Department of Statistics, Presidency University

Outline of Syllabus for UG GenEd Courses

UG Semester	Papers to be offered	To offer to the Students of			Remarks
		Science	Humanities	Both	
First Semester	**STAT 0131:** Basics in Statistics & Probability		Yes		(Candidates should have Mathematics at HS level)
	STAT 0132: Data Analysis	Yes			(Candidates should have Mathematics at HS level)
Second Semester	**STAT 0231:** Common Distributions & Statistical inference		Yes		Pre requisite: STAT 0131
	STAT 0232: Probability Theory	Yes			(Candidates should have Mathematics at HS level)
Third Semester	**STAT 0331:** Statistics in Applied & Social Sciences			Yes	Pre requisite: STAT 0131 (for Arts) STAT 0232 (for Science)
	STAT 0332: Distributions In Statistics	Yes			Pre requisite: STAT 0232
Fourth Semester	**STAT 0431:** Statistical Inference	Yes			Pre requisite: STAT 0232 & STAT 0332

Detailed Syllabus for U.G. GenEd Courses in Statistics

(With effect from the academic SESSION 2014-15)

STAT 0131 (Arts)- Basics of Statistics & Probability: What is Statistics? Qualitative & quantitative data; Diagrammatic representation of data; Central tendency, Dispersion, Correlation coefficient; Random experiments, Sample space, mutually exclusive & exhaustive events; Classical definition of probability with examples; Independence of events; Random variables, Probability mass & density functions, Expectation & variance.

STAT 0132 (Sc.)- Data Analysis: Graphical display of data; Measures of location, dispersion, skewness & kurtosis; Moments; Scatter diagram, Correlation coefficient & linear regression in bi-variate set-up, Framework of multiple linear regression, Multiple and partial correlation coefficients.

STAT 0231 (Arts)- Common Distributions & Statistical inference: Bernoulli trials, Binomial, Poisson & Normal distributions; Chi-square, t & F distributions (only statement of definition and useful properties); Concept of estimation, unbiasedness, standard error; Fundamentals of hypothesis testing, Technical demonstration (with reference to a data set) of tests under normal set-up for a single mean and the equality of two means, Pearsonian chi-square test for independence.

STAT 0232 (Sc.)- Probability Theory: Random experiments; Sample space; mutually exclusive & exhaustive events; Classical definition of probability with examples; Independence of events; Theorems of total & compound probability; Bayes theorem with its application; Random variables; Probability mass & density functions; Distribution function; Population Moments; Independence of variables, sum & product law of expectation; Moment generating function.

STAT 0331 (Arts & Sc.)- Statistics in Applied & Social Sciences: Index number- Consumer and wholesale price index numbers and their uses; Time series analysis- Different components, determination of trend by mathematical curve fitting and moving average methods; Sample survey methodology- Concept of population and sample, Simple random sampling (SRS) with and without replacement, Stratified sampling.

STAT 0332 (Sc.)- Distributions in Statistics: Discrete case- Geometric, Binomial & Poisson distributions; Continuous case: Transformation of variables; Uniform, Normal, Beta & Gamma distributions; Sampling distributions of sample mean & variance under normal set-up, chi-square, t & F distributions (statement and use only); Bivariate distribution- marginal & conditional distributions, properties of Bivariate normal distribution (Statement only).

STAT 0431 (Sc.)- Statistical Inference: Theory of estimation- MSE & standard error of an estimator, unbiasedness, minimum variance, method of maximum likelihood estimation (MLE), method of moments; Testing of hypothesis- Fundamentals of hypothesis testing, test under normal set-up for a single mean and variance, the equality of two means and two variances; Outline of analysis of variance (ANOVA) tests in one-way classified data & two-way classified data (single observation per cell).