

CSE11135	Real Time Analytics	L	T	P	C
Version 1.0	Contact Hours 45	3	0	0	3
Pre-requisite/Exposure	Statistical Modelling for data analytics				
Co-requisite	Machine Learning				

Course Objectives:

- To enable students to understand various challenges in real time data processing.
- To provide the fundamentals of building blocks for real time solution design.
- To enhance the skill of students to understand speed and complexity issues while designing real time systems.
- To allow students to identify challenging areas in prediction and forecasting.

Course Outcomes:

On the completion of this course the student will be able to CO1: Understand the fundamental of real time

processing.CO2: Analyze the different parameters for time series.

CO3: Explain various time series models.

CO4: Evaluate the results and interpret using machine learning models.

CO5: Develop some reports along with interpretation results on real world case studies and applications.

Course Description:

This course requires minimal knowledge in probability and high school statistics. The course starts from basic concepts of streaming of data. With the rise of Big Data, there is an increasing need to process large amounts of data continuously, with a shorter turnaround time. Real-time data processing involves continuous input, processing and output of data, with the condition that the time required for processing. The objective of this course is to provide students an understanding of real-time solution aspects, from the source to the presentation to persistence.

Course Content:

Units	Lecture Hours
Unit-I: Introduction to data stream with forecasting and analysis: Introduction: data stream, big data analytics, challenges of conventional systems, stream data model and architecture, sampling data in a stream, Realtime Analytics Platform (RTAP) applications, Evolution of Analytic scalability, analytic processes and tools, Analysis vs reporting - Modern data analytic tools	9

Units	Lecture Hours
Unit-II: Stochastic process: Introduction to stochastic process, discrete stochastic process, autocorrelation, stationary stochastic process, case studies of stochastic process.	9
Unit-III: Time series models: Trends and seasonality, Autoregression (AR), Moving average models (MA), ARMA Model, Box-Jenkins model, non-stationary models, forecasting and analysis using ARIMA.	9
Unit-IV: Machine Learning Models for Time Series Analysis: Ways to work with ML models for Time Analysis models, time series analysis using decision trees, analysis with random forests	9
Unit-V: Applications and Case Studies: Insurance and Premium, credit card detection, product sales analysis, stock prediction analysis, sales/demand forecasting.	9

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between Course Outcomes (COs) and Program Outcomes (POs):

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CSE111	Real Time Analytics	CO1113	2	3	2	2	3	1	2	-	1	-	-	3	3	1	1
35		5.1															
		CO1113 5.2	3	2	2	2	3	3	3	-	3	-	-	3	2	3	2
		CO1113	2	2	2	2	3	3	3	-	3	-	-	1	1	2	2
		5.3															
		CO1113	3	2	2	2	2	2	3	-	3	-	-	1	1	1	2
		5.4															
		CO1113	3	1	3	2	1	3	1	-	1	-	-	3	2	2	1
		5.5															
		CO1113	2.	2.	2.	2.	2.	2.	2.	-	2.	-	-	2.2	1.8	1.8	1.6
		5	6	0	2	0	4	4	4		2						