



GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications					Branch/Spec.	Computer Applications		
Semester	I					Version	1.0.0.0		
Effective from Academic Year			2026-27			Effective for the batch Admitted in		June 202	
Subject Code	P11D6RM		Subject Name			Research Methodology			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	0	1	0	3	Theory	40	60	100
Hours	2	0	2	0	4	Practical	20	30	50

Objective:

- The students should be able
 - Student should get insight about different research methodology
 - Students are able to understand qualitative and quantitative research methods
 - Students should know about research proposal writing

Pre-requisites:

- ☐ The basic knowledge of Scientific Learning.

Course Outcomes :

Name of CO	Description
CO1	Develop research problem identification skills and concept of research design.
CO2	Understand data sampling and its types for data preparation.
CO3	Understand the data analysis and interpretation
CO4	Develop the scientific learning skills.

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	3	3	2	2	1	1	1
CO2	3	3	3	2	2	1	1	1
CO3	3	3	3	1	1	1	2	2
CO4	3	3	2	2	2	2	1	1

Contents		
Unit	SECTION_I	Hrs
1	Introduction to Research Methodology: Meaning of research, objectives, significance, application of research, limitations of research, types of research, research process, and criteria for good research. Types of research design: exploratory, descriptive, causal and experimental research design, null hypothesis, alternative hypothesis, construction of hypothesis.	06
2	Sampling and Data Collection: Sampling process, sampling methods: simple random sampling method, systematic sampling, stratified sampling, cluster sampling, area sampling, quota sampling, judgement sampling, convenience sampling, snowball sampling. Primary data: advantages & disadvantages. Primary data collection method: observation, interview, survey, designing of questionnaire. Secondary data, sources of secondary data.	09
SECTION_II		
3	Data Analysis & Interpretation: Measurement scale: nominal scale, ordinal scale, interval scale, ratio scale, source of error in Measurement. Application of statistical tools, hypothesis testing, Parametric and Non- parametric Tests. Regression, Correction, Estimation. Multivariate Analysis: Factor, Cluster, software for Data Analysis.	06
4	Scientific Writing: Interpretation of Data and Paper Writing – Layout of a Research Paper, Journals in Computer Science, Impact factor of Journals, When and where to publish? Ethical issues related to publishing, Plagiarism and Self-Plagiarism. Preparing a bibliography (APA or MLA style): Citation, foot-note, end-note. Software and Contemporary Issues in Subject: SPSS / MatLab / R / Weka / Python / SAS / AMOS / Power BI or other relevant tools for data analysis, other ERP for time series and panel data analysis as applicable to subject domain.	09
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topic		
Text Books/Reference Books:		
1	Research Methodology Methods and Techniques by C. R. KOTHARI	
2	Handbook of Research Methodology by Dr. Shanti Bhusan Mishra and Dr. Shashi Alok	
3	Research Methodology A Step-by-Step Guide for Beginners by Ranjit Kumar	
Web References / MOOC / Certification Course		
1	https://www.coursera.org/browse/physical-science-and-engineering/research-methods	
2	https://nptel.ac.in/courses/121106007	
3	https://onlinecourses.nptel.ac.in/noc22_ge08/preview	
4	https://www.coursera.org/specializations/data-collection	
5	https://www.coursera.org/learn/sampling-methods	
Question Paper Scheme:		

University Examination Duration: 3 Hours

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION - I

Q.1 -8 Marks

Q.2 -11 Marks

Q.3 -11 Marks

SECTION - II

Q.4 -8 Marks

Q.5 -11 Marks

Q.6 -11 Marks