microeconomic Theory: Basic Principles and Extensions (6th edition).
2. Ferguson, C. E & Gould, J.P. Microeconomic Theory. Macmillan, (Latest Edition).

Recommended Books

1. Henderson, J. M. & Quandt, R. E. Microeconomic Theory, N.Y. Melliwra H A Book Co.
2. Koustoyiannia, A. Modern Microeconomics, London, Macmillan, (Latest Edition).
3. Layard and Walter A. A., Micro-Economics, McGraw Hills, (Latest Edition).
4. Varian Hall R., Micro Economics Analysis, Norton & Company, New York, 1992.

ETS-504 **Macroeconomic Theory **[credits 3]****

Pre Requisite: Nil

Basic concepts of macroeconomics; national income; theories of consumption and their implications; saving and investment; money market: the demand and supply of money; aggregate demand, supply and stabilization policy; long run economic growth; the

demand and supply of money; the IS-LM analysis; economic fluctuations and business cycles.

Text Books

1. Glahe, Fred R., (Latest Edition), Macroeconomics, Theory and Policy, Harcourt Brace Hovanovich Inc. Mankiw, Gregory N., (2000) Macroeconomics, Worth Publishers, New York.
2. Peel D. and Minfow P., (2002). Advance Macroeconomics, Edward Elgar, Cheltenham, U.K.

Recommended Books

1. Branson, William H., (1979), Macroeconomic Theory and Policy, Harpoer and Row Publishers, New York/London.
2. Branson, William H., and Litvack Hames M., Macroeconomics, (Latest Edition), Princeton University.

ETS-510 Probability Theory-I

[credits 3]

Pre Requisite: Nil

Probability as a set function. Conditional probability and Bayes' theorem. Random variables, Distribution function, Probability mass function and probability density function. Joint and conditional distributions for two and more random variables. Marginal and conditional distributions, stochastic independence. Mathematical expectation and its properties Conditional expectation, variance and moments. Probability generating function. Moment generating and characteristic functions and their properties. Relation between moments and cumulants. Probability distributions: Hyper geometric, Binomial, Multinomial, Negative Binomial, Geometric, Poisson, Uniform, Exponential, Beta, Gamma, Normal and Lognormal distributions with moments and commulants, Bivariate normal distribution.

Text Books

1. Mood, A.M, Graybill, F.A. and Boss, D.C. (1997), "Introduction to the Theory of Statistics", McGraw Hill, New York.
2. Hogg, R.M. and Craig, A.T. (1995), "Introduction to Mathematical Statistics". Prentice Hall, Engle wood Cliffs, New Jersey.

Books Recommended

1. Stirzaker, D. (1999). "Probability and Random Variables". Cambridge University Press, Cambridge.
2. Scheaffer, R. L., (1990). Introduction to Probability and its Applications, PWS-Kent.
3. Ho. Cacoullous, T., (1989). Exercises in Probability Theory, Springer-Verlag .

ETS-515 Statistical Methods

[credits 3]

Pre Requisite: Nil

Population, sample, Parameter, Statistic, Applications of Binomial, poisson and Normal distributions, Basic Sampling distributions (Chi-square, t and F) and their quantiles, Type I and Type II errors, confidence interval, estimation, testing, simple and composite hypotheses about means, proportions, variances, regression coefficient and correlation coefficients, power and O.C. Functions, goodness of fit test, Independence in contingency tables, testy of normality and randomness, Introduction to one statistical package like MINITAB, SPSS etc.

Text Book

1. Freedman, D. Pisani, R and Purves, R (1998). Statistics (3rd Edition)

Books Recommended

1. Steel, R. and Torrie, J. H. Principles and procedures of statistics, Mcgraw Hill, (1997)
2. Dixon, W.J. and Massey, F.J. Introduction to Statistical Analysis, McGraw Hill, (1983).
3. Snedecor, G. and Cochran, W.G. Statistical Methods, Iowa State Press, (1962).

ETS-530 Mathematical Methods**[credits 3]****Pre Requisite: Nil**

Review of matrices and Vectors, Matrix Differentiations, Eigen values, Eigen vectors and their Properties, Positive definitive matrix, Semi positive definitive matrix, Introduction to quadratic forms, Maximisation of Quadratic forms, Variance covariance Matrix, partitioned matrices, rank of matrix, Differentiation and Integration, Linear Programming, Introduction to optimization.

Text Book

1. Strang, G. (2003). Introduction to Linear Algebra

Books Recommended:

1. Richard, A. Johnson & Dean, W. Wichern Applied Multivariate statistical Analysis (1998)
2. Mood, A.M. Grabbill, F.A, & Boes D.C Introduction to the Theory of Statistics McGraw-Hill (1997)
3. Hogg, R.M & Craig, A.T .Introduction to Mathematical Statistics, Prentice hall (1995)
4. Kaplan, W.C. Advance Calculus, Addison and Wiley

ETS-511 Probability Theory-II**[credits 3]****Pre-requisite: ETS-510 Probability Theory-I**

Transformation of variables, Cumulative distribution function and moment generating functions techniques, Weak and Strong laws of large number, Central limit theorem. Properties of Cauchy, Laplace, Weibull, Maxwell, Pareto, Raleigh and Log normal distributions with applications in various fields. Inversion and uniqueness theorems, convolution of distributions. Order statistics, Distribution of r th & s th order statistics, distribution of median, range and quantiles. Independence of sample mean and variance, Central & Non-Central t, F and chi-square distributions, Distribution of quadratic forms, Distributions under linear constraints, Distributions of Fisher's Z statistics and linear sample correlation coefficient for uncorrelated normal data. Characteristic function of Distributions in R^k . Truncated distributions, Markov Chain and Markov Processes.

Text Books

1. Mood, A.M, Graybill, F.A. and Boss, D.C. (1997), "Introduction to the Theory of Statistics", McGraw Hill, New York.
2. Hogg, R.M. and Craig, A.T. (2005), "Introduction to Mathematical Statistics". Prentice Hall, Engle wood Cliffs, New Jersey.

