



चौ० चरण सिंह विश्वविद्यालय, मेरठ Ch. Charan Singh University, Meerut

Pre Ph.D. (for all Sciences) Coursework

Course No-1

RESEARCH METHODOLOGY AND COMPUTER APPLICATIONS

This course is common for doctoral research students of all the subjects in science faculty the objectives of the course is to acquaint research student with scientific research methods and approaches.

Unit 1(Basic Principles of Research):-

Basic principles of research, objectives of research, importance, types of research basic and applied, selection of a research topic and problem, assessment of current status of topic chosen, literature survey and reference collection, formulation of hypothesis. Research designs, sampling designs, **ethics in research**, code of ethics, fabrication of data, plagiarism, (**only for zoology**) animals, use of animals, animals ethics and related laws, (**for life science only**) bio safety regulations in biology research

Unit 2 (Methods of Data Collections):-

Types and sources of data, data collection methods, primary data, secondary data, analysis for specific type of data, tabulation and graphical representation, central tendency, dispersion, skewness, correlation, regression, Chi-square test, t and f tests ANOVA one way and two way, important non parametric tests Sign, Run, Kendall's Coefficient

Unit 3 (Report Writing Techniques):-

Significance of report writing, different steps in writing report and research papers, layout of the research report, oral and written presentation of research (abstract/synopsis), mechanics of writing a research report, precautions for writing research report, conclusions, impact factor and citation index

Unit 4 (Computer Applications):-

Computer and internet, networking different LAN and WAN connections, connection to a network, web browsers, internet security, web search engine, MS word, Handling Graphics, Tables and charts, converting a word document into various formats like text rich text, word perfect, HTMT, PDF etc. MS Power Point, creating slide show with animations, creating a blank presentation, auto layout, power point screen, screen layout and views, insert a new slide, applying design, template changing slide layout recording and hiding slide show and editing Custom slide

Data analysis and display facilities in MS Excel for data analysis and display, other data display software, case study origin, software for scientific and statistical analysis case studies SPSS data base creating a database

Educational and research resources on Net Encyclopaedia, case study Wikipedia on line tutorials and lectures, java applets, educational applet, virtual tabs, electronic journals, e-books, digital libraries, searching research information using -gate and SCOPUS, science direct

Suggested Books

- 1. Research methodology methods and technique by C.R. Kothan, second revised edition**
- 2. Research methodology a step by step guide for beginners by Ranjit Kumar**
- 3. Research methodology methods and statistical by Santosh Gupta Statistical methods S.P. Gupta**
- 4. Research design, Qualitative, Quantitative and mixed methods approaches by W. Creswell, third edition**
- 5. Information communication technology by Tim Shorts**
- 6. Handbooks of communication and social interaction skills by John O Green Brant Raney Burleso**

Department of Economics
Chaudhary Charan Singh University, Meerut



Programme Syllabus
Pre-Ph.D. Coursework in Economics
(Effective from Academic Year 2017-18)

PAPER I: RESEARCH METHODOLOGY AND COMPUTER APPLICATIONS

PREAMBLE

This paper is designed to make the student well conversant with entire process of research work. The main aim is to clarify concepts like formulation of research proposal, research design and to equip the student with appropriate tools for correct interpretation. Learning utility of computer application in social research is also an essential component of the course.

UNIT 1: Meaning and Significance of Social Research. Difficulties in Social Research, Difference between Social Research and Research in Physical Sciences, Scientific Methods, **Ethics in Research.**

UNIT 2: Research process, Formulation of a Research Proposal and Research design.

UNIT 3(a): Methods of Data collection: Nature of data (primary & secondary data), Collection of primary data, observation methods, interview methods, Questionnaire & Interview Methods of Collecting Primary Data, Collection of secondary data, Case study.

3(b): Data Sources: National Sample Surveys, National Accounts Statistics, Indian Public Finance Statistics, Data on Agriculture and Agricultural production, R.B.I. publications, Annual Survey of Industries, Census of India, Data on International trade, Transport and other Statistics, Important government publication

UNIT 4(a): Statistical Inference: Formulation of Hypothesis: Null and Alternative Hypothesis, Testing of Hypothesis, Sampling Distribution and Standard Error, Confidence Interval and Level of Significance. Tests of Significance based on z, t, F, and Chi-square, Analysis of variance and co-variance and Coefficient of determination.

4(b): Linear Regression Model – Estimation of parameters and tests of their significance and Second order tests.

UNIT 5: Interpretation and Report writing.

UNIT 6: Use of Computers in Research and presentation: MS Office application, Use of SPSS in Research; Working with M.S. Excel, Page-Maker, Power Point, Graphics, Tables and Charts, Converting a word document into various formats.

Basic Reading List :

1. Lundberg, George A. ,Social Research, Long mans, Green and Co., New York, London
2. Karmel and Polasek, Applied Statistics for Economics
3. Kumar, Ranjeet, Research Methodology
4. Young, P.V., Scientific Social Surveys and Research
5. Gujrati, D. N., Basic Econometrics
6. Best, J. W., Research in Education
7. Sanders. D.H., Computers Today, McGraw Hill (3rd Edition), New York.

8. Sinha, P.K., Computer Fundamentals, BPB Publications, New Delhi.
9. Tandon, B. C, Social Research
10. Mishra, R. P., Research Methodology

Additional Reading List :

1. Anderson, T. W., An Introduction to Multivariate Statistical Analysis, John Wiley, Wiley, New York.
2. Dooley, David, Social Research methods, Prentic-Hall of India, New Delhi.
3. Goode, W.J. and Hatt. P.K., Methods in Social Research, New York: Mc Graw, International Students Edition.
4. Gupta, S.P., Statistical Methods, New Delhi: Sultan Chand and Sons Publication.
5. Kvale, Steiner, Inter Views: An Introduction to Qualitative Research Interviewing, Sage London.
6. Rajaraman, V., Fundamentals of Computers, Prentice Hall of India, New Delhi.
7. Mirsky, L., Introduction to linear Algebra, Oxford University Press.