JINNAH SINDH MEDICAL UNIVERSITY

STUDY GUIDE	
PROGRAM	**MBBS**
COURSE TITLE	**RESEARCH METHODOLOGY-2**
ACADEMIC YEAR	**4th YEAR MBBS -2026**
INTRODUCTION	This course offers knowledge and skill in planning, conducting and writing research to students. It provides them with not only information but also opportunities for team work and hands-on practice in research.
RATIONALE	This course has been added to the MBBS programs since Jinnah Sindh Medical University is firmly committed to the propagation of high quality research and also because it believes that all practitioners must have competence in research.
OUTCOMES	By the end of the Research Methods-2 course, students will be able to submit a research manuscript to the concerned department such that the research work may be published in at least a local journal
DEPARTMENTS INVOLVED	• Community Medicine
COURSE OBJECTIVES	By the end of the course, the students will be able to:
LECTURES	**1. Introduction of Hypothesis Testing** • Explain the concept of p-value in deciding about a hypothesis • List commonly used statistical tests when comparison in groups is based on quantitative data (comparison of mean) and qualitative data (comparison of proportions) • Describe the assumptions of applying non-parametric tests while comparing mean scores

2. Hypothesis Testing for One Sample Mean

- Describe the assumptions of applying T-Test for one sample mean
- Interpret the findings of these tests using p-value

3. Non Parametric Alternative for One Sample Mean (Wilcoxon Sign Rank Test)

- Describe the assumptions of applying T-Test for one sample mean (Wilcoxon Sign Rank Test)
- Interpret the findings of these tests using p-value

4. Hypothesis Testing for One Sample Proportion

- Describe the assumptions of applying T-Test for one sample proportion
- Interpret the findings of these tests using p-value

5. Hypothesis Testing for Means of 2 observations Paired Samples: Paired T Test

- Describe the assumptions of applying Paired T Test for paired samples
- Interpret the findings of these tests using p-value

6. Non Parametric Alternative for Paired T Test (Wilcoxon Sign Rank Test)

- Describe the assumptions of applying paired samples (Wilcoxon Sign Rank Test)
- Interpret the findings of these tests using p-value

7. Hypothesis Testing for Means of 2 Independent Samples: Independent T Test

- Describe the assumptions of applying 2 sample Independent T Test
- Interpret the findings of the test using p-value

8. Non Parametric Alternative for Means 2 Independent Samples:

	Mann Whitney U Test • Describe the assumptions of applying Mann Whitney U Test • Interpret the findings of the test using p-value **9. Hypothesis Testing for Proportions of Independent Samples: Chi-Square Test** • Describe the assumptions of applying Chi-Square Test • Interpret the findings of the test using p-value **10. Hypothesis Testing for Means of >2 Independent Samples: One Way ANOVA** • Describe the assumptions of applying One Way ANOVA • Interpret the findings of the test using p-value **11. Non-Parametric Alternative for Means of >2 Independent Samples: Kruskal Wallis Test** • Describe the assumptions of applying Kruskal Wallis Test • Interpret the findings of the test using p-value **12. Developing Tables** • Describe the rationale of developing tables and graphs • Develop relevant tables and graphs for data summarization **13. Writing Results. Limitations & Discussion sections** • Discuss the principles of writing results, limitations and discussion sections **14. Threats to validity** • Identify threats to internal and external validity in research projects **15. Ethical Considerations in Research** • Discuss ethical principles relevant to research • Write down the ethical consideration section for the synopsis and manuscript (e.g. confidentiality and anonymity) • Describe the process of taking informed written consent (where applicable) for their project

	16. Critical analysis of a Research paper: Checklist • Explain the importance of critical appraisal of medical literature • Describe the guidelines of making a step wise Critical appraisal of published research
PRACTICALS/ TUTORIALS	**1. Referencing** • Cite references according to standard format by using software **2. Data Analysis and Inferential Statistics** • Analyze data by using relevant inferential statistics to test the hypotheses • Compute central tendency and dispersion of data **3. Writing Results. Limitations & Discussion sections** • Write results, discussion, limitations and conclusion sections for the manuscript based on prescribed guidelines
INTERNAL ASSESSMENT	Internal assessment will constitute 20% of the weightage for MBBS as per PM&DC policy. The frequency and assessment tools for internal assessment are to be determined by individual colleges.
ANNUAL EXAMINATION	• This course will be assessed in theory, as MCQs in 4th year MBBS. Topics covered in 3rd year MBBS will be included. • For MBBS batch admitted in 2023, this course will be assessed in its final year examination to be held in 2026
COURSE EVALUATION	This course will be evaluated as per JSMU & HEC policies