Books Recommended

1. Stirzaker, D. (1999). "Probability and Random Variables". Cambridge University Press, Cambridge.
2. Stuart, A. and Ord, J. K. Kedalls, (1998). Advanced Theory of Mathematical Statistics (Vol. I), Charles Coriffi & co., London
3. Scheaffer, R. L., (1990). Introduction to Probability and its Applications, PWS-Kent.
4. Ho. Cacoullous, T., (1989). Exercises in Probability Theory, Springer-Verlag .
5. Bickel, P. J. & Docksum, K. A. Mathematical Statistics. Holden Day Inc (1997).

ETS-516 Statistical Inference-I

[credits 3]

Pre Requisite: Nil

Properties of a good estimator, Unbiasedness, Consistent, Sufficient, Efficient, Completeness. Minimum variance unbiased estimator, Rao-Blackwell and Lehmann Sheffe theorem with applications, Cramer-Rao inequality, Methods of Estimation, Maximum likelihood, moments, least squares, minimum chi-square and Bayesian, Estimates based on order observations, Simultaneous confidence intervals. Interval Estimation: Pivotal and other methods of finding confidence interval, confidence interval in large samples, shortest confidence interval, optimum confidence interval. Bayes' Interval estimation.

Text Book

1. Lehman, E.L. (1997). "Testing Statistical Hypotheses". Springer - Volga, New York.

Books Recommended

1. Bickel, P.J., and Doksum, K.A. (2001), *Mathematical Statistics, Vol I*, Prentice Hall, N.J., 2nd ed.
2. Stuart, A and Ord, J.K. (1998). *Kendall's "Advanced Theory of Statistics" Vol. II*. Charles Griffin, London.
3. Lindgren, B.W. (1998). *"Statistical Theory"*. Chapman and Hall, New York.
4. Mood, A.M. Gray Bill, F.A. and Boss, D.C. (1997). *"Introduction to the Theory of Statistics"*. McGraw Hill, New York.
5. Hogg, R.V. and Craig, A.T. (1996). *"Introduction to Mathematical Statistics"*. Prentice Hall, New Jersey.
7. Zacks, S. (1973), *"Parametric Statistical Inference"*, John Wiley, New York.
8. Rao, C.R., (1973). *"Linear Statistical Inference and its Applications"*, John Wiley, New York.

ETS-540 Basic Econometrics

[credits 3]

Pre Requisite: Nil

Simple linear regression: Assumptions and least squares estimates, General linear model: Least Squares solution, maximum likelihood estimators, test of hypotheses and confidence intervals about parameters, Residual Analysis: Testing and dealing with multicollinearity, heteroscedasticity and auto-correlation, Use of instrumental, lagged and dummy variables, Simulation of Beta

Text book

1. Gujarati, D. (1998). *"Econometrics"*, John Wiley, New York.

Books Recommended

1. Draper, N.R. and Smith, H. (2004). *"Applied Regression Analysis"*, John Wiley, New York.
2. Baltagi, B. H. (1999). *"Econometrics"*, 2nd Edition, Springer Varlog.
3. Wonnacott, T.H. and Wonnacott R.J. (1998). *"Econometrics"*, John Wiley, New York.
4. Johnston, J. and Di. Nardo, J., (1997). *"Econometric Method"*, 4th Edition, McGraw Hill, New York.

5. Ryan, P. T. (1996) "Modern Regression Methods", John Wiley and sons Inc. New York.
6. Montgomery, D.C., and Peck E.A. (1992)."Introduction to linear Regression Analysis", 2nd Edition, John Wiley and sons Inc. New York.
7. Guttman, I, (1980); "Linear Models: An Introduction", John Wiley, New York.
8. Koutsoyiannis, A. (1980), "Theory of Econometrics", Macmillan. N.Y.
9. Maddala, G.S. (1977). "Econometrics", McGraw Hill. New York.
10. Searle, S. R. (1971), "Linear Models", John Wiley, New York.

ETS-520 Sampling Techniques

[credits 3]

Pre Requisite: Nil

Description and properties of simple random sampling. Sampling for proportions and percentages. Estimation of variances, standard errors and confidence limits. Sample size determination under different conditions. Description and properties of stratified random sampling. Formation of strata, Different methods of allocation of sample size. Systematic sampling. Ratio and regression estimates, Best linear unbiased estimator (BLUE), Lahiri, Midzuno and Hartley-Ross estimators. The linear regression estimator under a linear model, Cluster sampling, Sampling with probability proportional to size (PPS) (with and without replacement), Double Sampling, Multistage sampling, Multiphase sampling and Questionnaire Designing.

Text Book

1. Angus S. Deaton (1997). The Analysis of Household Surveys: A Micro-Econometric Approach to Development Policy.

Books recommended

1. Sharon, L. Lohr. Sampling Designs and Analysis, Duxbury Press, (1999)
2. Raj, D. & Chandhok, P. (1998), "Sample Survey Theory". Narosa Publishing House, New Delhi.
3. Cochran, W.G. Sampling Techniques, John Willey and Sons (1997)
4. Singh, R. and Singh N, (1996), "Elements of Survey Sampling", Kulwar Academic Publisher, Dodrecht.
5. Kish, L. (1992). "Survey Sampling", John Wiley, New York.

6. Sukhatme, P.V, Sukhatme, B., Sukhatme, S., and Asok, A. (1985), “Sampling Theory of Survey with Application”. Iowa State University Press.

ETS-533 Stochastic Processes

[credits 3]

Pre Requisite: Nil

Course Contents:

Introduction to stochastic processes. Simple random walk, Markov chains, Transition and absolute probability, Calculation of K-step transition probabilities. Chapman-Kolmogorov equations. Classification of states. Classification of Markov chains. The ergodic property. The random walk. Gambler’s ruin and expected duration of game. Markov process. Poisson process. Pure death process. Pure birth process. Renewal process. Branching process. The Winer process. Non-Markovian process. Stationary process.

Books Recommended

1. Karlin, S. A. and Taylor, A First Course in Stochastic Processes, Academic Press, (1975).
2. Srinivasin, S. K. & Mehta, K. M. Stochastic Process, Tata McGraw Hill (1988).
3. Jones, P.W. and Smith, P., Stochastic Processes: An Introduction, ARNOLD, London and Oxford University Press Inc., (2001).

