

Programme	: <b>M. Com</b>	
Course Code	: <b>COO 316</b>	Title of the Course: <b>Statistics and Basic Econometrics.</b>
Number of Credits	: <b>4</b>	
Effective from AY	: <b>2018-19</b>	

<b>Prerequisites:</b>	Students have studied B. Com and basic understanding of Statistics.
<b>Need, Description, and Objectives</b>	<p>Basic knowledge of predictive analysis is required for making any decisions based on past data, hence this course offers the students an opportunity to learn the meaning and importance of probability theory and various probability distributions for the purpose of applying them in predictive analysis techniques. The course provides basic understanding of the difference between psychometric and econometric data, and the role and importance of econometric data in the present globalized business world. Understanding of the intricacies of relationships between variables and further applications of this relationships in knowing the extent of impact of independent variables on dependent variable. Student also must understand the difference between data used for correlation and regression analysis and also the time series data used for time series analysis. This course also allows the students to test the significance of the data using hypothesis testing for making calculated decisions.</p> <p>The course provides the student an overall idea about the role and importance of probability and various types of probability distributions, which are essential for learning understanding the concept of hypothesis testing. The course also introduces the students to basic econometrics techniques and to prepare them to apply the knowledge in real business and economic problems / issues. Students are encouraged to think of the course as a preparation towards their class assignments as well as any related research projects. Students will be provided the basic understanding about the predictive analytical tools of regression and time series. The goal is to help a solid theoretical background in introductory level of econometrics, the ability to implement the techniques and to critique empirical studies based on econometric data.</p> <p>This course is designed to motivate the students to understand the importance of probability and its applications in predictive analysis and also hypothesis testing. Since the course is based on the sample study, students will also gain the knowledge between parametric and non-parametric tests, in other words what types of testing to be followed when the sample data is parametric and also non-parametric. Students will get the complete clarity about applying randomness tests with respect to non-parametric datasets.</p>

Content:	<b>UNIT 1: Introduction to Econometrics</b>	12 hours
	Meaning and importance – Correlation – Reliability of data – Regression – Assumptions of CLRM – Properties of OLS estimation – Multicollinearity, Heteroscedasticity, Autocorrelation (causes, consequences, detection, and solution). [ <i>Includes practical problems</i> ].	12 hours
	<b>UNIT 2: Time Series Analysis</b>	
	Meaning and importance – Components – Methods used for measurement of Trend – Measurement of seasonal variations. [ <i>Includes practical problems</i> ].	12 hours
	<b>UNIT 3: Probability and Probability Distributions</b>	
	Meaning and importance – Approaches, Theorems, and Types of Probability – Mathematical Expectation and Theoretical Frequency Distributions	

	<p>(Binomial, Poisson, and Normal). [<i>Includes practical problems</i>].</p> <p><b>UNIT 4: Theory of Estimation and Hypothesis Testing.</b></p> <p>Meaning and importance – Population and Sample – Sampling and Non-Sampling Errors – Significance of Sample Size – Parametric Vs Non-Parametric Tests – Chi-Square Tests – Tests involving one, two, or more than two samples (small and large) in the case of Parametric and Non-Parametric Tests. [<i>Includes practical problems</i>].</p>	12 hours
<b>Pedagogy:</b>	<p>The following methods and forms of study are used in the course:</p> <ul style="list-style-type: none"> <li>• Lectures.</li> <li>• Case studies based on research papers.</li> <li>• Practical's in the class as well as in computer lab.</li> <li>• Self-study (doing home assignments using Excel and other statistical software's, working with psychometric and econometric data, and doing research on the web)</li> <li>• Self-study with literature to know about suitability of appropriate data analysis tools for different situations.</li> </ul>	
<b>Reference / Readings:</b>	<ol style="list-style-type: none"> <li>1. Brooks, C., Introductory Econometrics for Finance, 2008, Cambridge University Press</li> <li>2. Gujarati, D., Basic Econometrics, 2003, McGraw-Hill</li> <li>3. Gujarati, D., Essentials of Econometrics, 2006, Mc Graw-Hill</li> <li>4. Greene, W., Econometric Analysis, 2003, Prentice Hall</li> <li>5. Maddala &amp; Lahiri, Introduction to Econometrics, 2009, Wiley India Edition</li> <li>6. Ramanathan., Introductory Econometrics with applications, 2002, Thomson South-Western</li> <li>7. Wooldridge J., Introductory Econometrics A modern Approach, 2002, South Western</li> <li>8. Krishnaswami, O. R and Ranganathan. M. Methodology of Research in Social Sciences. Himalaya Publishing house. 2016</li> <li>9. Gupta, S.C. Fundamentals of Statistics. Himalaya Publishing House. 2016</li> <li>10. Aizel, Amir D &amp; Sounderpandian, Jayavel. Complete Business Statistics, Tata McGraw Hill. 2016</li> <li>11. Sachdeva, J. K., Business Research Methodology, Himalaya Publishing House. 2016</li> </ol>	
<b>Learning Outcomes:</b>	<ol style="list-style-type: none"> <li>1. Basic understanding about the importance and applications of probability theory.</li> <li>2. Identify whether the data is psychometric or econometric, and apply appropriate data analysis tools.</li> <li>3. Clarity about carrying out relationship analysis, followed with predictive analysis using regression as well as time series.</li> <li>4. Successfully identify whether the data is parametric or non-parametric and apply appropriate testing procedures.</li> <li>5. Able to prepare the results of data analysis in the appropriate tabulated format for easy understanding and effective communication.</li> </ol>	

