महात्मा गाँधी केन्द्रीय विश्वविद्यालय
MAHATMA GANDHI CENTRAL UNIVERSITY
(Established by an Act of Parliament)
Gandhi Bhawan, Bankat, Motihari, District: East Champaran, Bihar – 845401
www.mgcub.ac.in

DEPARTMENT OF ECONOMICS
SCHOOL OF SOCIAL SCIENCES

Ph. D. PROGRAMME

Ph.D. ECONOMICS

Detailed Course Structure

ECON6001: Research Methodology (04 Credits)

Course Code: ECON6001

Course Title: Research Methodology

Credits Equivalent: 4 Credits (One credit is equivalent to 1 hour of lecture per day)

Course Objectives:

This course aims to develop a research orientation among the students and to acquaint them with the fundamentals of research methods. Specifically, the course aims at introducing them to the basic concepts used in research and to economic research methods and their approach.

Learning Outcomes:

After successful completion of this course, a student will be able to:

- identify the best research design for his/her research questions;
- understand, and apply appropriate research methods to his/her study;
- understand the limitations of a particular research method;
- develop writing skills and presentation skills.
- This course will enable students to use and avail the benefit of e-resources and Databases for research.

Attendance Requirements:

Students are expected to attend all lectures in order to be able to fully benefit from the course. A minimum of 75% attendance is a must failing which a student may not be permitted to appear in examination

Evaluation Criteria:

1. End Term Examination: 70%
2. Continuous Internal Assessment (CIA): 30%
    a. Attendance : 5%
    b. Comprehensive Continuous Assessment (CCA): 25%

COURSE CONTENT:

Unit I: Definition and Characteristics of Research (04 hours)

Research – Definition; Concept of Construct; Objective of Research; Types of Research, Steps of Research Process, Criteria of Good Research, Defining the research Problems, Research Design.

Unit II: Probability Distribution (08 hours)

Random variable, Mathematical Expectations, Probability distributions, Discrete theoretical distribution: Binomial Distribution and Poisson distribution. Continuous theoretical Distribution: Normal Distribution and Standard Normal Variate (Z distribution).

Unit III: Sampling Theory and Hypothesis Testing (08 hours)

Population and sample, Parameter and statistic, Census method and sampling method of Data collection, Methods of Sampling, Central limit theorem, Sampling Design, Sample Size and its Determinants.

Testing of Hypothesis, Basic concepts, Computation of Test statistic and significance Test, Concept of degrees of freedom, Small sample test: t Test- $\chi 2$ test, F test, Large sample test: Z test; Non-parametric tests, Analysis of Variance; Multivariate Analysis Techniques.

Unit IV: Outcomes of Research (06 hours)

Research paper writing – Relevance, interest, available data, choice of data, Analysis of data, Generalization and interpretation of analysis, Preparation of the Report on conclusions reached, Suggestions and recommendations, identifying future scope. Report Writing – Different stages in writing Report – Layout of the Research Report – Types – Precautions in writing Research Reports – Foot notes – Bibliography.

Unit V: E-Resources and Databases (14 hours)

Use of E-resources and Applications of ICT in research; Different data sources and their characteristics - C.S.O.; National Sample Surveys; National Accounts Statistics; National Family Health Surveys; Indian Public Finance Statistics; R.B.I. publications; World Bank and IMF databases; UNCTADSTAT.; CMIE databases; Annual Survey of Industries; Census and other government publications; Limitations of existing databases of India – Reliability and inter-temporal comparability of data.

References:

1. *Dawson, Catherine, 2002, Practical Research Methods, New Delhi, UBS Publishers' Distributors.*
2. *Kothari, C.R., 1985, Research Methodology-Methods and Techniques, New Delhi, Wiley Eastern Limited.*
3. *Kumar, Ranjit, 2005, Research Methodology-A Step-by-Step Guide for Beginners, (2nd.ed), Singapore, Pearson Education.*
4. *Shrivastava, Shenoy& Sharma, Quantitative Techniques for Managerial Decisions, Wiley.*
5. *Goode W J & Hatt P K, Methods in social research, McGraw Hill 6.*
6. *Basic Computer Science and Communication Engineering – R. Rajaram (SCITECH).*
7. *M. Cohen and E. Nagal – An Introduction to logic and Scientific method, New York 1962.*
8. *Pauling V. Young – Scientific Social Survey's and Research, Prentice Hall (Dorsey Press), New York.*
9. *Gupta, S. C. (2015), Fundamentals of Statistics, Himalaya Publishing House.*
10. *Gupta. S.C. and Kapoor V.K. (2000), Fundamentals of Applied Statistics, S. Chand, New Delhi.*

ECON6002: Quantitative Techniques for Economics (04 Credits)

Course Code: ECON6002

Course Title: Quantitative Techniques for Economics

Credits Equivalent: 4 Credits (One credit is equivalent to 1 hour of lecture per day)

Course Objectives:

The objective of this paper is to introduce basic econometrics, advanced econometrics and applied econometrics techniques that the course will equip the students with tools of econometrics for empirical work in economics. Economic theory will be supported and complemented by empirical exercises.