ETS-541 Econometrics Methods

[credits 3]

Pre-requisite: ETS-540 Basic Econometrics

Problems of autocorrelation, multicollinearity, heteroscedasticity and their solution. Ridge regression. Lagged variables. Dummy variables. System of simultaneous linear equations, Identification-Estimation method, Estimation of Simulataneous Equation, restricted least squares. Test of identifying restrictions. Errors in Variables. Estimation with stochastic regressor, generalized least squares estimators.

Text Book

1. Baltagi, B. H. (1999). “Econometrics”, 3rd Edition, Springer Varlog.

2. Green, W.H (2003). "Econometric Analysis" 5th edition Pearson Education, Inc.

Books Recommended

1. Draper, N.R. and Smith, H. (2004). "Applied Regression Analysis", John Wiley, New York.
2. Gujarati, D. (1998). "Econometrics", John Wiley, New York.
3. Wonnacot, T.H. and Wonnacot R.J. (1998). "Econometrics", John Wiley, New York.
4. Johnston, J. and Di Nardo, J., (1997). "Econometric Method", 4th Edition, McGraw Hill, New York.
5. Montgomery, D.C., and Peck E.A. (1992). "Introduction to Linear Regression Analysis", 2nd Edition, John Wiley and sons Inc. New York.
6. Guttmann, I. (1980); "Linear Models: An Introduction", John Wiley, New York.
7. Koutsoyiannis, A. (1980), "Theory of Econometrics", Macmillan.
8. Maddala, G.S. (1977). "Econometrics", McGraw Hill. New York.

ETS-517 Statistical Inference-II

[credits 3]

Pre-requisite: ETS-516 Statistical inference-I

Tests of Hypotheses: Simple and composite hypotheses, critical regions. Neyman-Pearson Lemma, power functions, uniformly most powerful tests. Deriving tests of Hypothesis concerning parameters in normal, exponential, gamma and uniform distributions. Randomized Tests. Unbiased tests, Likelihood ratio tests and their asymptotic properties. Sequential Tests: SPRT and its properties, A.S.N. and O.C. functions.

Text Book

1. Lehman, E.L. (1997). "Testing Statistical Hypotheses". Springer - Volga, New York.

Books Recommended

1. Bickel, P.J., and Docksum, K.A. (2001), Mathematical Statistics, Vol I, Prentice Hall, N.J., 2nd ed.
2. Stuart, A and Ord, J.K. (1998). Kendall's "Advanced Theory of Statistics" Vol. II. Charles Griffin, London.

3. Lindgren, B.W. (1998). "Statistical Theory". Chapman and Hall, New York.
4. Mood, A.M. Gray Bill, F.A. and Boss, D.C. (1997). "Introduction to the Theory of Statistics". McGraw Hill, New York.
5. Hogg, R.V. and Craig, A.T. (1996). "Introduction to Mathematical Statistics". Prentice Hall, New Jersey.
6. Zacks, S. (1973), "Parametric Statistical Inference", John Wiley, New York.
7. Rao, C.R., (1973). "Linear Statistical Inference and its Applications", John Wiley, New York.

ETS-543 Time Series Econometrics-I

[credits 3]

Pre-requisite: ETS-540 Basic econometrics

Decomposition of Time Series, Stochastic Process, Stationary Time-Series, Exponential smoothing techniques, auto-correlation and auto-covariance, estimates functions and standard error of the auto-correlation function (ACF) and PACF, spectral density functions, comparison with ACF, Linear stationary models: Auto regressive, Moving Average and mixed models, Nonstationary models, general ARIMA notation and models, minimum mean square forecasting. ARIMA Seasonal Models, ARCH, Garch Model, Forecasting and application with monetary and macro data

Text book

1. Enders, W (2004). Applied Econometric Time Series . John Wiley. New York

Books Recommended

1. Cox, D. R., Hinckley D.V. and Nielsen O.E.B. (1996). "Time Series Models - In Econometrics, finances and other fields"; Chapman & Hall, London.
2. Chatfield, C. (1996). "The Analysis of Time Series: An Introduction", Chapman and Hall, London.
3. Andy, P, West M. and Harrison, P. J. (1994). "Applied Bayesian Forecasting and Time Series Analysis", Chapman & Hall New York.
4. Brock well P.J. and Davis R.A. (1991). "Time Series Theory and Methods", Springer Verlag New York.

5. Harvey, A.C. (1990). "Forecasting Structural Time Series Models and the Calamander", Cambridge University Press, Cambridge.
6. Daggle, P.J. (1990), "Time Series: A Biostatistical Introduction", Clarendon Press, Oxford.
7. Bovas, A. and Johannes, L. (1983), "Statistical Methods for Forecasting", John Wiley. New York
8. Priestley, M.B. (1981), "Spectral Analysis and Time Series", Academic Press, London.
9. Box, G.E.P. and Jenkins, G.M. (1999). "Time Series Analysis: Forecasting and Control", San Francisco.

ES-544

Time Series Econometrics II

[credits 3]

Pre-requisite: ETS-543 Time Series Econometrics-I

Testing for unit roots in univariate and multivariate time series, Vector Autoregressive Models(VAR), Unrestricted and restricted VAR, Impulse response function, Bivariate Granger Causality, Transfer Function models, Their identification, fitting and checking, Intervention analysis models, Outlier analysis for time series, Co integration, Testing of Hypothesis about Cointegration, Estimation of Vector Error Correction Model(VECM), Kalman Filter and State Space.

Text book

1. Enders, W (2004). Applied Econometric Time Series . John Wiley. New York

Recommended Books:

1. Box, George E.P, Jenkins, G.M and Reinsel, G.C., (1994). Time Series Analysis, Forecasting and Control, Prentice Hall.
2. Hamilton, James. D, (1994). Time Series Analysis, Princeton University Press.

