

<b>Course title: Statistical Methods for Management</b>				
<b>Course code:</b> <b>BSI 175</b>	<b>No. of credits:</b> 3	<b>L-T-P distribution:</b> 28-14-0	<b>Learning hours:</b> 42	
<b>Pre-requisite course code and title (if any):</b> Knowledge of mathematical techniques is required to understand the subject.				
<b>Department:</b> Department of Business and Sustainability				
<b>Course coordinator (s):</b> Montu Bose			<b>Course instructor (s):</b>	
<b>Contact details:</b> <a href="mailto:montu.bose@teriuniversity.ac.in">montu.bose@teriuniversity.ac.in</a>				
<b>Course type:</b>	<b>Core</b>	<b>Course offered in:</b> MBA (BS) & (Infra)		
<b>Course Description</b> This course gives students an exhaustive introduction to statistical methods important in business and infrastructure. For last few decades India's growth rate is impressive along with high competition in the economy. Economic growth, expansion of trade and business has forced to invest in infrastructure. Given this background, businessmen can no longer rely on the old system of hit-or-miss methods, or leave their future on chances. They have now to proceed on scientific principles, prepare themselves for competitive markets and plan their business accordingly. The managers have therefore to depend on a variety of factors (like present labour condition, prices of raw materials etc.). All these factors are statistically taken account of before fixing the price of new commodity or services, so that it may find a suitable place in the market. This course would be offered to MBA Business Sustainability as well as MBA Infrastructure. The lectures of this course would be provided in joint class; however, tutorials classes would be separate for each programme.				
<b>Course Objectives</b> In the course the students would be exposed to relative example in economics of infrastructure and business applications. The primary objective of this course is to motivate the use of statistical analysis and at the same time encourage students to go beyond the mathematical applications of technique and to develop critical judgment through statistical analysis. The specific objectives of the course are enable student – <ul style="list-style-type: none"> <li>• to understand and use of statistical methods ranging from graphical presentation of data to descriptive statistical representation of data for infrastructure &amp; business-related studies;</li> <li>• to analyse data for understanding the characteristics of the business &amp; infrastructure related factors, their association etc.</li> <li>• apply statistical techniques to forecast the market situation and to take proper decisions.</li> </ul>				
<b>Course content</b>				
<b>Module</b>	<b>Topic</b>	<b>L</b>	<b>T</b>	<b>P</b>
1	<b>Introduction: Data and Statistics</b> Data: Concept & types of data; importance of data in infrastructure & business; Data sources: introduction to infrastructure & business-related data & sources.	2		
2	<b>Descriptive Statistics</b> Summarizing data: how to handle data scientifically to make proper decisions; Exploration & representation of infrastructure related data: tabulation, cross tabulation, variability checking, measuring the distribution and location statistically, association among inputs and outputs; Use of diagrams in business & infrastructure projects and reporting.	4	3	
3	<b>Probability Distribution</b> Introduction to set theory and probability; Discrete and continuous distributions; Random variables; Discrete & continuous probability distributions: theory and its applications in business & infrastructure management.	4	3	

4	<b>Sampling and Sampling Distributions</b> Statistical Inference: concepts & relevance in business & infrastructure; Methods of Sampling: purposive, random, stratified, systematic, multy-stage; Concepts and estimation of - Point Estimation, Sampling Distribution of Mean, Sampling distribution of p, differences of means, proportions, difference of proportions, variances, ratio of variances sample size determination; Standard normal, $\chi^2$ , t and F distributions.	4	1	
5	<b>Problem of Estimation</b> Population mean; Population proportion; Point and interval estimation, confidence interval; Determining sample size.	2	1	
6	<b>Hypothesis Testing</b> Null and alternative hypothesis; Test of significance; Type I and Type II errors; Practical issues	2	2	
7	<b>Analysis of Variance</b> Introduction to analysis of variance; Assumptions and analysis of one-way classified data; Assumptions and analysis of two-way classified data; Comparison of equality of k-population means; Multiple comparisons.	3	1	
8	<b>Simple linear regression – Introduction</b> Simple regression model; Least square method; Coefficient of determination; Model assumptions; Testing of significance; Predictions; Residual analysis.	4	2	
9	<b>Index Numbers</b> Method of construction of index numbers; Consumer price index (CPI) & Wholesale price index; Time series of index numbers; Deflation of index number.	3	1	
<b>Evaluation criteria</b> The break-up of the evaluation procedure is as follows – Minor-I Exam - 20% Minor-II Exam - 20% Project Work - 20% Major Exam - 40%				
<b>Pedagogical approach</b> The course will be delivered through lectures and application of statistical tools in infrastructure related problems would be discussed.				
<b>References:</b> Textbooks:  1. Anderson DR., Dennis J. Sweeney and Thomas A. Williams (2002): Statistics for Business and Economics, Cengage Learning (10 <sup>th</sup> Eds.), India.  Additional Readings: 2. Kohler, H. (2010): Statistics for Business & Economics, Harper Collins. 3. Levin, R. and Rubin, D. (2012): Statistics for Management, Pearson. 4. McClave, J. and Benson, P.G. (2013): Statistics for Business and Economics, Pearson. 5. Richard I.L. and David S.R. (2011): Statistics for Management, Pearson (7 <sup>th</sup> Eds.). 6. Stine R. and D. Foster (2014): Decision making and Analysis, Pearson New International Edition. 7. Thukral J.K. (2015): Business Mathematics & Statistics, Mayur Paperback. 8. Triola, M.F. and Franklin, L.A. (2015): Business Statistics. 9. Watsnam, T. J. and Keith, P. (2014): Quantitative Methods in Finance, International Thompson Business Press.				

**Additional information (if any):**

**Course Reviewer(s):**

1. Dr. Nilanjan Sen, Assistant Professor, St. Xavier's College, Kolkata.
2. Dr. Yamini Gupt, Associate Professor, University of Delhi, Delhi.
3. Dr. Tamal K. Kayal, Assistant Professor, Rabindra Bharati University, Kolkata