POST GRADUATE DIPLOMA IN MANAGEMENT
FN: 610-FINANCIAL ECONOMETRICS
CREDIT: 3 credits
SESSION DURATION: 60 Minutes

TERM: IV
YEAR: 2021-2022
BATCH: 2020-22

FACULTY: Dr. Sougata Ray
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Office hours: 9.30 am to 5.30 pm
Consulting hours: Can be decided based on prior appointment.

Course Introduction: This course aims at introducing the methods of econometrics and their application to economic and financial data. This course focuses on the empirical techniques which are mostly used in the analysis of financial markets and how they are applied to actual real-world data. This course will cover the topics like classic linear regression model(with assumptions), univariate time series models and multivariate time series models like Vector Autoregressive models and Cointegration techniques.

Learning Outcomes: The specific learning outcomes of the course are:
- To acquaint students with the fundamentals of financial econometrics (**L01** Subject Knowledge)
- To acquaint students with various econometric tools and techniques and linking it to various economic and financial problems (**LO2** Concept Application)
- To increase the students' ability to apply econometric techniques to economic and financial data (**LO3** Economic & Financial Application)
- To expose participants to practical orientation of building econometric models (**LO4** Software based analytical skills)

Course Pedagogy: The course will have a mix of lectures and lab exercises.

Course Readings

Books:

Brooks, C, *Introductory Econometrics for Finance*, Cambridge University Press, Second Edition.

Additional readings:

Tsay, R.S., 2005. *Analysis of financial time series* (Vol. 543). John wiley & sons. Third edition.

Gujarati, D.N., 2009. *Basic econometrics*. Tata McGraw-Hill Education. Fifth edition.

Course Evaluation criteria:

The approach of assessment would be to test the candidate's:
(a) ability to use statistical techniques to formulate, estimate and draw inferences from simple statistical techniques; (b) understanding of the way in which those results can be given interpretations; and (c) ability to communicate with other statisticians, and with non-specialists, in a comprehensible and effective manner.

Components	Learning Outcomes	Weightage (%)
Quizzes	LO1 LO2	20%
Group Assignment	LO3 LO4	20%
Term Project in Groups	LO1 LO2 LO3 LO4	30%
End Term Exam	LO1 LO2 LO3 LO4	30%
Total		100%

Plagiarism

We are committed to upholding the highest standards of academic integrity and honesty. Plagiarism is the use of or presentation of ideas, works that are not one's own and which are not common knowledge, without granting credit to the originator. You may refer the already available content just for your reference and to get the basic ideas. Only 20% of such content is acceptable, above that comes under the definition of Plagiarism which is unacceptable in IMI and will be treated seriously. All such cases will be referred to the appropriate body of the Institute for suitable disciplinary action.

Session Plan: This may be given in tabular form or without gridlines. However, must cover the following details:

Session No.	Topic	Learning Outcomes	Readings

1	**Introduction to Econometrics**	LO1	Chris Brooks – Ch 1
2- 4	**Introduction to Financial Data** ▪ One period and multiperiod returns ▪ Distributional Properties of returns ▪ Moments of a random variable –Mean, Variance, Skewness and Kurtosis	LO1, LO2	Chris Brooks – Ch 1
5 - 9	**Handling & Visualizing Financial Data** ▪ Understanding normality of data ▪ Jarque-Bera test, QQ Plot ▪ Histogram ▪ Stationarity of data (Strong and Weak) ▪ Testing for Unit Root (ADF test)	LO2	Chris Brooks – Ch 5
10 - 16	**Linear Models** ▪ Concepts of autocorrelation, white noise, random walk ▪ AR (p), MA(q), ARMA (p,q) and ARIMA (p,d,q) modelling ▪ Testing for serial correlation ▪ Selecting models using ACF and PACF graphs, AIC and BIC Criterion	LO2, LO4	Chris Brooks – Ch 5
17 – 22	**Univariate Volatility Modelling** ▪ Meaning of volatility and its measurements ▪ Heteroscedasticity in data ▪ Testing for ARCH effects ▪ ARCH (p) and GARCH (p,q) models ▪ Forecasting using GARCH models	LO2, LO3, LO4	Chris Brooks – Ch 8
23 -28	**Multivariate Volatility Modelling** ▪ Vector Autoregression ▪ Cointegration (Johansen Cointegration test); ▪ VECM	LO3, LO4	Chris Brooks – Ch 7
28 - 30	Implementing Time-Series forecasting	LO3, LO4	Material to be provided