Pre Requisite: Nil

General issues in simulation; brief review of math and statistical computing. Model building; bias-variance tradeoff; model selection; Fisher information matrix. Stochastic simulations: generating random variables, simulating normal, gamma and beta random variables. Generating random variables from failure rates. Simulating multivariate distributions, MCMC methods and Gibbs sampler, Simulating random fields. Comparison of algorithms to generate random variables. Resampling methods. Variance reduction. Discrete-event systems and simulations. Markov chain Monte Carlo. Optimization using Monte Carlo methods, simulated annealing for optimization. Solving differential equations by Monte Carlo methods Input selection and optimal experimental design for linear models. Input selection and optimal experimental design for nonlinear models. Statistical methods for selecting the best option using simulation runs.

Books Recommended

1. Chen, Ming-Hui, Shao, Qi-Man, Ibrahim, Joseph G. (2000). Monte Carlo Methods in Bayesian Computation. Springer.
2. Christopher, Z. Mooney. (1997). Introduction to Monte Carlo Methods. Sage Publications.
3. Fishman, G.S. (1996). Monte Carlo: Concepts, Algorithms, and Applications. Springer.
4. Gentle, James E. (2003). Random Number Generation and Monte Carlo Methods. Springer.
5. M. E. J. Newman and G. T. Barkema. (1999). Monte Carlo Methods in Statistical Physics. Oxford University Press.
6. Morgan, B. J. T. (1984). Elements of Simulation. Chapman and Hall.
7. Neal Madras. (2000). Monte Carlo Methods. AMS Books.
8. Ripley B.D. (1987). Stochastic Simulations. Wiley.
9. Ross, S. M.(2002). Simulation. Academic.
10. Rubinstein, R.Y. (1981).Simulation and the Monte Carlo Method. Wiley.

ETS-546 Applied Financial Econometrics

[credits 3]

Pre Requisite: Nil

Stochastic Processes and Financial time series, Shock Persistence and impulse response analysis, Estimating Capital Asset Pricing Models (CAPM), Modeling of equity returns, trading day effects, and volatility estimations. In addition, recent advancements in financial time series including the unit root phenomenon, co-integration, Autoregressive Conditional Heteroscedasticity (ARCH) and Generalized Autoregressive Conditional Heteroscedasticity (GARCH), stochastic volatility modeling, trend break analysis and nonlinearity will be covered Measure of Stock Market Integration, varying parameters.

Text Books

1. Articles Based Latest Books

Books Recommended

1. Chatfield, C. (2004) The Analysis of Time Series, (5th Ed.) Chapman and Hal, New York.
2. Mills, T. C. (1993) The Econometric Modeling of Financial Time Series, Cambridge University Cambridge.
3. Campbell, J. Y., Lo, A. W. And Mackinlay, A. C. (1977) The Econometrics of Financial markets. Princeton University Press.
4. James D. Hamilton (1994) "Time Series Analysis" Princeton University Press.

OPTIONAL COURSES

ETS-561 Bayesian Econometrics

[credits 3]

Pre Requisite: Nil

Prior information, prior distributions, methods of elicitation of prior distributions, posterior distributions: the posterior mean, medians (Bayes estimator under loss functions) and variances of univariate and bivariate posterior distributions, non informative priors: methods of elicitation of non informative priors, Bayesian hypotheses testing: bayes factor; the highest density region; posterior probability of the hypothesis.

Text Book

1. Zellner, A (1996). An Introduction to Bayesian Inference in Econometrics. John Wiley, New York

Books recommended

1. O. Hagan A. Kendall's. Advanced theory of statistics (Vol. 2B), Bayesian Inference, Cambridge, The University Press (1994)
2. Bernardo, J. M. & Smith, A. F. M., Bayesian theory, John Wiley, New York (1994)
3. Lee, P.M. Bayesian statistics, an introduction. Oxford University Press, New York (1991)
4. Berger, J. O. Statistical Decision Theory and Bayesian Analysis (2nd Ed.), New York, Springer Verlag (1985).
5. Box, G. E. P & Tiao, G. C. Bayesian Inference in Statistical Analysis, Reading Addison Wesley (1973).

ETS-519 Multivariate Statistics

[credits 3]

Pre Requisite: Nil

Multivariate normal distribution, Distribution of linear function of normal variates, Distribution of quadratic forms, Wishart distribution, Hotelling's T^2 distribution, canonical variate analysis, discriminant analysis, principal component and factor analysis, factor analysis versus principle component analysis, cluster analysis, MANOVA

Text Book

1. Richard A. Johnson & Dean. W. Wichern. Applied Multivariate Statistical Analysis, Prentice Hall (1998)

Books Recommended

1. Anderson, T.W. (2003). "An Introduction to Multivariate Statistical Analysis", John Wiley, New York.
2. Afifi, A. A. and Clark Virginia (2000). "Computer Aided Multivariate Analysis", Lifetime learning publications, Belmont California.

3. R. Gnanadesikan. Methods for data analysis of multivariate observations, (2nd Ed.) John Wiley and Sons (1997)
4. Chatfield, C. and Collins, A.J. (1980). "Introduction to Multivariate Analysis", Chapman and Hall, London.
5. Mardia, K.V., Kent, J.T. and Bobby, J.M. (1979). "Multivariate Analysis", Academic Press, London.
6. Everett, B.J. (1974). "Cluster Analysis", McGraw Hill, New York
7. Morrison, F. (1990). "Multivariate Statistical Methods", McGraw Hill, New York

ETS-562 Micro- Econometrics

[credits 3]

Pre Requisite: Nil

Discrete choice models , 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.

Books recommended

1. Wooldridge, Jeffrey (2002), Econometric Analysis of Cross Section and Panel Data, Cambridge, MA: MIT Press.
2. Cameron, Colin and Pravin Trivedi (2005), Microeconometrics: Methods and Applications, Cambridge University Press.
3. Angrist, Joshua and Jörn-Steffen Pischke (2009), Mostly Harmless Econometrics, Princeton University Press.

ETS-550 Statistical Packages

[credits 3]

Pre Requisite: Nil

Three statistical packages will be offered from the following statistical packages for the application of statistical techniques.