Learning Outcomes:

- This course would help the students to learn the basic tools of econometrics that are used to analyse various types of data.

- This course will help them to interpret and critically evaluate outcomes of empirical analysis
- It will help them to undertake empirical analysis using the econometrics packages.
- Students shall learn about the use of simultaneous equations, analysis of cross-section, time series and panel data, the role of time or lag in the economic relationship, impact evaluation, etc.

Attendance Requirements:

Students are expected to attend all lectures in order to be able to fully benefit from the course.
A minimum of 75% attendance is a must failing which a student may not be permitted to appear in examination

Evaluation Criteria:

1. End Term Examination: 70%
2. Continuous Internal Assessment (CIA): 30%
   a. Attendance : 5%
   b. Comprehensive Continuous Assessment (CCA): 25%

COURSE CONTENT:

Unit I: Classical Linear Regression Models, Violation of CLRM Assumptions and Multivariate Linear Regression Model (10 hours)

Ordinary least squares (OLS) estimation, the Classical assumptions, the Gauss-Markov theorem and properties of the OLS estimators, Functional Forms of Regression Model, Interpreting regression results, Violations of Classical Assumptions: Consequences, Detection and Remedies Multicollinearity; heteroscedasticity; Autocorrelation. Multiple Regression Equation, CLRM in Matrix Formulation.

Unit II: Dummy Variable Regression Models (05 hours)

Concept of a dummy variable, Dummy independent variable, Dummy dependent variable: LPM, Logit, Probit, Multinomial Logit, Multinomial Probit and Tobit models. Multinomial Response Models – Ordered and Sequential Response Models, Nested logit.

Unit III: Simultaneous-Equation Models (07 hours)

The rationale behind the use of SEM - simultaneous bias and inconsistency of the OLS estimator, Structural, reduced form and final form model, Problem of Identification: Rank and Orders conditions, Methods of estimation: ILS, 2SLS, Instrumental Variable, LIML, Mixed Estimation Method, 3 SLS and FIML methods.

Unit IV: Time Series and Panel Data Analysis **(08 hours)**

Stochastic Time Series Models, Stationarity and Testing for Unit Root, Co-integration, ARIMA Models, Stationarity, The Autocorrelation Function, The Partial Autocorrelation Function, Box–Jenkins Model Selection, Properties of Forecasts, ARCH and GARCH models. Vector Auto-Regression (VAR) Models, Cointegration and Error-correction Models, Impulse Response Function, and Variance Decomposition, ARDL model.

The Fixed Effects Model, The Random Effects Model, Fixed vs Random, Panel Unit Root and Co-integration. Dynamic panel data model: Endogeneity, Anderson-Hsiao, Arrelano-Bond model.

Unit V: Other Topics **(10 hours)**

Seemingly Unrelated Regression (SURE), The Method of Principal Component Analysis, Nonlinear Regression Functions, Estimation of Nonlinear Regression. Missing Data and Imputation, Sample-selection Bias-Heckman correction: benefits, problems and alternatives; Median and Quantile Regression; Decomposition technique for linear regression models; Impact Evaluation, Causal Inference and Counterfactuals, Randomisation method, Regression Discontinuity Design, Propensity score matching (PSM) method, Differance-in-Differances (DD) Design, Instrumental Variable (IV) Method, Review of Empirical Studies.

Note: *The students will be taught software packages for performing econometric applications. Computer exercises will be given to students.*

References:

1. *Baltagi, B.H. (2008), Econometric Analysis of Panel Data, 4th Edition, Wiley.*
2. *Cameron A. C. and P. K. Trivedi (2005), Microeconometrics: Methods and Applications, Cambridge University press, Cambridge.*
3. *Gujarati, D (1995), Basic Econometrics, 4th Edition, New York: McGraw Hill*
4. *Hamilton, JD (1994), Time Series Analysis, Princeton University Press, New Jersey.*
5. *Hsiao, C. (2003), Analysis of Panel Data, Cambridge University Press, Cambridge.*
6. *Johnston, J (1991), Econometric Methods, 3rd edition, New York: McGraw Hill.*
7. *Koutsoyiannis, A. (2001), Theory of Econometrics, 2nd edition, Palgrave Macmillan.*
8. *Lutkepohl, Helmut (2007), New Introduction to Multiple Time Series Analysis, Springer, New York.*
9. *Pindyck, Robert S. and Daniel L. Rubinfeld (1995), Econometric Models and Economic Forecasts, 4th Edition, Irwin McGraw-Hill, New York.*
10. *Stata Manual: xtivreg and xtabond.*
11. *Walter Ender (2004), Applied Econometric Time Series, 2nd edition, Wiley.*
12. *Wooldridge, J. (2009), Introductory Econometrics, 4th Edition, South-Western College Pub.*

ECON6003: Research and Publication Ethics (02 Credits)

Course Code: ECON6003

Course Title: Research and Publication Ethics

Credits Equivalent: 2 Credits (One credit is equivalent to 1 hour of lecture per week)

Learning Objectives and Outcomes:

- To provide students with the fundamental knowledge of basics of philosophy of science and ethics, research integrity, publication ethics.
- To demonstrate hands-on sessions are designed to identify research misconduct and predatory publications.
- To explore indexing and citation databases, open access publications, research metrics (citations, h-index, Impact Factor etc)
- To guide and mentor students in presenting plagiarism tools for a valid and ethical research report.

