

COURSE STRUCTURE / CURRICULUM:

Course outline: Biostatistics		
Contents	Duration (75) hours	Detail teaching and assignments
1) Definition of Biostatistics & its uses with examples, types of variables, data types (scales), tabulation and Graphical presentation	2 hour	Scholars will be assigned practicals on uses of secondary data, data collection and collating the findings.
2) Measures of Central tendency, variation, location, association and correlation for qualitative and quantitative data.	30 hours	Scholars will be given assignments on probability, theoretical distributions, tabulation, graphical presentation, measures of central tendency, measures of location, and measures of dispersion.
3) Simple regression analysis, Multivariate analysis; concepts and interpretation, Logistic regression analysis; concepts and interpretation	15 hours	Correlation and simple linear regression will help Scholars to study inter-relationship of variables. They will also be able to predict variable of interest using its determinants.
4) Probability theory, Normal, Binomial and Poisson distributions	10 hours	Scholars will be given assignments on comparing their findings with standard distributions.
5) Sampling methods & sample size estimation with examples, Statistics and parameters	5 hours	Scholars will know sampling methods & how to estimate sample size and its utilities.
6) Concepts in generalization of statistics computed from a samples and their utilities in research, including tests for significance (parametric & non-parametric)	13hours	The Scholars will understand and show their ability of generalization of the statistics computed from their research data. Research hypothesis, testing of hypothesis using parametric and non-parametric tests.

Suggested readings

1. P.S.S. Sunder Rao, J. Richard, Introduction to Biostatistics and Research Methods, Prentice-Hall of India Private Limited, 2006.
2. Armitage, P., Statistical Methods in Medical Research, London, Blackwell Scientific Publications, 1989.
3. Hill, A.B., Principles of Medical Statistics, London, Edward Arnold, 1981.
4. Reid, Norma, G., Research Methods and Statistics in Health Care, London, Adward Anrold, 1987.
5. Siegel, S., Non-Parametric Statistics for Behavioural Sciences, New York, McGraw-Hill,1988

Course outline: Research Methodology		
Contents	Duration (15 hours)	Detail assignments and expectation from students
1) Writing research Protocol, title, objectives, hypothesis from research question and searching response variables.	3 hours	Students will write their research question – response variables and present it for discussion.
2) Searching co-variates affecting response variables.	2 hours	Students will write covariates affecting response variables and present it for discussion
3) Preparing the conceptual model of the research	2 hour	The final research conceptual model will also be presented by the student for his/ her research problem
4) Preparing questionnaire.	3 hour	Students will prepare questionnaire for their study project and present it for discussion.
6) Research designs with practical examples.	2 hours	Students will discuss and detail the situations of using these research designs.
7) Data collection, errors in the data, correction of errors, and preparing dummy tables and stating procedures for analysis	3 hour	Students will use their research plan and data for completing this exercise.

In the end of the module trainees will be able to prepare complete Protocol, questionnaire, research hypothesis and the path model for solving their research questions.

They will also be able to design their studies and choose the appropriate study design and prepare expected dummy tables.

Suggested reading:

1. Omran, A.R. The Clark-Omran System of research design in epidemiology. Raleigh, NC: University of North Carolina, 1972.
2. Pauli, H.G. Training in research methodology: (Advisory Committee on Medical Research, 25th Session, Geneva, 10-13 October 1983). Geneva: World Health Organization, 1983.
3. Health Research Methodology, A Guide for Training in Research Methods, World Health Organization, Oxford University Press, 1993.
4. P.S.S. Sunder Rao, J. Richard, Introduction to Biostatistics and Research Methods, Prentice-Hall of India Private Limited, 2006.
5. Armitage, P., Statistical Methods in Medical Research, London, Blackwell Scientific Publications, 1989.
6. Altman, D.G., Practical Statistics for Medical Research, London, Chapman and Hall, 1992.

Course outline – Data Management; checking, cleaning and analysis on computers		
Contents	Duration (10 hours)	Practical assignments & expectations
1) Excel files management, micro and macro commands, tabulation & computation of statistics using Excel	5 hours	Students will learn Excel Work Sheets, their uses for computing and data management
2) Graphics and simple calculations for research using Excel and SPSS	5 hour	Students will understand the use of Excel and SPSS to prepare Graphs, doing simple calculations in tables created in WORD etc.

In the end of this course students are expected to use computers for the analysis of their data, however, prior knowledge of using computers will be essential for the students.

Note:

- Every Scholar is expected to come with Laptop.
- To teach Data Management; checking, cleaning and analysis on computers the Softwares SPSS is needed.
- A research laboratory with facilities for research projects data security, data handling, data management, timely analysis and training with around 25 PC's is needed. This facility will enhance the research capabilities of the university, and will also work as central utility for the faculty.