Name of the Programme: MSc Integrated
Course Code: IMC-712
Title of the Course: Domain Specific Predictive Analytics
Number of Credits: 4(4L-0T-0P)
Effective from AY: 2022-23

Prerequisites for the course	Data science fundamentals and programming background	
Objectives	It introduces theoretical foundations, algorithms, methodologies for analyzing data in various domains such Retail, Finance, Risk and Healthcare.	
Content	**Retail Analytics** Understanding Customer: Profiling and Segmentation, Modelling Churn. Modelling Lifetime Value, Modelling Risk, Market Basket Analysis. **Risk Analytics** Risk Management and Operational Hedging: An Overview, Supply Chain Risk Management, A Bayesian Framework for Supply Chain Risk Management, Credit Scoring and Bankruptcy Prediction **Financial Data Analytics** Financial News analytics: Framework, techniques, and metrics, News events impact market sentiment, Relating news analytics to stock returns **Financial Time Series Analytics** Financial Time Series and Their Characteristics, Common Financial Time Series models, Autoregressive models, Markov chain models, Time series models with leading indicators, Long term forecasting **Introduction HealthcareAnalytics** An Introduction to Healthcare Data Analytics, Electronic Health Records, Privacy-Preserving Data Publishing Methods in Healthcare, Clinical Decision Support Systems **Healthcare Data Analytics** Natural Language Processing and Data Mining for Clinical Text: Core NLP Components, Information Extraction and Named Entity Recognition, Social Media Analytics for Healthcare: Tracking of Infectious Disease Outbreaks, Readmission risk prediction. **Genomic Data Analytics** Microarray Data, Microarray Data Analysis , Genomic Data Analysis for Personalized Medicine , Patient Survival Prediction from Gene Expression Data , Genome Sequence Analysis	8 hours 8 hours 8 hours 8 hours 8 hours 8 hours
Pedagogy	Lectures/ tutorials/assignments/self-study	

References/ Readings	1. Chris Chapman, Elea McDonnell Feit "R for Marketing Research and Analytics", Springer, 2015. 2. Olivia Parr Rud “Data Mining Cookbook: Modeling Data for Marketing, Risk, and Customer Relationship Management”, Wiley, 2001. 3. Chandan K. Reddy, Charu C. Aggarwal "Healthcare Data Analytics", CRC Press, 2015. 4. Rene Carmona "Statistical Analysis of Financial Data in R", Springer, 2014. 4. James B. Ayers “Handbook Of Supply Chain Management” Auerbach Publications, 2006. 5. PanosKouvelis, Lingxiu Dong, OnurBoyabatli, Rong Li "The Handbook of Integrated Risk Management in Global Supply Chains", Wiley, 2012.

Course Outcomes	1. Understand Retail Analytics 2. Understand Risk Analytics 3. Understand Financial Data Analytics, Financial Time Series Analytics 4. Understand Healthcare Analytics, Healthcare Data Analytics and Genomic Data Analytics.