Course Code	Principles of Probabilities & Statistics
Course Name	MS 210
Course Credit Hours	3(2,2,0)
Pre-requisites	MS 101
Semester	3
Course Description	This course introduces fundamental concepts of probability and statistics. It provides the background for studying the uncertainty in computer problems. It introduces some methods for statistical inference. This course presents basic statistical principles and methods. It focuses on descriptive statistics, probability theory, Binomial, Poisson, z, t, and Chi-square distributions, central limit theorem, confidence intervals and hypothesis testing. One hr/wk is spent in the microcomputer laboratory exploring software applications of statistical concepts presented in the lecture. No previous computer experience is assumed.
Learning Outcomes of Course	Upon completion of this course, students are expected to: 1. be able to find the probability of events and distributions of random variables [POs: a]; 2. be able to solve problems involving some well-known probability distributions [POs: a]; 3. be able to solve some basic problems on statistical inference [POs: a]. .
Course Syllabuses	
Part 1 Overview	**Introduction** Sample space, events, counting the sample points **Probability** Probability of an event, conditional probability, elementary probability rules, Bayes' Rule
Part 2	**Random Variables and Probability Distributions** Concept of a random variable, discrete and probability distributions, joint probability

	Mathematical Expectation Mean of a random variable, variance of a random variable, Chebyshev's theorem
	Midterm
Part 3 **Part IV**	**Some Discrete Probability Distributions** Discrete uniform distribution, binomial distribution, hypergeometric distribution, negative binomial distribution, geometric distribution and Poisson distribution. **Some Continuous Probability Distributions** Normal distribution, areas under the normal curve, normal approximation to the binomial, chi-squared distribution. **Fundamental Sampling Distributions** Random sampling, some important statistics, sampling distributions of means and (sample) variances, t-distribution. **Tests of Hypotheses** General concepts of testing a statistical hypothesis, one and two- tailed tests, tests concerning a single mean, tests on a single mean with unknown variance, tests on two means, tests concerning variances, goodness-of-fit test.
References	1. Probability & Statistics for Engineers & Scientists, 8th Ed.*, Walpole, Myeres, Myers & Ye, Prentice Hall. 2. Statistics for Engineering and the Sciences, 5th Ed., Mendenhall &Sincich, Prentice Hall. 3. Introduction to Probability and Statistics, 4th Ed., Milton & Arnold, McGraw-Hill.