

# Applied Mathematics

## Unit1

### Course Outline 2014

Proposed time	Topic	Module
September	Sources of Data	Quantative, Qualitative , discrete and continuous Populations, parameters, censuses, samples, statistics, sample surveys Sampling frame Random, non- random samplings Simple, stratified, cluster ,quota and stratified sampling Techniques in random sampling
	Data Collection	Design questionnaires Sampling techniques Collection of Data Analysis of Data
	Data Analysis	Pie charts, bar charts, histogram. Stem and leaf, frequency polygon, box and whiskers Means, trimmed means, mode median Percentiles, quartiles Advantages and disadvantages of various central tendency
October	Probability Theory	Concept of probability Mutually exclusive events Independent events Probability space, tree diagrams, Venn Diagrams ,contingency tables Conditional probability
	Random Variables	Properties of discrete and continuous random variables Expected value and variance standard deviation of discrete random variables Probability distributions Cumulative distribution
	Binomial distribution	Notation and probabilities Expected value and variance of binomial distribution

	Normal distribution	Normal distribution notation and probabilities Use of normal distribution table Z-scores Normal approximation to a binomial Continuity correction
November	Sampling distribution and Estimation	Central limit Theorem Unbiased estimates Confidence intervals
	Discussion of Internal assessment project	
January	Hypothesis testing	Null and alternative hypothesis One tailed and two tailed test Level of significance Test statistic
Jan/ Feb	T- Test	Degrees of freedom Use of t –tables Hypothesis testing for a small sample
	Chi squared test	
	Correlation and linear progression	Dependent and independent variables Scatter diagrams Product moment coefficient Regression coefficient and lines Estimation from regression lines
	Submission of Internal assessment project	