Course Name: Big Data Analytics Course Code: ITEC416

General Information						
Course Code	ITEC 4**(416) - Elective-3	**Level/Year**	8^{th} / 4^{th}	**Required (R) / Selected Elective (SE)**		**SE**
Credit Hours	**Theory**	**2**	**Lab**	**1**	**Total**	**3**
Prerequisites	ITEC 313- Introduction to Data Science	**Course Coordinator**		Dr. Rahama Salman		
Corequisites	**--**	**Track Leader**		Dr. John Martin		

Course Description

This course will first introduce the overview applications, market trend, and the things to learn. Then, it will introduce the fundamental platforms, such as Hadoop, Spark, and other tools, such as IBM System G for Linked Big Data. Afterwards, the course will introduce several data storage methods and how to upload, distribute, and process them. It also covers different ways of handling analytics algorithms on different platforms.

Course Objectives: On completion of the course, the student will be able to:

- Be aware of the facts, capabilities, and benefits of big data.
- Apply analytics algorithms on different platforms to big data.
- Learn about uploading, distributing, and processing big data.
- Understand big data management and their technologies included visualization issues and mobile issues.
- Handle various real-world challenges on Big Data Analytics.

Course Contents

List of Topics	Weeks
CH 1: Understanding Big data	1,2
CH 2: Business Motivations & Drivers for Big Data Adoption	3, 4
CH 3: Enterprise Technologies and Big Data Business Intelligence: Technology Foundations for Big Data	5, 6, 7
CH 4: Big Data Storage Concepts	7, 8, 9
CH 5: Big Data Processing Concepts	10, 11, 12
CH 6: Big Data storage Technology -Real Time Analysis: In-Memory Processing	13, 14, 15

Textbook

- Big Data Analytics: A Hands-On Approach 2019 by Arshdeep Bahga & Vijay Madisetti,
- Demirbaga, Ümit, Gagangeet Singh Aujla, Anish Jindal, and Oğuzhan Kalyon. Big data analytics: theory, techniques, platforms, and applications. Springer Nature, 2023.

- Th. Erl, W. Khattak, and P. Buhler," Big Data Fundamentals: Concepts, Drivers & Techniques" 2016
- Big Data for Dummies® Published by John Wiley & Sons

Reference Materials

- Ivanka Menken, "Big Data Complete Certification Kit", Core Series for IT
- "Data Science and Big Data Analytics Student Guide" distributed by EMC Education Services will be provided to the students-2015
- Foster Provost and Tom Fawcett, "Data Science for Business: What You Need to Know about Data Mining and Data-analytic Thinking.
- Big-data-analytics-for-beginners-Mastering the Art of data driven decision making, sam-campbell.

Course Learning Outcomes

CLO	Description	Mapped PI
CLO#01	**Define** the basic concepts and terminologies of big data analytics process	PI 1.1
CLO#02	**Explain** the critical methods, techniques and algorithms commonly used in different platforms of big data	PI 1.2, PI 1.4
CLO#03	**Demonstrate** proficiency with the methods and techniques for uploading, distributing, storing and processing large amount of big data	PI 1.3, PI 2.2
CLO#04	**Construct** and **build** big data applications through highly scalable systems including visualization and statistical modelling tools	PI 2.1, PI 2.2
CLO#05	**Apply** concepts and principles to handle, analyze and interpret various real-world challenges on Big Data Analytics using analytics and statistical modelling	PI 2.3, PI 2.4
CLO#06	**Evaluate** and determine appropriate solutions for a problem and communicate through reports/presentations and demonstrate the ability to function in a group and Elaborate as a team member to attain a common assignment.	PI 3.1, PI 3.2, PI 5.1

CLO-PI-SO Mapping

	SO-1	SO-2	SO-3	SO-4	SO-5	SO-6
CLO#01	PI 1.1	-	-	-	-	-
CLO#02	PI 1.2, PI 1.4	-	-	-	-	-
CLO#03	PI 1.3	PI 2.2	-	-	-	-
CLO#04	-	PI 2.1, PI 2.2	-	-	-	-
CLO#05	-	PI 2.3, PI 2.4	-	-	-	-
CLO#06	-	-	PI 3.1, PI 3.2	-	PI 5.1	-