- SAS, SPSS, EVIEWS, STATA, PC GIVES, MINITAB

Pre Requisite: Nil

Scales of measurement, Non-parametric problems, when to use non parametric procedures, parametric versus nonparametric tests, Trimmed and Winsorized means, One sample tests: binomial test, Sign test, wilcoxon signed ranks test, Rank sum test, Kolmogrov-Smirnov test, run test, Tests for two related samples: sign test, run test, Chi-Square test, Test for two independent samples: Mann-whitney test, Medain test, Chi-Square test, Wald-wolfwitz test, Kolmogrov-smirnov test. Categorical data, association in $r \times c$ contingency tables, Partition of χ^2 , binomial and Poisson, Homogeneity tests, Log-Linear models

Books recommended

1. Conover, W.J. (1999), Practical Nonparametric Statistics, 3rd Edition, John Wiley and Sons, New York.
2. Maritz, J.S. (1995). Distribution-Free Statistical Methods. Chapman & Hall London.
3. Gibbons, J.D. and Chakraborti, S.(1992), Nonparametric Statistical Inference, Marcel Decker, New York.
4. Annette, J. Dobson. Introduction to Generalized Linear Models. Chapman & Hall (1991)
5. Anderson E.B. The statistical analysis of categorical Data. Springer-Verlag, (1990)
6. Conover, W.j. Practical Non-Parametric statistics, John Willey (1984)
7. Sprent, P. Applied Nno-parametric statistics, John Willey (1984)
8. Fleeberg, S. E. the analysis of cross classified categorical data (1980)
9. Randlwess, R.H. & Wolfe, D.A. introduction to theory of non-parametric statistics, john willey (1979)
10. Everitt, B.s. the analysis of contingency table (1977)

ETS-523 Official Statistics**[credits 3]****Pre Requisite: Nil**

Population and Demographic Methods, Sources of Demographic data, Testing of accuracy of demographic data, Basic demographic measures, Life tables, Population estimates and projections, Statistical Systems in Pakistan, Statistics Divisions and Bureaus of Statistics: their functioning and publications. National Accounts: measures of production, income and expenditure, the national income and product, Gross Domestic product, saving and Wealth, Index Numbers, Social Indicators, capital market data: KSE indices, SBP indices, International Statistics.

RECOMENDED BOOKS:

1. Govt. of Pakistan, Provisional Results of Fifth Population and Housing Census held in March 1998, P.C.O. Islamabad.
2. Rukanuddin A. R. Farooqi, N. M. L. The State of Population in Pakistan-NIPS
3. Pollard, A. H. Yausaf, F. Pollard, Demographic Techniques, Pergaman Press (1982).
4. Speigleman, M. Introduction to Demography, Cambridge University Press, Revised Edition (1968).
5. Publications of Statistics Division I, State Bank of Pakistan, provisional Bureaus of Statistics and other Departments.

ETS-571 Panel Data Analysis I**[credits 3]****Pre Requisite: Nil**

Introduction to Panel Data, its Benefits and Limitations, one-way and two-way error component regression models, Fixed Effect and Random Effect Models, Maximum Likelihood Estimation, prediction, Hypothesis Testing with Panel Data, test for poolability of data, test for individual and time effects, Hausman's specification tests, Hetroskedasticity and Serial Correlation, Seemingly Unrelated Regressions, one way and two way model with applications, Simultaneous Equations with error Components, single equation and system estimation.

Recommended Books:

1. Baltagi, B.H, Econometric Analysis of Panel Data, John Wiley, (2001).
2. Hsiao, Cheng, Analysis of Panel Data, Cambridge University Press,(2003).
3. Arellano, Manuel,Panel Data Econometrics, oxford university press,(2003).

ETS-572 Panel Data Analysis II**[credits 3]****Pre Requisite: ETS-571 Panel Data Analysis I**

Dynamic Panel data models, Unbalanced Panel Models, Unbalanced one-way and two-way error component models, testing for individual and time effects using Unbalanced Panel data, the unbalanced nested error component models, limited dependent variable and panel data, fixed and random Logit, Probit and Tobit models, simulation, estimation of limited dependent variable models, heterogeneity and selection bias in panel data, Nonstationary Panels, panel unit root test, spurious regression in panel data, panel co integration test.

Recommended Books:

1. Baltagi, B.H, Econometric Analysis of Panel Data, John Wiley, (2001).
2. Hsiao, Cheng, Analysis of Panel Data, Cambridge University Press,(2003).
3. Arellano, Manuel,Panel Data Econometrics, oxford university press,(2003).

ETS-552 Exploratory Data Analysis**[credits 3]****Pre Requisite: Nil**

Exploratory Data Analysis (EDA) is an approach/philosophy for data analysis that employs a variety of techniques (mostly graphical) to maximize insight into a data set; uncover underlying structure; extract important variables; detect outliers and anomalies; test underlying assumptions; develop parsimonious models; and determine optimal factor settings.

Text Book**ETS-599 THESIS****[credits 6]**

A practical statistical project involving non-trivial statistical methodology. The project may stress a phases of the statistical process from the design aspects or data collection to data analysis and the complete analysis must be written in a formal way. A good review of literature related to topic of project will also be included in the thesis.

Standard 2.1: The curriculum must be consistent and supports the program’s documented objectives.

Table 2.3: Course Objectives

	Objectives			
	To provide theoretical knowledge	To teach application of theories	To provide skills to use Econometrics and Statistical packages	Awareness about the different national and international sources of data.
Courses	ETS-501, ETS-504, ETS-510, ETS-515, ETS-530, ETS-511, ETS-516, ETS-540, ETS-520, ETS-533, ETS-541, ETS-517, ETS-543, ETS-544, ETS-561, ETS-519, ETS-562, ETS-555, ETS-571, ETS-572	ETS-540, ETS-533, ETS-541, ETS-517, ETS-543, ETS-544, ETS-522, ETS-546, ETS-519, ETS-562, ETS-550, ETS-555, ETS-523, ETS-511, ETS-512, ETS-552	ETS-540, ETS-533, ETS-515, ETS-541, ETS-543, ETS-544, ETS-522, ETS-546, ETS-519, ETS-550, ETS-555, ETS-571, ETS-572, ETS-552	ETS-541, ETS-543, ETS-544, ETS-546, ETS-523, ETS-552

Standard 2.2: Theoretical background, problems analysis and solution design must be stressed within the program’s core material.

