INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति
Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	Time Series Analysis
2.	Course number	MA634L
3.	Structure of credits (L-T-P-C)	2-0-0-2
4.	New course/modification to	New
5.	To be offered by	Mathematics and Statistics
6.	Prerequisite	CoT
7.	**Course Objective(s):** To discuss different linear and nonlinear time series processes. To describe statistical models using these processes and implement the methods for analyzing data.	
8.	**Course Content:** Characteristics of time series; Linear models: auto regressive moving average (ARMA), seasonal auto regression integrated moving average (SARIMA); Nonlinear models: threshold auto-regressive (TAR), smooth transition auto regressive (STAR); Conditional models: auto regressive conditional heteroskedasticity (ARCH), generalized ARCH (GARCH), exponential GARCH; Multivariate models: vector auto regressive (VAR), vector moving average (VMA); Long memory models: auto regression fractionally integrated moving average (ARFIMA); State space models; Forecasting.	
9.	**Textbook(s):** 1. Shumway R and Stoffer D, Time Series Analysis and Its Application, 4th Edition, Springer (2000). 2. Brockwell P J and Davis R A, Introduction to Time Series and Forecasting, 3rd Edition, Springer New York (2016).	
10.	**Reference(s):** 1. Say R T, Analysis of Financial Time Series, 3rd Edition, Wiley (2010). 2. Hamilton J D, Time Series Analysis, Princeton University Press (2020). 3. Brockwell P J and Davis R A, Time Series: Theory and Methods, 2nd Edition, Springer Science & Business Media (2009). 4. Fuller W A, Introduction to Statistical Time Series, 2nd Edition, John Wiley & Sons (2009).	