Curriculum

of

Ph.D. Course Work

Offered by

MEWAR UNIVERSITY, CHITTORGARH
RAJASTHAN-312901

About Mewar University

Mewar University is a multidisciplinary institution of higher education located in Chittorgarh, Rajasthan, India. Established in 2009 under the Government of Rajasthan through the Mewar University Act, the University is recognized by the University Grants Commission (UGC) under Section 2(f) of the UGC Act, 1956. The University is committed to providing quality education, fostering innovation, and promoting research to prepare competent professionals and responsible citizens.

The University offers a wide range of undergraduate, postgraduate, diploma, doctoral, and professional programs across disciplines such as Engineering, Management, Pharmacy, Agriculture, Computer Science, Education, Law, Humanities, Commerce, Basic Sciences, Nursing, and Allied Health Sciences. Its curriculum is designed to integrate theoretical knowledge with practical skills through laboratory work, industry interaction, internships, and research-oriented learning.

Mewar University emphasizes academic excellence, skill development, entrepreneurship, and community engagement. The institution encourages faculty and students to undertake research, publish scholarly work, and participate in national and international conferences, contributing to knowledge creation and societal development.

The University provides modern academic infrastructure, including well-equipped laboratories, libraries, digital learning resources, sports facilities, and hostel accommodation. Through collaborations with industries, research organizations, and academic institutions, Mewar University strives to enhance employability, innovation, and global perspectives among its students while upholding values of integrity, inclusivity, and lifelong learning.

Vision

To develop a center of excellence for technical, professional and vocational education and research at par with national and international standards.

Mission

To develop the framework for effectively conducting various educational and research programmes of the highest standards so as to produce confident, self-reliant and responsible youth for the society and outstanding professionals for government, industry and business. The mission is to "Reach the unreached, serving the poorest of the poor section of society"

Programme Outcomes (POs)

PO1: Disciplinary Knowledge: Demonstrate advanced knowledge and comprehensive understanding of theories, concepts, principles, and recent developments in the chosen discipline.

PO2: Problem Analysis: Identify, analyze, and formulate complex research problems through critical review of literature and scientific inquiry.

PO3: Research Design and Investigation: Design and conduct original, systematic, and ethical research using appropriate methodologies and advanced research tools.

PO4: Modern Tool Usage: Apply advanced analytical, computational, statistical, and digital tools for data collection, analysis, interpretation, and validation of research outcomes.

PO5: Ethics and Professional Integrity: Demonstrate ethical research practices, academic integrity, intellectual property awareness, and professional responsibility in research and publication.

PO6: Communication Skills: Communicate research findings effectively through scholarly publications, technical reports, presentations, and interactions with academic, industrial, and societal stakeholders

PO7: Leadership and Teamwork: Function effectively as an independent researcher and as a leader or collaborative member of multidisciplinary and interdisciplinary research teams.

PO8: Innovation and Societal Contribution: Develop innovative solutions and contribute to scientific, technological, industrial, environmental, and societal advancement through impactful research.

PO9: Lifelong Learning: Recognize the need for and engage in lifelong learning, continuous professional development, and independent acquisition of emerging knowledge and research skills.

Teaching Scheme for Ph.D. Coursework

S.N.	Course Code	Course Title	Contact hours per Week			Credit	Internal Evaluation	End-Term	Total Marks
			L	T	P				
1	RES-I (A)	Research Methodology	4	0	0	**4**	40	60	**100**
2	RES-I (B)	ICT Lab Work and Presentation	0	0	4	**2**	40	60	**100**
3	RES-II	Research and Publication Ethics	2	0	0	**2**	40	60	**100**
4	RES-III	Review of Research Work	0	0	8	**4**	40	60	**100**
5		Elective Course*	4	0	0	**4**	40	60	**100**
Total			**10**	**0**	**12**	**16**			**500**

*Elective course related to research work as per list/NPTEL/Swayam Portal of min 4 Credits

Ph.D. Course Work

RES-I (A) Research Methodology

Lectures	Tutorials	Practical	Credits
4	0	0	4

Scheme of Evaluation

Internal Evaluation	End Term Examination
40	60

Duration of End Term Examination: 03 Hours

Course Objectives:

To develop knowledge of research methods, problem identification, hypothesis formulation, statistical analysis, ethical practices, scientific writing, publication skills, and critical evaluation for conducting and communicating quality research effectively.

S.N.	Course Outcomes
CO1	Explain the fundamentals of research methodology and formulate research problems, questions, and hypotheses.
CO2	Design appropriate research methods, sampling strategies, and data collection tools for scientific investigation.
CO3	Apply descriptive and inferential statistical techniques to analyze data and interpret research findings.
CO4	Evaluate research outcomes and prepare research reports and synopses following ethical and academic standards.