Table 2.4: Program’s Core Material

Elements	Courses
Theoretical background	ETS-501, ETS-504, ETS-510, ETS-515, ETS-530, ETS-511, ETS-516, ETS-540, ETS-520, ETS-533, ETS-541, ETS-517, ETS-543, ETS-544, ETS-561, ETS-519, ETS-562, ETS-555, ETS-571, ETS-572
problems analysis	ETS-540, ETS-533, ETS-541, ETS-517, ETS-543, ETS-544, ETS-522, ETS-546, ETS-519, ETS-562, ETS-550, ETS-555, ETS-523, ETS-511, ETS-512, ETS-552
solution design	ETS-540, ETS-533, ETS-515, ETS-541, ETS-543, ETS-544, ETS-522, ETS-546, ETS-519, ETS-550, ETS-555, ETS-571, ETS-572, ETS-552, ETS-523

Standard 2.3: The curriculum must satisfy the core requirements for the program, as specified by the respective accreditation body.

The curriculum satisfies both the core requirements of credit hours and criteria of admission laid down by PIDE and HEC.

Standard 2.4: The curriculum must satisfy the major requirements for the program as specified by the respective accreditation body.

The curriculum satisfies the major requirements for the program as specified by HEC.

Standard 2.5: The curriculum must satisfy general education, arts and professional and other discipline requirements for the program, as specified by the respective accreditation body.

The curriculum satisfies general education and professional disciplines requirements as approved by academic council.

Standard 2.6: Information technology component of the curriculum must be integrated throughout the program.

In Econometrics and Statistics education and research computer applications are very extensive not only in analytical and quantitative courses but also in theoretical subjects. Students are adept users of information technology for their assignments, projects, presentations and research work.

Standard 2.7: Oral and written communication skills of the student must be developed and applied in the program.

In order to develop strong written and oral communication skills in students class presentations and seminars are a regular part of all courses of the program.

CRITERION 3: LABORATORIES AND COMPUTING FACILITIES

For the students, the computing facilities are provided in terms of two Computer Labs (Details of which are provided in the following tables). Personal computer with internet facility along with the printer is provided to each faculty member in their room.

Table 3.1: Computer Lab Information

Title of the Lab	Computer Lab I
Location and Area	Main building, Computer Cell, PIDE
Objectives	To provide skills to use Econometrics and Statistical Packages
Adequacy for Instruction	2 lab assistants are sitting in the lab whole time and help is always available to the students
Courses taught	Statistical Packages (ETS-550), Simulation Techniques (ETS-522)
Software available	SPSS, EVIEWS, STATA, MINITAB
Major Equipment	17 computers with internet facility, 4 air conditioners, 1 printer, 1 projector, 1 scanner
Safety regulations	We are striving to provide as many manuals of instructions as possible

Title of the Lab	Computer Lab II
Location and Area	West Block, PIDE
Objectives	To provide skills to use Econometrics and Statistical Packages
Adequacy for Instruction	1 lab assistant is sitting in the lab whole time and help is always available to the students
Courses taught	Statistical Packages (ETS-550), Simulation Techniques (ETS-522)
Software available	SPSS, EVIEWS, STATA, MINITAB
Major Equipment	20 computers with internet facility, 5 air conditioners, 1 printer, 1 projector, 1 scanner
Safety regulations	We are striving to provide as many manuals of instructions as possible

Standard 3.1: Laboratory manuals/documentation/instructions for experiments must be available and readily accessible to faculty and students.

Not applicable

Standard 3.2: There must be adequate support personnel for instruction and maintaining the laboratories.

Not applicable

Standard 3.3: The University computing infrastructure and facilities must be adequate to support program's objectives.

Table 3.2: Computer Infrastructure

Total number of computers for students	37 (Each having internet facility)
Total number of printers	02
Total number of scanners	02
Total number of projectors	02

CRITERION 4: STUDENT SUPPORT AND ADVISING

Standard 4.1: Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.

Table 4.1: Frequency of Courses Offered

Type of Course	Courses Offered/Semester	Repetition of courses (semester-wise)
Core	8	All students are allowed to repeat their failed courses along with their regular courses in the next semesters, provided that the total number of registered courses, in a semester, should not exceed 6.
Optional	2	Regularly offered in the fall and spring Semester but with no choice due to low enrolment.

- ETS-501: Microeconomic Theory and ETS-504: Macroeconomic Theory are offered outside the department every year.

Standard 4.2: Courses in the major must be structured to ensure effective interaction between students, faculty and teaching assistants.

The courses offered are well structured to ensure effective interaction between faculty member, students and teaching assistants. Double teaching courses are generally not offered and no TA has been appointed to handle courses.

Standard 4.3: Guidance on how to complete the program must be available to all students and access to qualified advising must be available to make course decisions and career choices.

- Brochure is given at the time of admission and the PIDE official website is updated time-to-time.
- There are well formulated advisory groups comprising of faculty members who are all time available to solve and advice on concerned issues of students. Students have full and easy access to their allotted advisors. Student-advisor meetings are arranged on weekly basis and evaluation of advisory system is conducted at the end of each semester.(See Appendix 4)

- Students have membership of Pakistan Society of Development Economics (PSDE) and participate in PSDE international conference annually.

