

1.	Title of the course	Industrial Data Science and Engineering
2.	Course number	CS513L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CS5223/10
6.	To be offered by	Department of Computer Science and Engineering
7.	To take effect from	January 2022
8.	Prerequisite	CoT
9.	<b>Course Objective(s):</b> To impart knowledge on industrial systems for data generation, storage, processing and analysis. To impart knowledge on model maintenance over data distributions. To impart knowledge on industry best practices and eco-system for data science applications.	
10.	<b>Course Content:</b> Basics of multivariate statistics, probability distributions and random variables; Big data systems: data life cycle using Cross industry standard process for data mining (CRISP-DM), sharding, deduplication, map-reduce, system configurations and infrastructure as service; Data pre-processing: data wrangling, cleaning, handling unstructured data including image, text and codes, feature engineering and dimensionality handling; Explainability: noise in data and missing values, balancing, visualization, story-telling and hyper parameter tuning, automatic model learning, ensembling, concept drift and model maintenance; Advanced topics: methodologies of active, meta and transfer learning paradigms and stream data mining.	
11.	<b>Textbook(s):</b> 1. Dinesh U K, <i>Business Analytics: The Science of Data - Driven Decision Making</i> , Wiley (2007).	
12.	<b>Reference(s):</b> 1. Patterson J, <i>Deep Learning: A Practitioner's Approach</i> , O' Reilly (2007). 2. Sharda R, Delen D and Turban E, <i>Business Intelligence: A Managerial Perspective on Analytics</i> , Pearson (2017).	