UNIT 1	Foundations of Research Methodology	15 Hours
Meaning of Research, Objectives of Research, Motivations in Research, types of Research, Research Approaches, Significance of Research, Research Methods v/s Methodology, Research and Scientific Methods, Research Process, Criteria of good research and ethics in research, Defining the Research Problem: Concept and need, Identification of Research problem, defining and delimiting Research problem, Research Questions and Hypothesis: Variables and their linkages, characteristics of good Hypothesis. Research question and formulation of hypotheses-directional and non-directional hypotheses, Basis for hypotheses, Design of hypothesis based on deeper ROL by focusing on the citation of relevant research		
UNIT 2	**Research Design and Data Collection**	**15 Hours**
Meaning, Need, Features of Good Design, Concepts, Types. Basic principles of Experimental Design, various methods of Research. Survey, Philosophical, Historical, Experimental, Causal Comparative, Genetic, Case Studies, Collections of Primary Data,		

Collection of Data through questionnaire and Schedules, other Observation Interview Methods, Collection of Secondary Data, Selection of appropriate method for data collection, Case Study, Focus Group Discussion, Techniques of developing research tools, viz. Questionnaire and rating scales etc., reliability and validity of Research tools. Sampling: Probability and non-probability sampling- types and criteria for selection. Developing sampling Frames, Determination of sample size by using statistical formula.		
UNIT 3	**Statistical Techniques for Research**	**15 Hours**
Descriptive Statistics: Measurement Scales, Sources of error in measurement. Measures of central Tendency (Mean, medium, Mode), Measures of dispersion (range, mean deviation, standard deviation) Graphical representation of Data, Inferential statistics: Normal Probability Curve-Meaning, characteristics and applications. Standard error. Confidence Interval sand Fiduciary limits. Type 1 and Type II errors. Estimating Population Means. Correlations: Rank Difference Method Pearson's Product Moments Correlation Significance of correlation. Concept of Variance. Other methods of Correlation (Concept and application only)-Partial and Multiple correlation Biserial, Point Biserial, tetra choric and Phi correlation. Regression and Multiple Regression equations (concept and applications), Sampling Distribution, Null Hypothesis-Alternative Hypothesis. Testing the Significance of difference between means (z and 't' test), Analysis of Variance (ANOVA) and Analysis of covariance (ANCOVA) concept and applications only, Factor Analysis and Path Analysis (concept and applications).		
UNIT 4	**Advanced Statistics and Research Reporting**	**15 Hours**
Non-Parametric Statistics: Wilcoxon Test- steps, characteristics and application, Sign Test, man- Whitney u Test, Chi Square test- steps, Characteristic sand applications. Relationship between chi-square and phi correlation, Logic: Logical form, deductive and inductive reasoning, consistency, validity, soundness and completeness, western and oriental conception of logic, Writing Research Report: Format and style. Review of related literature its implications at various stages of research. (Formulation of research problem, hypothesis, interpretation and discussion of results). Major findings, Conclusions and suggestions. Citation of references and Bibliography, Preparation of Research Synopsis: Title, Preface, Abstract, Introduction, Geographical location, Objective, Hypothesis, Methodology-Time frame and work plan, Proper chapterization, References, Bibliography etc.		

Reference Books:

1. Best and Kahn, Research Methodology, PHI Limited.
2. Kothari, C.R. Research Methodology (Methods and Techniques), New Age Publisher.
3. Kerlinger, Foundation of Research.
4. Fundamentals of modern statistical methods by R and R. wilcox.
5. Power Analysis for Experimental research A Practical Guide for the Biological, Medical and social Sciences by R. Barker Bausell, Yi-Fang Li Cambridge University Press.

Ph.D. Course Work

RES-I (B) ICT Lab Work and Presentation

Lectures	Tutorials	Practical	Credits
0	0	4	2

Scheme of Evaluation

Internal Evaluation	End Term Examination
40	60

Duration of End Term Examination: 02 Hours

Course Objectives:

To develop students' skills in word processing, spreadsheets, presentations, online research, and professional communication, enabling them to create documents, analyze data, prepare presentations, and effectively use digital resources.

S.N.	Course Outcomes
CO1	Apply MS Word and MS Excel tools to create and manage documents and worksheets.
CO2	Create effective presentations using MS PowerPoint with text, images, and animations
CO3	Use online educational and research resources to find academic information.
CO4	Demonstrate effective written and oral communication skills in professional settings

UNIT 1	Word Processing and Worksheet	12 Hours
Word features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard shortcut, Editing, Previewing, Printing and Formatting a Document, Advanced Features of MS Word, Find and replace, using the source, using Auto-Multiple Functions, Mail Merge, Handling Graphics, tables and Charts, Covering word Documentation various Formats like-text, Rich Text format, Word Perfect, HTML, PDF, Worksheet Basics, Working with single and multiple workbook, working with formula & cell referencing, Auto sum, Copying formulae, Absolute & relative addressing, Worksheet with ranges, Formatting of worksheet, Previewing and printing Worksheet, Graphs and charts, Database, Creating and using Macros, Multiple Worksheets-concepts, Creating and using, data analysis and display.		
UNIT 2	**Presentation**	**08 Hours**
PowerPoint, Creating Slide show with animations. Auto Wizard, Creating a Blank presentation, auto layout, Screen layout and views, insert a new slide, applying design template, changing slide layout, recording and hiding a slides, slide show and editing		

