

• Soft Core	STS 552 : FINANCIAL TIME SERIES	No. of credits: 3
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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 1

Financial time series and their characteristics: Assets and Markets, Asset Returns, dividends- definition, types and policies. Distribution of returns, empirical properties of returns, Market Indexes. (10 hrs)

Unit II

Unit root non-stationarity:-random walk, random walk with drift and trend stationary. Testing for unit roots: Dickey-Fuller Tests and its extension, PP and KPSS test statistics. Unit Roots in Time Series Models- Unit Roots in Autoregressions, Unit Roots in Moving Averages. Regression Models with Time Series Errors.Cointegration. Test for Cointegration, Error Correction Models. (13 hrs)

Unit III

Conditional Heteroscedastic models: Volatility, Characteristic of volatility, model building. The Autoregressive Conditional Heteroscedastic (ARCH) model. Properties of ARCH model. Order determination, estimation and forecasting. (10 hrs)

Unit IV

The GARCH model and properties. Estimation and forecasting, limitations of GARCH model, Elementary properties of EGARCH and M-GARCH models. (09 hrs)