



JSPM UNIVERSITY PUNE



SYLLABUS



Research Program Entrance Test

JSPM University Pune

Syllabus for Ph.D. Research Program Entrance

Test (RPET) 2023

Research Methodology

1. **Foundation of Research:** Meaning, Objectives, Motivation, Utility. Concept of theory, Empiricism, Deductive and Inductive theory. Characteristics of scientific method - understanding the language of research - Concept, Construct, Definition, Variable, Research process.
2. **Problem Identification & Formulation:** Definition and formulating the research problem, Necessity of defining the problem, Importance of literature review in defining a problem, Research question – Investigation question - Measurement issues - Hypothesis - Qualities of a good hypothesis - Null hypothesis and Alternative hypothesis. Hypothesis testing - Logic and importance
3. **Research Design:** Concept and importance in research - Features of a good research design - Exploratory research design - Concept, types and uses, Descriptive research design - Concept, types and uses. Experimental design - Concept of independent and dependent variables.
4. **Qualitative and Quantitative Research:** Qualitative - Quantitative research - Concept of measurement, causality, generalization, and replication. Merging the two approaches.
5. **Data Collection and analysis:** Execution of the research - observation and collection of data - Methods of data collection, hypothesis-testing - Generalization and interpretation.
6. **Measurement:** Concept of measurement - what is measured? Problem in measurement in research - Validity and Reliability. Levels of measurement - Nominal, Ordinal, Interval, Ratio.
7. **Sampling:** Concept of Statistical population, Sample, Sampling frame, Sampling error, Sample size, Non response. Characteristics of a good sample. Probability sample - simple Random sample, Systematic sample, Stratified random sample and Multi-stage

sampling. Determining size of the sample - Practical considerations in sampling and sample size.

8. **Data Analysis:** data Preparation - Univariate analysis (frequency tables, bar charts, pie charts, percentages), Bivariate analysis - Cross tabulations and Chi-square test including testing hypothesis of association, Correlation- Time series analysis, multivariate techniques, regression.
9. **Interpretation of Data and Paper Writing:** Layout of a Research paper, Journals in Geography and allied subjects, Impact factor of journals, When and where to publish? Ethical issues related to publishing, Plagiarism and self-plagiarism.
Use of Encyclopedias, Research guides, Handbook etc., Academic databases for concerned subject.
10. **Use of Tools / Techniques for Research:** methods to search required information effectively, Reference management software like Zotero/mendeley, Software for paper formatting like LaTeX/MsOffice, Software for detection of plagiarism.
11. **Reporting and Thesis writing:** Structure and components of scientific reports - Types of report - Technical reports and thesis - Significance - Different steps in the preparation - Layout, Structure and Language of typical reports - Illustrations and tables - bibliography, referencing and footnotes - oral presentation - planning - preparation - practice - Making presentation - Use of visual aids - Importance of effective communication.
12. **Application of Results and Ethics:** Environmental impacts - Ethical issues - ethical committees - Commercialization - Copyright - royalty - Intellectual property rights and patent law - Trade related aspects of intellectual property rights - Reproduction of published material - Plagiarism - citation and acknowledgement - Reproducibility and accountability.