Panipat Institute of Engineering & Technology, Panipat

Lecture Plan

Class: B. Pharm. 8TH Sem.

Subject: Biostatistics & Research Methodology BP-801(T)

Scope: To understand the applications of Biostatics in Pharmacy. This subject deals with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non-Parametric tests, ANOVA, Introduction to Design of Experiments, Phases of Clinical trials and Observational and Experimental studies, SPSS, R and MINITAB statistical software's, analyzing the statistical data using Excel.

Objectives: Upon completion of the course, the student shall be able to

1. Know the operation of M.S. Excel, SPSS, R and MINITAB, DoE (Design of Experiment).

2. Know the various statistical techniques to solve statistical problems.

3. Appreciate statistical techniques in solving the problems.

Module	S. No	Content to be delivered	No of Lecture required	Date
Module 1	1	Introduction: Statistics	1	
	2	Biostatistics,	1	
	3	Frequency distribution	1	
	4	Measures of centraltendency:Mean	1	
	5	Median and Mode with Pharmaceutical examples	1	
	6	Measures of dispersion: Dispersion, Range	1	
	7	Standard deviation, Pharmaceutical problems	1	
	8	Correlation: Definition, Karl Pearson's coefficient of correlation	1	
	9	Multiple correlation-Pharmaceuticals examples.	1	
Module 2	10	Regression: Curve fitting by the method of least squares, fitting the lines y= a + bx and x = a + by	1	
	11	Multiple regression,standard error of regression– Pharmaceutical examples	1	
	12	Probability: Definition of probability, Binomial distribution	1	
	13	Normal distribution, Poisson's distribution, Properties– problems.	1	
	14	Sample, Population, large sample, small sample,	1	
	15	Null hypothesis, alternative hypothesis, sampling, essence of sampling,	1	
	16	Types of sampling, Error-I type, Error-II type, Standard error of mean(SEM)-Pharmaceutical examples	1	
	17	Parametric test: t-test(Sample, Pooled or Unpaired	1	

		and Paired)		
	18	ANOVA, (One way and Two way), Least Significance difference.	1	
Module 3	19	Non-Parametric tests: Wilcoxon Rank Sum Test	1	
	20	Mann- Whitney U test, Kruskal-Wallis test	1	
	21	Friedman Test.	1	
	22	Introduction to Research: Need for research, Need for design of Experiments,	1	
	23	Design Technique, Plagiarism. Graphs: Histogram,	1	
	24	Pie Chart, Cubic Graph, response surface plot, Counter Plot graph	1	
	25	Designing the methodology: Sample size Determination and Power of a study	1	
	26	Presentation of data, Protocol ,Cohorts studies	1	
	27	Observational studies, Experimental studies		
	28	Designing clinical trial, various phases		
Module 4	29	Blocking and confounding system for Two-level factorials	1	
	30	Regression modeling: Hypothesis testing in Simple	1	
	31	Multiple regression models	1	
	32	Introduction to Practical components of Industrial and Clinical Trials Problems: Statistical Analysis Using Excel,	1	
	33	Patenting and Regulatory requirements of natural products: a) Definition of the terms: Patent,	1	
	34	SPSS, MINITAB®	1	
	35	Design of experiment,	1	
	36	R-Online Statistical Software's to Industrial and Clinical trial approach.	1	
Module 5	37	Design and Analysis of experiments	1	
	38	Factorial Design: Definition, 2^2	1	
	39	2^3design. Advantages of factorial design	1	
	40	Response Surface methodology: Central Composite design	1	
	41	Historical design, Optimization Techniques.		

Subject Incharge **Principal**

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