

# **Research Module for Medical Students of Jinnah Sindh Medical University, Karachi**

**Draft 3- March 15<sup>th</sup> 2016**

## **I. Module Description**

The module aims to improve the research skills and competence amongst students by strengthening their theoretical knowledge as well as by giving them the Hands-on training to develop Research Proposal. It will help the students to scientifically design Research proposals by applying standard research methods. A total of four (4) credit hours will be awarded for the research module.

## **II. Learning Methods**

Interactive lectures, small group discussions, assignments and tutorials. In the first two years there will be lectures and tutorials and by the end of second year a research supervisor will be assigned from the university (inclusive of SMC, JPMC, Pharmacy, Dentistry and Business faculty). In the fourth year a two week workshop will be held in small groups for the students. In this workshop the students under supervision of senior faculty analyze their data and write a manuscript for publication.

## **III. Duration**

The Module will continue from 2<sup>nd</sup> Year to 4<sup>th</sup> Year MBBS. The specific objectives for each year of the Module and outline of Sessions and Tutorials are given below:

## 2<sup>nd</sup> Year

### *Specific Objectives*

By the end of the year the students will be able to:

- Identify the problems related to health in the community
- Write a research question and hypothesis
- Perform literature search
- Write the background which should lead to the rationale for the study
- Explain the basic study designs used in research
- Sampling and sample size estimation
- Designing a questionnaire
- Data collection procedures
- Ethics in research
- Budgeting and timelines (Gantt Chart)
- Develop a research proposal for IRB approval

### *Outline of Sessions*

<b>Week</b>	<b>Title of Session</b>	<b>Method</b>	<b>Facilitator</b>
1	Importance of Research in Health How to Formulate a Research Question	Lecture	Dr. Shiraz
2	Hypothesis, its types and Errors in Hypothesis Testing	Lecture	Prof. Lubna
3	How to Perform Literature Search	Lecture	Dr. Shiraz
4	Performing Literature Search using Databases	Tutorial	All Lecturers
5	Writing background and rationale of study	Tutorial	All Lecturers
6	Basic Epidemiologic Study Designs-1	Lecture	Dr. Sana
7	Basic Epidemiologic Study Designs-2	Lecture	Dr. Sana
8	Estimating Sample Size	Lecture	Dr. Shiraz
9	Calculating Sample Size using Statistical Softwares	Tutorial	All Lecturers
10	Sampling Techniques	Lecture	Dr. Sana
11	Designing a Questionnaire	Tutorial	All Lecturers
12	Data Collection Procedure	Lecture	Ms. Naushaba
13	Ethical Considerations in Research	Lecture	Dr. Asim
14	Developing a Budget and Gantt Chart for Research Proposal	Lecture	Dr. Sana
	Exam/Submission of Proposal to IRB for Approval		
	Total hours: 12 Lectures=12 hours 4 tutorials=8 hours (2 hours to be counted for credit) Assignments=8 hours (2 hours to be counted for credit)	<b>1 Credit hour</b>	

## 3<sup>rd</sup> Year

### *Specific Objectives*

By the end of the year the students will be able to:

- Collect data for research proposal developed in the previous year
- Describe the types of data and variables
- Use a statistical package (SPSS) for entering data and later analysis
- Display and summarize data sets
- Apply the concepts of measures of central tendency and spread
- Describe the basic concepts of inferential statistics
- Use SPSS for inferential statistics
- Apply the concepts of hypothesis testing (alpha beta errors, confidence interval)

### *Outline of Sessions*

<b>Week</b>	<b>Title of Session</b>	<b>Method</b>
1	Data Collection of at least 50 Questionnaires per student	Fieldwork
2	Types of data	Lecture
3	Data entry on SPSS	Tutorial
4	How to display and summarize data	Lecture
5	Measures of Central Tendency	Lecture
6	Measures of Dispersion	Lecture
7	Normal Distribution	Lecture
6	Descriptive analysis of data on SPSS	Tutorial
7	Assessing normality on SPSS	Tutorial
8	Inferential Statistics: Point estimates and Confidence Intervals	Lecture
9	Calculation of CI for mean	Tutorial
10	Calculation of CI for proportion	Tutorial
11	Hypothesis Testing	Lecture
12	Hypothesis Testing	Tutorial
	Hours 7 Lectures=7 hours 6 tutorials=12 hours (6 hours to be counted for credit) Assignments=12 hours(3 hours to be counted for credit)	<b>1 Credit hour</b>

## 4<sup>th</sup> Year

### *Specific Objectives*

By the end of the year the students will be able to:

- Apply common statistical tests to Analyze data using SPSS
- Interpret research findings and write a discussion
- Develop a manuscript for submission in Research Journal
- Critically analyze a research paper

### *Outline of Sessions*

<b>Week</b>	<b>Title of Session</b>	<b>Method</b>
<b>1</b>	T-Test and its types	Lecture
<b>2</b>	One sample T-Test on SPSS	Tutorial
<b>3</b>	Paired T-Test on SPSS	Tutorial
<b>4</b>	Independent T-Test	Tutorial
<b>5</b>	Chi Square Test	Lecture
<b>6</b>	Chi Square Test on SPSS	Tutorial
<b>7</b>	Non-Parametric Tests	Lecture
<b>8</b>	Non-Parametric Tests on SPSS	Tutorial
<b>9</b>	Developing Tables and Writing Results	Lecture
<b>10</b>	Writing a Discussion	Lecture
<b>11</b>	Writing a report	Lecture
<b>12</b>	Critical analysis of a Research paper	Lecture
	Exam	
	Hours 7 Lectures=7 hours 5 tutorials=10 hours (5 hours to be counted for credit) Assignments=16 hours(4 hours to be counted for credit) Workshop for one week with 32 hours of teaching = 1	<b>1 Credit hour + 1</b>