

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Master of Technology				Branch/Spec.		Chemical Engineering	
Semester		II				Version		1.0.0.0	
Effective from Academic Year			2026-27			Effective for the batch Admitted in			July 2026
Subject code		3CH2104		Subject Name		Research Methodology II			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	0	0	0	2	Theory	60	40	100
Hours	2	0	0	0	2	Practical	00	00	00
Pre-requisites:									
3CH1106 - Research Methodology I									
Course Outcomes									
On successful completion of the course, the students will be able to:									
CO1	Ability to independently conduct and analyze research work								
CO2	Proficiency in technical writing and publication								
CO3	Understanding of IPR and research management								
CO4	Readiness for thesis work, Ph.D., or R&D careers								
Theory syllabus									
Unit	Content								Hrs
1	Advanced Research Tools and Techniques: Advanced experimental techniques in chemical engineering, Scale-up considerations and reproducibility, Advanced modeling, simulation, and optimization concepts, Introduction to machine learning and AI tools in research								8
2	Data Interpretation and Validation: Advanced statistical analysis, Uncertainty analysis and error propagation, Validation of experimental and simulation results, Comparison with literature data								7
3	Technical Writing and Publication Ethics: Structure of research papers, theses, and dissertations, Journal selection and impact metrics, Plagiarism, copyright, and publication ethics, Responding to reviewers' comments								8
4	Intellectual Property Rights and Research Management: Patents: basics, types, and filing procedure, Technology transfer and commercialization, Research project management and funding agencies, Safety, risk assessment, and sustainability in research								7
Text Books									
1	Experimental Design for Chemical Engineers — Hugh W. Coleman & W. Glenn Steele								
2	An Introduction to Error Analysis — John R. Taylor								
Reference Books									
1	The Craft of Research — Booth, Colomb & Williams								
2	Scientific Writing and Communication — Angelika Hofmann								
3	Ethics in Engineering Research and Practice — Caroline Whitbeck								
ICT/MOOCs references									
Writing in the Sciences, Coursera, Kristin Sainani (Stanford University)									

Mapping of CO with PO and PSO:														
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	-	2	-	3	2	-	-	-	-	-	2	3	-	-
CO2	-	-	-	2	-	-	-	3	2	3	1	2	2	1
CO3	-	-	-	1	-	2	-	3	1	2	2	-	1	3
CO4	-	1	-	2	-	-	-	-	1	1	3	-	3	2