RESEARCH STUDY GUIDE
2ND YEAR BDS

STUDY GUIDE	
PROGRAM	**BDS 2nd Year**
COURSE TITLE	**RESEARCH METHODOLOGY**
TIME	**12:15 PM-1:15 PM**
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 BDS program 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 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

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	TOPICS	PRACTICALS	FACULTY	DATE
1.	**Importance of Research in Health** • Discuss the importance of research in health care provision • Identify the problems related to health in the community **Writing background and rationale of study** • Explain the importance and characteristics of a scientifically acceptable background and rationale of the study • Write the background which should lead to the rationale for the study	**Importance of Research in Health** • Identify research problems **Writing background and rationale of study** • Write the background which should lead to the rationale for the study	Dr. Rooha	13-2-25
2.	**Writing Research Objectives, Inclusion and Exclusion Criteria and Operational Definitions**		Dr. Rooha	20-2-25
3.	**How to Formulate a Research Question** • Formulate scientifically correct research questions **Hypothesis, its types and Errors in Hypothesis Testing** • Classify hypotheses • Explain types of errors in hypothesis testing • Discuss how these errors can be prevented	**How to Formulate a Research Question** • Form a research question	Dr. Junaid	27-2-25
4.	**How to Perform Literature Search** • Describe the terminology and Boolean Search • List the common search engines • List the steps of effective and efficient literature search	**How to Perform Literature Search** • Perform literature search by using Boolean Search	Dr. Marium	6-3-25

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5.	**Basic Study Designs** • Explain the basic study designs used in research • Justify the selection of study designs for their own research questions		Dr. M. Mohsin	13-3-25
6.	**Types of data** • Discuss types of variables and data • Identify the main variables and the data types in their research projects **SPSS Software** • Define SPSS • Different window views of SPSS • Discuss the uses of SPSS • Enter data in SPSS	**Data Entry** • Enter data in SPSS and Excel (if and where needed) **Data Analysis** • Use a statistical package (SPSS) for entering data and analysis	Dr. M. Mohsin	20-3-25
7.	**Basic concepts of Descriptive statistics** • Calculate relevant measures of central tendency and dispersion by using SPSS	**Basic concepts of Descriptive statistics** • Calculate relevant measures of central tendency and dispersion by using SPSS **Summarizing scale data:** • Measure of central tendency and dispersion	Dr. M. Mohsin	10-4-25

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8.	**Designing a Questionnaire** • Discuss steps of developing and using a questionnaire • Define validation and the most common methods of questionnaire validation **Data Collection** • Discuss various methods of data collection along with their advantages and disadvantages • Collect data by using the data collection instrument within the given timeline	**Designing a Questionnaire** • Design a questionnaire for their project, based on scientific principles **Data Collection Procedure** • Write a comprehensive data collection procedure section for their research project synopses and the research manuscripts • Collect data by using the data collection instrument within the given timeline	Dr. Marium	24-4-25
9.	**Estimating Sample Size** • Describe the importance and methods of calculating sample size • Calculate sample size based on prescribed guidelines • Justify sample size for their research project • Demonstrate the use of appropriate software for sample size estimation **Sampling Techniques** • Discuss various common sampling techniques • Justify the selection of sampling technique for their project	**Estimating Sample Size** • Calculate sample size based on prescribed guidelines • Justify sample size for their research project • Demonstrate the use of appropriate software for sample size estimation	Dr. Sadia	8-5-25
10.	**Basic concepts of inferential statistics** • Describe the usage and importance of inferential tests (i.e. One sample T-Test, Paired t-test, independent t-test, chi-square and other non-parametric tests)	**Basic concepts of inferential statistics** • Justify the selection of inferential tests for testing their hypotheses • Assess normality of data • Test the hypotheses by the selected inferential test/s by using SPSS	Dr. Sadia	22-5-25

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	• Justify the selection of inferential tests for testing their hypotheses • Define confidence interval and its usage • Describe the importance of p-value	• Display and summarize data sets in their projects • Interpret findings of data analysis • Interpret p-value/s where necessary in the results • Calculate Confidence Interval for means and proportions • **Summarizing and displaying categorical data: frequency tables and graphs** • **Displaying scale data and the concept of normal and skewed distribution**		
11.	**Writing Plan of Analysis**	**Plan of Analysis**	Dr Sadia	5-6-25
12.	**Developing Tables** • Describe how and why to develop tables and graphs • Develop relevant tables and graphs for data summarization	**Developing Tables** • Describe how and why to develop tables and graphs • Develop relevant tables and graphs for data summarization	Dr. Sadia	19-6-25
13.	**Writing Results. Limitations & Discussion sections** • Discuss the principles of writing results, limitations and discussion sections **Threats to validity** • Identify threats to internal and external validity in their projects	**Writing Results. Limitations & Discussion sections** • Write results, discussion, limitations and conclusion sections for the manuscript based on prescribed guidelines	Dr. Rooha	3-7-25
14.	**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) • Take informed written consent (where applicable) for their project		Dr. Rooha	17-7-25

	Guidelines on filling IRB forms. **Project Timeline and Budget** **Developing a Budget and Gantt Chart for Research Proposal** • Develop a Budget and Gantt Chart for Research Proposal			

Workshops to be conducted:

- SPSS
- Endnote (Referencing tool)
- Descriptive & Inferential statistics

Recommended books:

Research Methodology:

- ***Creswell***, John W. ***Research design***: Qualitative, quantitative, and mixed methods approaches/John W. ***Creswell***.—3rd ed

Biostatistics:

- **Kuzma** Basic Statistics for the Health Sciences 5th Edition