

**Nirma University**  
**Institute of Technology, School of Technology**  
**M Tech Computer Science and Engineering (Data Science)**  
**Semester – II**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
3	0	2	4

<b>Course Code</b>	3CS42D301
<b>Course Name</b>	Econometrics

**Course Learning Outcomes (CLOs):**

At the end of the course, students will be able to

1. use broad knowledge of regression analysis relevant for analyzing economic data
2. interpret and critically evaluate the outcomes of empirical analysis
3. apply elementary procedures for model validation in the single equation context
4. perform statistical tests to investigate whether the classical assumptions in regression analysis are satisfied
5. implement econometric methods

**Syllabus:**

**Teaching  
Hours**

**Unit I**

**Single-Equation Regression Models:** The Nature of Regression Analysis, Two Variable Regression, Classical Normal Linear Regression Model, Interval Estimation and Hypothesis Testing, Multiple Regression Analysis

**8**

**Unit II**

**Relaxing the Assumptions of Classical Model:** Multicollinearity, Heteroscedasticity, Autocorrelation

**7**

**Unit III**

**Topics in Econometrics:** Nonlinear Regression Models, Qualitative Response Regression Models, Panel Data Regression Models, Dynamic Econometric Models

**13**

**Unit IV**

**Simultaneous-Equation Models:** The Identification Problem, Simultaneous-Equation Methods, Time Series Econometrics

**11**

**Unit V**

**Stochastic Prediction Models:** Monte Carlo Model, Hidden Markov Model

**6**

**Self-Study:**

The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

**Laboratory Work:**

Laboratory work will be based on above syllabus with minimum 5 experiments to be incorporated.

**Suggested Readings<sup>^</sup>:**

1. Gujarati, D. N., Basic econometrics, Tata McGraw-Hill Education.
2. Wooldridge, J. M., Introductory econometrics: A modern approach, Nelson Education.
3. Maddala, G. S., & Lahiri, K., Introduction to econometrics (Vol. 2), New York: Macmillan.
4. Stock, J. H., & Watson, M. W., Introduction to econometrics (Vol. 104), Boston: Addison Wesley.

L=Lecture, T=Tutorial, P=Practical, C=Credit

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<sup>^</sup>this is not an exhaustive list