

**Nirma University**

**Syllabus for the Ph.D. Entrance Examination**

Name of the Institute : Institute of Technology  
Name of the Department / Subject : Research Methodology  
Academic Year : 2026-2027

**Introduction:** Objectives of research, motivation in research, types of research, interdisciplinary research, scientific methods of research, criteria of effective research, and characteristics of an effective researcher.

**Defining Research Problem:** Art of literature review, use of ICT in effective literature review, formulation of problem, formulation of hypothesis, developing research plan, meaning of research design, types of research design, basic principles of experimental design, selection of relevant variables, validity of experiments.

**Data Collection and Utilization:** Types of data, methods & techniques of data collection, sampling, characteristic of a good sample design, methods used in sampling, sampling errors, tests of hypothesis.

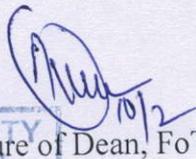
**Quantitative Methods:** Data presentation, satisfied analysis and interpretation of data, types of analysis, simple regression correlation, coefficient of determination, ( $r^2$ ), z-test, t-test, ANOVA, Chi-square test, multi-variate analysis of data, multiple regression.

**Computer Application:** Role of Computer in research, data organization, software selection and its applications, solving problems by using scientific software and tools, sample programmes for analysis of data.

**Thesis Writing and Presentation:** Significance of writing thesis, different types of research writing, conference paper, journal paper, patents, thesis etc., different steps in writing thesis, layout of thesis, guidelines for writing good thesis, precautions in writing thesis, presentation skills, defending the thesis.

**References:**

1. C.R. Kothari, Reserach Methodology: Methods & Techniques, Wishwa Publication.
2. D K Bhattacharyya, Reserach Methodology, Excel Books.
3. Loraine Blaxter, Christina Hughes, Molocolm Tight, How to Research, Viva Books Pvt.Ltd.
4. Paul Oliver, Writing Your Thesis, Vistaar Publication.
5. Pat Cryer, The Research Student's Guide to Success, Viva Books Pvt Ltd.
6. Research papers/web articles in the field of research methodology.

  
Signature of Dean, FoTE

NIRMA UNIVERSITY (Ph. D. Section) INWARD	
No.	964
Date	12-2-2026
Sign.	Jae