

Programme Name	Master of Commerce
Semester	Fourth
Paper No	4.2
Course Code	
Course Name	Quantitative Techniques & Research Methodology
Course Type	Core Course
Effective from	DECEMBER 2012
Objective	This course helps students to make them familiar with art of using different research methods and techniques . It also enables students, irrespective of their discipline, in developing the most appropriate methodology for their research studies.

Unit No.	Topic No.	Content	Hrs.	Marks W + %	Credit
1	A	Introduction to research methodology Meaning, Objectives, motivation in research, types, approaches , importance, research methodology, scientific research , process, criteria for good research, problems encountered, <i>Defining research problem, Developing research proposal, Research Design</i> : meaning, need, features, important concepts	06	10	0.4
	B	Experimental designs Basic principles - randomization, replication, local control; Informal experimental design - before and after without control, after only with control, before & after with control; Formal experimental designs - completely randomized, randomized block, latin square ; <i>Sampling design</i> : implications, steps criteria for sampling procedure, characteristic of good sample design, different types of sample design - (a) Probability sampling like simple random, systematic random, stratified, cluster (b) Non probability sampling like quota, judgmental, convenience	09	15	0.6
2	A	Data collection Techniques Primary and Secondary data, direct and indirect investigation and techniques, Data collection through Questionnaires : advantages and disadvantages of mail, & personal questionnaire, essential of good questionnaire, guidelines for constructing questionnaire, difference between survey and experiment	08	13	0.5
	B	Sampling fundamentals Need, some definitions-population, sampling frame, sampling design, statistics and parameter, sampling error, precision, confidence level and significance level; sampling distribution, sampling theory, standard error, estimation for population mean and proportion, Ethical issues in research, Writing research report and presentation of research report, Role of computer in research, general concept of computer and computer technology, computer system, areas of computer applications	07	12	0.5

3	A	Testing Hypothesis - Large Sample Test Definition of hypothesis, basic concepts - null hypothesis and alternative hypothesis, the level of significance, type I & type II errors, two tailed and one tailed test, power of test, testing of mean, testing of differences between two means, testing of proportion of differences between two proportion limitations of hypothesis testing	08	13	0.5
	B	Testing Hypothesis - Small Sample Test Idea of degree of freedom, test significance based upon t and F statistic- testing of mean, testing of difference between two means, testing of equality of variances.	07	12	0.5
4	A	Chi-square Test and analysis of variance Definition of chi-square, limitations of chi-square test, chi-square test as a test of goodness of fit and as a test of independence, Yate's correction and its application, <i>Analysis of Variance</i> (ANOVA) : Concept, one way ANOVA, ANOVA in test in latin square design	09	15	0.6
	B	Non Parametric Test (Distribution Free Tests) Idea of non Parametric tests, Sign test, McNemer change test, Wilcoxon matched pair test, Man-Ehitney test, One Sample Run test.	06	10	0.4

**References:**

- 1 Research Methodology by C.R.Kothari, 2<sup>nd</sup> Edition (2004), New Age International Publication, New Delhi
- 2 Research Methodology by G. R. Basotia and K. K. Sharma, 1<sup>st</sup> Edition (1999), Mangal Deep Publication, Jaipur. New Delhi
- 3 Research Methodology by D. K. Bhattacharya, 1<sup>st</sup> Edition, (2003), Excel Books Publication, New Delhi
- 4 Marketing Research concept and practices in India by Dr. S.Shahjahan, 1<sup>st</sup> Edition (2005), Mac Millan India Publication, New Delhi
- 5 Marketing Research by Luck and Rubin, 7<sup>th</sup> Edition, Prentice Hall of India Publication, New Delhi.
- 6 Introduction to Mathematical Statistics by S.P.Gupta, S.C hand, New Delhi
- 7 Business Statistics by Sancheti & Kpoor, Sultan and Sons, New Delhi