Table 4.2: List the Opportunities Provided by The Department to Students

Sr. No	Opportunities for students
1	Provision of Internet facility and computers for assignment preparation/search journals/ Books/ References etc.
2	Provision of multimedia for presentation/ seminars
3	Provision of modern equipment for research
4	Easy access to National and International data sources

Appendix 4

Pakistan Institute of Development Economics Department of Econometrics and Statistics

Students are allocated to the following advisors for their academic counseling:-

Fifth Semester		
S.No	Student's Name	Advisor
1	Hassan Mukhtar	Ms. Hafsa Hina
2	Arslan Munir Turk	Mr. Zamir Hussain
3	Akbar Jan	Ms. Amena Urooj
Third Semester		
1	Tanzila Wasif	Ms. Hafsa Hina
2	Azhar Abbas	Mr. Zamir Hussain
3	Waseem Akhtar	Ms. Amena Urooj
4	Ghulam Abbas	Mr. Muhammad Javaid
5	Muhammad Sharif	Ms. Amena Urooj
6	Wasif Hameed	Mr. Zamir Hussain
7	Imtiaz Ahmed	Dr. Abdul Qayyum
8	Hafiz Muhammad Kashif	Dr. Abdul Qayyum
9	Irfan Gul	Ms. Hafsa Hina
First Semester		
1	Saad Sarfraz	Mr. Muhammad Javaid
2	Anam Alamdar	Ms. Amena Urooj
3	Jawad Qayyum	Mr. Zamir Hussain
4	Ahmed Khalil	Dr. Abdul Qayyum
5	Alvina Urooj	Ms. Amena Urooj
6	Muhammad Sohaib	Dr. Abdul Qayyum
7	Muhammad Shearyar	Ms. Hafsa Hina
8	Hassam Mushtaq	Mr. Muhammad Javaid
9	Reema Naveed	Ms. Hafsa Hina
10	Abdul Sattar	Mr. Zamir Hussain

Handwritten notes: Hina 27/9/2010, Zamir, Amena Urooj 27/9/2010.

Handwritten initials: M/H

Dr. Abdul Qayyum
(Head of Department)

To: Dean of Economics, Office of the Vice Chancellor, PIDE, Islamabad.
Handwritten: AS-AL-C 27/9, 27/9/10

CRITERION 5: PROCESS CONTROL

Standard 5.1: The process by which students are admitted to the program must be based on quantitative and qualitative criteria and clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives.

Admission criteria at university level

ADMISSIONS

- a) A person holding a (two years) Bachelor's degree from a Pakistani Institute recognized by Higher Education Commission (HEC), or an equivalent degree from any other HEC recognized Institute, with at least a second division (annual system) or B grade (semester system), shall be eligible for admission to the Master's programme of study provided that the applicant meets the other eligibility requirements of the concerned departments.
- b) Admissions shall be made once a year in the Fall semester.
- c) Each candidate shall submit an application for admission on a prescribed form in response to an advertisement.
- d) Admission shall be made on the basis of PIDE entry test/GRE score, academic record, and interview.
 - (i) The allocation of marks for determining merit shall be as follows:

Pakistani Nationals	
Academic Record	40 marks
Admission Test	50 Marks
Interview	10 Marks
Foreign Students	
Academic Record	
GRE and TOEFL Scores	

- (ii) Distribution of Marks allocated for the academic record shall be as under:-

Class	1 st Division/ A-Grade	2 nd Division/ B-Grade	3 rd Division/ C-Grade
B.A./B.Sc/B.Com/BBA	20	15	(not allowed)
FA/F.Sc/A-level	20	15	Zero

- (iii) The candidates awaiting results of their Bachelor's degree may get admission subject to obtaining at least 2nd Division/B-Grade
- (iv) All the admissions shall be approved by the Dean of the Faculty concerned on the recommendations of the Admission Committee of the concerned department.
- (v) PIDE may revise criteria for determining merit for admission from time to time.
- (e) Admission to one department shall not give a student a right to migrate to another department.

- (f) The students who have ceased to be a student of the institute under rule 7c of these Regulations shall not be eligible for admission to the Master's programme.
- (g) The maximum age limit for admission to the Master programme shall be 26 years. Anyone beyond the age of 26 years shall not be admitted unless the relaxation is granted by the Dean of the concerned faculty (up to 5 years) or the Vice-Chancellor (for more than 5 years) on the recommendation of the Head of the Department.

Transfer of credits is not allowed.

Standard 5.2: The process by which students are registered in the program and monitoring of students progress to ensure timely completion of the program must be documented. This process must be periodically evaluated to ensure that it is meeting its objectives.

The students are registered as per the rules and regulations of PIDE presented below:

REGISTRATION OF COURSES

- (a) Within the 1st week of a semester, students shall register in the course(s) being offered by the department on prescribed registration cards.
- (b) (i) A student shall normally be required to register for courses of a total of 15 credits in a semester. However, the Head of a department may allow a student to register courses of 12 credits in a semester as a special case.
 - (ii) A student may, in the final semester, register less than 12 credit courses if that completes the credit requirement of the degree.
- (c) A student may register additional non-credit course(s) out of the prescribed courses.
- (d) A student may change or drop course(s) or convert a credit course into a non-credit course, or vice-versa, within two weeks from the date of commencement of a semester. In exceptional cases a student can add/drop a course in the 3rd week from the start of the semester with the permission of the Head of the department concerned.
- (e) The Head of each department shall forward in the 3rd week from the date of commencement of a semester all the course registration cards to the Controller of Examinations.
- (f) (i) No registration or change of course(s) shall be allowed after three weeks from the date of commencement of the semester.
 - (ii) No drop of course(s) or change of a non-credit course to credit course or of a credit course to a non-credit course shall be allowed after three weeks from the date of commencement of the semester.
- (g) (i) A student dropping all the registered courses or choosing not to register minimum required credits in concerned semester will deem to have dropped the semester.
 - (ii) The dropped semester shall be counted towards the maximum period of six semesters allowed under section 7(c) (iv) for completing the Master degree.

Standard 5.3: The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented. Also processes and procedures for faculty evaluation, promotion must be consistent with institution mission statement. These processes must be periodically evaluated to ensure that it is meeting with its objectives.

The process of recruiting and retaining highly qualified faculty members lies with the administration and is being followed as per HEC policy guidelines. However in the need of hour visiting faculty is recommended by the department that can be hired according to general rules and regulation set so far by PIDE.

Standard 5.4: The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives.

Organization of Teaching at PIDE:

- Teaching in various courses shall be organized in the department through lectures, tutorials, discussions, presentations, seminars, demonstrations, practical work in the computer labs, and any other method approved by PIDE.
- Courses are allocated to the faculty members of the department or Visiting faculty members in meeting of all faculty members of the department headed by the Head of the Department.
- Teaching in each Department shall be conducted by the University teachers or such other persons as may be declared to be teachers by the authority.

