Course title: Quantative methods in management-2			
Course code: PPM 174	**No. of credits: 2**	**L-T-P: 20-08-00**	**Learning hours: 28**
Pre-requisite course code and title (if any): NA			
Department: Department of Business & Sustainability			
Course coordinator: Dr. Montu Bose	**Course instructor: Dr. Montu Bose**		
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Course type: Core	**Course offered in: Semester 2**		

Course description:

In recent decades, econometric methods are widely applied to understand simple trends of a variable to complicated relationships among multiple variables. Econometrics as a subject has gone beyond its outlook as a method to make use of data, generate statistical inferences through modeling to address practical economic problems to solving complicated managerial problems. The course objective is to provide students an understanding of quantitative techniques in econometrics and an overview on time-series forecasting. This course will equip them to understand and evaluate most applied analysis using cross-sectional data. Since finance as a discipline has grown rapidly, introductory financial econometrics will also be dealt with suitable examples. There will be a strong emphasis on applied work, exploiting the availability of computer technique(s) for model solution.

The prerequisite for studying this subject is a background in mathematics and elementary statistical theory. The mathematics requirement is a basic understanding of multivariate differential calculus. With regard to statistics, a clear understanding of sampling distribution of an estimator, and of the principles of statistical inference and hypothesis testing is necessary. The students are therefore advised to revise statistics and mathematics lectures in the first semester.

Course objectives:

The specific objectives of the Econometrics module are the following:

- Illustrate use of econometrics in estimating models derived from theory;
- Demonstrate the practical use of econometric methods with reference to specific issues of applied economic interest;
- Inform interpretation and critical appraisal of model estimates;

Course contents

Module	Topic	L	T	P
1	**Module 1:** Simple and Multiple Regression Analysis: Assumptions and Asymptotic Properties	4		0
2	**Module 2:** Dummy Variables	2		
3	**Module 3:** Heteroscedasticity and Autocorrelation	4	2	0
4	**Module 4:** Distributed Lag Models	2	1	0
5	***Module 5 :*** Time Series Properties	3	3	0
6	***Module 6 :*** Forecasting	2	2	0
7	***Module 7 :*** Panel Data Models	3	0	0
	Total	**20**	**8**	**0**

Evaluation criteria:

The evaluation policy is designed to verify the knowledge acquired by students during the course. For this purpose assignments will be graded in addition to a written exam at the end of the course. Some assignments will need to be submitted individually by all students while group submissions will be allowed for select assignments. In addition, it would be helpful if you have some knowledge of economics.

The final grade is obtained by averaging all the tests/quizzes and assignments (40% of weight), assignment (10%) and the final exam (50% of weight).

- Test-1: Written Examination (Module 1-3): 40%
- Test-2: Assignment (Module 1-7): 10%

Indicators for assessment: (a) Identification of the problem; (b) Data collection; (c) Relevance of the data analysis method; (d) Representation and explanation; (e) Punctuality and timeline adherence.

Note: (a), (b) and (c) would carry a weightage of 10% each; (c) would carry 30% weightage and (d) would carry 40 % weightage.

- Test-3: Written Examination (All Modules): 50%

Learning outcomes:

At the end of the course, it is expected that students are able to –

- successfully carry out simple and multiple linear regression estimations (Test-1 and 3);
- Apply appropriate data analysis technique for various types of data (All Tests);
- Understand various techniques to handle binary dependent variables in business, economics and management related problems (Test1 and 3).
- Develop an understanding to interpret the results of various econometric techniques (All Tests).

Pedagogical approach:

A combination of class-room interactions, tutorials, assignments and projects.

Materials:

Suggested readings

1. Introductory Econometrics: A Modern Approach, 3rd Edition. Jeffrey Wooldridge. Cengage Learning, India, 2012
2. Introduction to Econometrics, 4th Edition. Christopher Dougherty, Oxford University Press, 2011
3. Econometrics. 1st Edition. Jeffrey Woolridge. Cengage Learning, India, 2009
4. Basic Econometrics, Damodar Gujarati, Dawn Porter, Sangeetha Gunasekar, Tata McGraw Hill Publishers, 2009

Lecture notes and Problem Sets are essential for this course

Additional information (if any):NA

Student responsibilities:

Attendance, feedback, discipline: as per university rules.

Course reviewers:

Dr. Bodhisattva Sengupta, Assistant Professor, IIT Guwahati
Dr. Subir Sen, Assistant Professor, IIT Roorkee