Course Number	EAI 6101
Course Title	**Computational Data Analytics**
Course Outline	Introduction, Operation of physical systems and data generation, Complexity, Drawbacks and Challenges in data generation from physical devices. Requirement of advanced data analytics. Foundations of advanced data analytics principles, mathematical models, probabilistic models, optimization models, deep learning and machine learning models. Role of advanced data analytics in data apprehension and compression, curve-based approximation techniques, interpolation techniques, machine learning models for data interpretation. Statistical models to advanced data analytics, data analytics for 2D and 3D data processing and data manipulation, application of advanced data analytics to real life cases, problem solving.
Learning Outcome	• Gain understanding on data generation systems and the role of advanced data analytics. • Apply the Mathematical models of advanced data analytics to real time • Understand the utilities of statistical models and ML models for advanced data analytics.
Assessment Method	Quiz / Assignment / ESE

Suggested Reading

- Probability & Statistics for Engineers & Scientists (9th Edn.), Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers and Keying Ye, Prentice Hall Inc.
- Advanced Data Analysis from an Elementary Point of View Cosma Rohilla Shalizi
- Mining Massive Data Sets, A. Rajaraman and J. Ullman, Cambridge University Press, 2012
- Advances in Complex Data Modeling and Computational Methods in Statistics, Anna Maria Paganoni and Piercesare Secchi, Springer, 2013