Attendance Requirements:

Students are expected to attend all lectures in order to be able to fully benefit from the course.
A minimum of 75% attendance is a must failing which a student may not be permitted to appear in examination

Evaluation Criteria:

1. End Term Examination: 70%
2. Continuous Internal Assessment (CIA): 30%
    a. Attendance : 5%
    b. Comprehensive Continuous Assessment (CCA): 25%

COURSE CONTENT:

A. Theory **(10 hours)**

Unit I: Philosophy and Ethics

Introduction to philosophy: definition, nature and scope, concept, branches Ethics: definition, moral philosophy, nature of moral judgments and reactions.

Unit II: Scientific Conduct

Ethics with respect to science and research, Intellectual honest and research integrity, scientific misconducts: falsification, fabrication, and plagiarism. Redundant publications: duplicate and overlapping publications, salami slicing Selective reporting and misrepresentation of data.

Unit III: Publication Ethics

Publication ethics: definition, introduction and importance Best practices/standards setting initiatives and guidelines: COPE, WAME, etc. Conflicts of interest Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types Violation of publication ethics, authorship and contributor ship Identification of publication misconduct, complaints and appeals Predatory publishers and journals

Practice **(10 hours)**

Unit IV: Open Access Publishing

Open access publications and initiatives SHERPA/RoMEO online resource to check publisher copyright and self-archiving policies. Software tool to identify predatory publications developed by SPPU Journal finder/ journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

Unit V: Publication Misconduct

A. Group Discussions

Subject specific ethical issues, FFP, authorship Conflicts of interest Complaints and appeals: examples and fraud from India and abroad

B. Software tools

Use of plagiarism softwares like Turnitin, Urkund and other open source software tools.

Unit VI: Databases and Research Metrics

A. Databases

Indexing data bases Citation data bases: Web of Science, Scopus, etc.

B. Research Metrics

Impact Factor of journal as per journal citation report, SNIP, SJR, IPP, Cite Score. Metrics: h-index, g index, i10 index, altimetrics

Suggested Readings:

1. *Bird, A. (2006). Philosophy of Science. Routledge.*
2. *Ethics and Values in Industrial-Organizational Psychology By Joel Lefkowitz Lawrence Erlbaum Associates, 2003.*
3. *MacIntyre, Alasdair (1967) A Short History of Ethics. London.*
4. *Research Ethics: A Psychological Approach By Barbara H. Stanley; Joan E. Sieber; Gary B. Melton*
5. Research Methods in Applied Settings: An Integrated Approach to Design and Analysis By Jeffrey A.

6. *Gliner, George A. Morgan Lawrence Erlbaum Associates, 2000*
7. *The Ethics of Teaching and Scientific Research By Miro Todorovich; Paul Kurtz; Sidney Hook.*

ECON6004: Preparation & Presentation of Research Proposal (04 Credits)

Course Code: ECON6004

Course Title: Preparation & Presentation of Research Proposal

Credits Equivalent: 4 Credits (One credit is equivalent to 1 hour of lecture per week)

Course Objectives:

- The course intends to develop PhD scholars' writing and oral presentation skills while preparing their respective research proposals.

Learning Outcomes:

- The course will enable the scholars to identify their research topic and formulate the research problems lucidly.
- The students will learn the art of writing a research proposal/paper/dissertation.

Evaluation Criteria:

A total of 100 marks allotted for this and will be split into two parts, 75% for research proposal writing and 25% for its presentation. For this, the evaluation shall be done jointly by the Research Advisory Committee (RAC) and the Departmental Research Committee (DRC) and submitted to CoE.

Course Contents and Teaching Plan:

Unit I: Preparation of Research Proposal

Literature Survey, Identification of the topic for Ph.D. research and preparation of research proposal in the standard format as per the University guidelines.

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Unit II: Oral Presentation of Research Proposal

The research proposal on the topic chosen by the candidate for her/his Ph.D. shall be submitted as per the writing discipline, followed by a presentation. Each student shall be required to articulate in about 5000 words her/his individual subject of study in the intended area of research by a selected bibliography. The written submission on the chosen topic shall be evaluated for 75% weightage and the seminar presentation for 25% weightage. The research proposal is supposed to give evidence of two things: a comprehensive review of existing

literature of the past studies in the subject area and the student's awareness of and adherence to the discipline of writing research proposal/paper/dissertation and documentation

Total Hours: 40