Standard 5.5: The process that ensures that graduated have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

- Continuous evaluation procedure is used to ensure that graduates have completed program for completing each stage.
- The procedure is evaluated continuously.

Table 5.1: Process of Evaluate Graduate Programs

Procedures that ensure that graduates meet the program requirements	Semester schedule is announced well before the start of new academic session for both semesters during the academic year. Each teacher provides teaching schedule for complete semester, outlining the course contents, time, venue, and reference material etc also showing examination schedules, assignments and field trips.
when this procedure was evaluated	Evaluation procedure was started after the establishment of QEC at PIDE
Evaluation results used for improvements	Since HEC has initiated evaluation program, students Performa are being regularly filled, based on initial results improvements in teaching and research programs are being incorporated. As this evaluation program is being recently initiated as soon as we receive feedback from quality assurance cell these results will be properly use for the improvement

CRITERION 6: FACULTY

Standard 6.1: There must be enough full time faculty who are committed to the program to provide adequate coverage of the program areas/courses with continuity and stability. The interests and qualifications of all faculty members must be sufficient to teach all courses, plan, modify and update courses and curricula. All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D. in the discipline.

Program Areas of Specialization	Courses in the Area & Average number of sections per year	Number of Faculty members in each Area	Number of Faculty members with Ph.D degree
Econometrics	10	3	1
Statistics	10	3	1

- Faculty resumes of following faculty members are available in the department as per given format:

Name	
Dr. Abdul Qayyum	Professor
Ms. Saba Anwar	Assistant Professor
Ms. Saima Bashir	Assistant Professor
Ms. Amena Urooj	Assistant Professor
Dr. Zamir Hussain	Lecturer
Ms. Hafsa Hina	Lecturer

- Have all faculty members prepared their resume in line with HEC guidelines?

Yes.

Standard 6.2: All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programs for faculty development must be in place.

- Are all faculty members current in their disciplines?

Yes, the faculty members are current in their discipline (about 100%). The faculty comprise of two PhD doctors while four PhDs are in progress.

Name	Designation	Research Publications	Training
Dr. Abdul Qayyum	Professor	42	12
Ms. Saba Anwar	Assistant Professor	-	3
Ms. Saima Bashir	Assistant Professor	-	3
Ms. Amena Urooj	Assistant Professor	3	3
Dr. Zamir Hussain	Lecturer	2	3
Ms. Hafsa Hina	Lecturer	0	3

- **Is there sufficient time for faculty members for scholarly activities and professional development?**

Yes, the Full time faculty members observe 8:00am to 4:00pm office hours, in which weekly six hours of teaching is conducted while the remaining time is for research, scholarly activities and professional development of faculty members.

- **Is there any faculty development program?**

Yes, PDE has constructed very systematic program for faculty development in coordination with HEC.

- **Is there any process by which faculty input is obtained (e.g. faculty survey form)?**

Yes

- **How frequently faculty programs evaluated?**

Annual evaluation of Faculty program where changes are suggested and approved via Board of Study

- **Are evaluation results of faculty programs used for improvement?**

Yes, the changes suggested are discussed and approved via Board of Study annually.

Table 6.1: Faculty Development Program

Name of Faculty Member	Title of the development programme	Location and organized by	Status
Ms. Saba Anwar	PhD	HEC/QAU, Pakistan	In Progress
Ms. Saima Bashir	PhD	Full Bright/USA	In Progress
Ms. Amena Urooj	PhD	QAU, Pakistan	ABD
Dr. Zamir Hussain	PhD	BZU, Pakistan	Completed
Ms. Hafsa Hina	PhD	PIDE, Pakistan	ABD

Standard 6.3: All faculty members should be motivated and have job satisfaction to excel in their profession.

In order to motivate faculty members and to enhance their job satisfaction, following measures have been practiced

- Two increments on publication of working paper (but not implemented currently due to financial crises in PIDE)
- Up gradation of faculty members as per HEC rules(in process).
- Permission granted to pursue PhD degree (4 national and 1 international)

CRITERION 7: INSTITUTIONAL FACILITIES

Standard 7.1: The institution must have the infrastructure to support new trends in learning such as e-learning.

The Institute has provided the facilities, such as personal computers with internet and printing facility to each of the faculty members.

Departmental Facilities:

The department has provided following facilities to the students:

- Classrooms equipped with technological facilities, projectors, electronic access to lecture notes.
- Computer laboratory equipped with econometrics and statistical softwares for empirical research.
- Access to computers with network connection.
- Easy access to electronic databases and scientific articles.
- Academic supervisors for all students and close teacher - student relationship.

Standard 7.2: The library must possess an up-to-date technical collection relevant to the Program and must be adequately staffed with professional personnel.

Central Library of the university is shared with the department.

Standard 7.3: Classrooms must be adequately equipped and offices must be adequate to Enable faculty to carry out their responsibilities.

Does the university have enough class rooms to run the academic affairs?

No

Does the university have enough offices for faculty members?

No

Table 7.1: Total Number of Computer Labs, Offices and Classrooms

S. No.	Items	Total	Remarks
1	Class rooms for students	2	Additional rooms are required due to multiple programs
2	Computer Labs	2	Insufficient due to increased number of students in other programs of the department (MPhil)
3	Offices for the faculty members		Rooms are shared by the faculty members therefore more rooms needed
4	Computers		More computers alongwith accessories are required for students
5	Multimedia	1	Atleast one more multimedia alongwith accessories is required

CRITERION 8: INSTITUTIONAL SUPPORT

Standard 8.1: There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars.

PIDE fully supports its faculty members to perform all kinds of research and teaching activities and give opportunities to present work of scholarly level at all forums either inside or outside the country.

Standard 8.2: There must be an adequate number of high quality graduate students, research assistants and Ph.D. students.

Standard 8.3: Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities.

PIDE provide all financial resources when required.

CRITERION 9: RESEARCH WORK

Standard 9.1: Research Department must have regular review of its performance.

Not applicable

Standard 9.2: Student involved in research must submit regular progress review

Not applicable