custom slide, resizing a text box, Text Box Properties, Delete text Box, Bulleted Lists, number ED lists, adding notes, video and audio, Adding text editing options, Formatting text, Replace fonts, Line spacing, change case spelling check, color schemes, Adding clip art, Adding an image form a file, Editing graphic, Auto Shapes, Word Art, backgrounds, Action Buttons, Slide Animation, Preview Slide transactions, Slide Show options, Slide Master, Header and Footer, Slide Numbers, Date and Time.		
UNIT 3	**Education and Research Resources on Net**	**04 Hours**
Encyclopedia, Wikipedia, On-Line Tutorials and lectures, Virtual labs, Open Course-wares, Electronic Journals, E-Books, Digital Libraries, Searching research Information		
UNIT 4	**Professional Written and Oral Communication**	**08 Hours**
Students prepare E-mails, Letters, memos, proposals, formal and informal reports, Impromptu and Extemporaneous methods of delivery. Oral Presentations using usual aids such as handouts, overhead transparencies and presentation software such as Power Point.		

Reference Books:

1. Fundamentals of Computers – V. Rajaraman, PHI Learning.
2. Computer Fundamentals – BPB Publications.
3. Microsoft Office 365 Bible – Wiley India
4. Computer Fundamentals – Pearson India.
5. Computer Fundamentals – Oxford University Press India.
6. Business Communication – Oxford University Press India.
7. Technical Communication – Oxford University Press India.
8. The Official Guide to Microsoft Office 365 – Microsoft Press.

Ph.D. Course Work

RES-II Research and Publication Ethics

Lectures	Tutorials	Practical	Credits
2	0	0	2

Scheme of Evaluation

Internal Evaluation	End Term Examination
40	60

Duration of End Term Examination: 02 Hours

Course Objectives:

To develop understanding of research and publication ethics, promote academic integrity, prevent scientific misconduct, and enable ethical use of research, plagiarism detection, and publication tools.

S.N.	Course Outcomes
CO1	Explain the principles of research ethics, research integrity, and different types of scientific misconduct
CO2	Apply publication ethics and use appropriate tools to evaluate journals, detect plagiarism, and assess research quality

UNIT 1	Research Ethics	10 Hours
Introduction to philosophy: definition, nature and scope, concept, branches, Ethics: definition, moral philosophy, nature of moral judgments and reactions, Ethics with respect to science and research, Intellectual honesty and research integrity, Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP), Redundant publications, duplicate and overlapping publications, salami slicing, Selective reporting and misrepresentation of data		
UNIT 2	**Publication Ethics**	**20 Hours**
Publication ethics: definition, introduction and importance, best practices/standards setting initiatives and guidelines: COPE, WAME, 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, Open access publications and initiatives, SHERPA/ROMEO online resource to check publisher copyright & 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, Subject specific ethical issues ,FFP, authorship, Conflicts of interest, Complaints and appeals: examples and fraud from India and abroad, Software tools, Use of plagiarism software like Turnitin, Urkund and other open source software tools, Indexing databases, Citation		

databases: Web of Science, Scopus Impact Factor of journal as per Journal Citation Report, SNIP, SIR, IPP, Cite Score, Metrics: h-index, g-index, i10 index, alt metrics

Reference Books:

1. Bird, A. (2006). Philosophy of science. Routledge.
2. MacIntyre, Alasdair (1967)'A Short History of Ethics. London.
3. P. Chaddah, (2018) Ethics in Competitive Research: Do not get scooped; do not get plagiarized, ISBN:978-9387480865
4. National Academy of Sciences, National Academy of engineering and Institute of Medicine. (2009). On Being a Scientist: A Guide to Responsible Conduct in Research: Third edition. National Academies Press.
5. Resnik, D.B. (201l). What is ethics in research & why is it important? National Institute of Environmental Health Sciences
6. Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance (2019), ISBN: 978-81-939482-1-7

Ph.D. Course Work

RES-III Review of Research Work

Lectures	Tutorials	Practical	Credits
0	0	8	4

Scheme of Evaluation

Internal Evaluation	End Term Examination
40	60

Duration of End Term Examination: 02 Hours

Course Objectives:

To develop students' ability to study subject-specific topics, prepare technical reports, and effectively present, discuss, and communicate ideas using professional presentation skills.

S.N.	Course Outcomes
CO1	Analyze a subject-specific topic through literature review and prepare a technical seminar report.
CO2	Present the research findings effectively using appropriate oral, written, and presentation skills

Course Content/Activities
• Selection of a subject-specific topic. • Literature survey using books, journals, conference papers, and online databases. • Collection, analysis, and organization of collected information. • Preparation of report with proper referencing and citations. • Preparation on the subject specific topic. • Evaluation based on content, presentation skills, and communication.