RK UNIVERSITY

SYLLABUS

Course Title	Biostatistics and Research Methodology
Course Code	PT501
Course Credit	Lecture: 3
	Practical / Clinical Training: 0
	Total: 3

Course Objective

1. To understand the importance of biostatistics & research methodology in Physiotherapy practice
2. To acquire skills for review of literature & research publication as well as formulating a hypothesis, data collection/analysis and interpretation of result
3. To value ethical principles in the research

Detailed Syllabus

Sr. No.	Name of chapter & Details	Hours Allotted
	Section - I	
1.	**Introduction,** Definition, Types and Application of Biostatistics in Physiotherapy.	**1**
2.	**Data -** Definition, Types, Presentation, Collection methods. **Computing in Biostatistics**	**3**
3.	**Measures of central value and Dispersion -** Arithmetic mean, median, mode, Relationship between them, Partitioned values- Quatertiles, Deciles, Percentiles, Graphical determination, Range, Mean Deviation, Standard Deviation.	**4**
4.	**Normal Distribution Curve -** Properties of normal distribution, Standard normal distribution, Transformation of normal random variables, Inverse transformation, Normal approximation of Bioaxial distribution.	**4**
5.	**Correlation analysis and Regression analysis -** Bivariate distribution, Scatter Diagram, Coefficient of correlation, Calculation, interpretation of correlation coefficient, T-test, Z-test, P-value, Calculation of Regression coefficient .	**4**
6.	**Probability and Hypothesis Testing -** Null Hypothesis, Alternative hypothesis, Acceptance and rejection of null Hypothesis,	**3**

	Level of significance.	
7.	**Parametric andnon-Parametric tests -** Chi square test, Mann-Whitney U test, Wilcoxon Signed test, Kruskal-Wallis test, Friednam test, T-test/student T test,	**3**
8.	**Analysis of variance**	**2**
	SECTION II (Research Methodology)	
9	**Research in Physiotherapy** - Research for Physiotherapist, Research – Definition, concept, purpose, approaches	**2**
10	**Research Fundamentals** - Types of variables, Reliability and Validity, Drawing Tables, graphs, master chart etc	**3**
11	**Writing a Research Proposal** – Hypothesis, Review of Literature, Inclusion and Exclusion criteria, Forming groups, Data collection and analysis Results, Interpretation, conclusion, discussion, Informed Consent, Limitations.	**3**
12	**Research Design** - Qualitative and Quantitative research designs, Experimental design, Non experimental design, Observational Study design, Meta analyses.	**3**
13	**Population and sample** - Definition of population and sample, Types of sampling, Sample size determination and calculation	**3**
14	**Data collection methods** - Research reliability, validity and criteria for assessing, measuring the tools, Presentation of data, Analysis and interpretation of research data	**3**
15	**Interpretation of statistical results** - Interpreting significant and non-significant results, Discussion and conclusion of obtained results, Guidelines to interpret and critique research results	**3**
16	**Presenting a research report, graphs, etc…**	**1**
17	**Writing research for publication and Research Ethics** - Guidelines to publish a research paper and its contents	**2**
18	**Computing in research methodology**	**1**

Instructional Method:

1. Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students
2. Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc.
3. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval

Text book:

1. Methods in Bio-Statistics. 6th edition. B.K. Mahajan. Jaypee Publication 1997
2. Research Methods for clinical therapist: 5th edition. Hicks C. Churchill Livingstone 2009

Reference Books:

1. Rehabilitation research: 3rd edition. Elizabeth Domholt. Saunders 2004
2. Research for health professionals – Bailey DM. F.A. Davis Company 1991
3. Elements of Health Statistics: Rao.N.S.N. Tara Book Agency
4. Research in Physical Therapy. Bork CE. Lippincott Williams and Wilkins