

MANGALORE UNIVERSITY
Department of Statistics

STS553 (a): FINANCIAL TIME SERIES

Hours/Week:3
Credits : 3

I.A.Marks:30
Exam. Marks: 70

Course Outcomes:

- CO1: The ability to approach and analyse financial time series
 CO2: The ability to differentiate between various financial time series models.
 CO3: The ability to perform cross-validation of the model developed.
 CO4: The ability to forecast future observations of the market.
 CO5: A running knowledge of R for applied time series analysis

UNIT-I

09 Hrs.

Financial time series and their characteristics: Assets and Markets, Asset Returns, Distribution of returns, empirical properties of returns, Market Indexes.

UNIT-II

12 Hrs.

Stationary process. Autocorrelation function, Simple Autoregressive, Moving Average, Autoregressive moving average (ARMA) and seasonal ARIMA models.

Unit root non-stationarity, Testing for unit roots, Dickey-Fuller Tests, and its extension. Co-integration and error correction models,

UNIT-III

10 Hrs.

Conditional Heteroscedastic models: Volatility, Characteristic of volatility, model building, The Autoregressive Conditional Heteroscedastic (ARCH) model. Properties of ARCH model. Order determination, estimation and forecasting.

UNIT-IV

06 Hrs.

The GARCH model and properties. Estimation and forecasting. Elementary properties of EGARCH and MGARCH models.

REFERENCE BOOKS:

1. Rucy S. Tsay (2009): *Analysis of Financial Time Series*, 2nd Ed. Wiley Series in Probability and Statistics, ISBN 978-81-265-2369-6.
2. Christian Gouriéroux G and Joann Jasiak (2005): *Financial Econometrics*, New Age publications, ISBN 81-224-1697-7.
3. Dilip M. Nachane (2006) *ECONOMETRICS, Theoretical Foundations and Empirical Perspectives*, ISBN-10-0-19-564790-4, Oxford University Press, New Delhi.
4. David Ruppert (2004) "Statistics and Finance an Introduction" – Springer International Edition.