Course Outline

Course Name	: Big Data and Cloud Computing (MSL7300)
Credits	: 2 (2-0-0)
Type	: Technology Core
Semester	: III
Prerequisite	: None
Faculty	: Dr. Deepak Kumar Saxena

A Brief Overview of the Course:
We live in a world which is surrounded by data. Especially, after the Internet and new age technologies (Web 2.0 applications, Internet of everything, sensors, AR & VR, industrial automation etc.) the pace at which data is being generated and transferred is unprecedented. In such a scenario, managing data and using it for business decision making is a constant challenge for organizations. Welcome to the Big Data world. One way to manage this big data and the applications dealing with it, is use of cloud computing. Apart from resource sharing, dynamic resource allocation, metered billing and other benefits, cloud also provides the benefit of using applications and data anytime, anywhere. This course deals with these two dominant technological trends of our time – Big Data and Cloud Computing.

Learning Outcome:
The objective of the course is to provide the basic understanding and knowledge of big data and cloud computing technology and its applications. After completing this course, the students will:
1. Develop an understanding of big data and its applications for business.
2. Be familiarized with the architecture of cloud computing and its implications for business.
3. Have an understanding of business applications of cloud computing.
4. Know various emerging business opportunities in cloud computing and big data analytics domain.

Pedagogy:
Lecture, discussions, case studies, project work, demonstrations

Evaluation Scheme
Minor 1: 15%
Minor 2: 15%
Individual Assignment: 10%
Group Assignment (Debate): 20%
Major Exam - 40%

TextBooks:
T1. Stephenson, D. (2018). *Big Data Demystified: How to use big data, data science and AI to make better business decisions and gain competitive advantage*. Pearson Education.
T2. Erl, T., Puttini, R., & Mahmood, Z. (2014). *Cloud computing: concepts, technology, & architecture*. Pearson Education.
Other references and text will be provided as and when required.

Session Plan:

Session#	Topic	Readings	Connect
1.	Course Introduction	NA	Industry, Technology
2-3	(Small Data) - Relational Database System	Class Notes	Industry, Technology
PART I - BIG DATA			
4	Characteristics of Big Data	T1.Ch1, 3, 5	Industry, Technology
5	Business value and advantages of big data, Challenges of managing big data		
6-7	Introduction to data science and role of data scientists	T1.Ch2, Ch8	Industry, Technology
8-10.	Introduction to Big Data Ecosystem and Tools	T1.Ch5, Ch9	Technology
11.	Big Data Project Implementation – Strategy and Human Resources	T1.Ch7, Ch10	Industry, Technology
12.	Big Data Project Implementation – Deployment	T1.Ch12	Industry, Technology
13.	Governance and Legal Compliance	T1.Ch11	Industry, Technology, Sustainability
PART II - CLOUD COMPUTING			
14-15.	Cloud Computing: Background & Introduction	T2.Ch3	Industry, Technology
16.	Fundamental Concepts: Roles and Characteristics	T2.Ch4	Industry, Technology
17-18.	Cloud Delivery and Deployment Models	T2.Ch4	Industry, Technology
19.	Cloud Computing - Enabling Infrastructure	T2.Ch5	Industry, Technology
20.	Introducing Cloud Computing Tools and Techniques	Lecture Notes	Industry, Technology
21.	Cloud Security: Threats and Mitigation Mechanisms	T2.Ch6	Industry, Technology, Sustainability
22.	The Business of Cloud: Service Provider and Consumer Perspective	T2.Ch14	Industry, Technology
23.	Cost Metrics and Pricing Models,	T2.Ch15	Industry, Technology
24.	Service Quality Metrics and Service Level Agreements	T2.Ch16	Industry, Technology
25-26.	Case Debate: Cloud Computing	Sessions 14-24	Industry, Technology, Sustainability
27.	Dark Side of Big Data and Cloud Computing	R2, R3	Industry, Technology, Sustainability
28.	Connecting the dots: AI, Big Data, Blockchain, Cloud Computing, Industry 4.0, Digital Transformation	Lecture Notes	Industry, Technology