

CAI3701 Introduction to Data Analytics

COURSE INFORMATION

Prerequisites	Academic Year & Level		Teaching Methods			Credit Hrs.
	Year	Semester	Lecture	Tutorial	Laboratory	
CIS2101 & EBA2203	3	6	2	2	0	3

COURSE AIM

- Provide a solid understanding of fundamental concepts in data analytics, including data types, variables, and basic statistical measures.
- Teach methods for collecting, cleaning, and preprocessing data to ensure its quality and reliability.
- Introduce techniques for exploring and summarizing data to gain insights and identify patterns or trends.
- Cover basic statistical methods used in data analytics, such as descriptive statistics, hypothesis testing, and correlation analysis.
- Familiarize participants with programming languages commonly used in data analytics, such as Python or R, and introduce popular tools like Jupyter Notebooks.
- Explore techniques for creating effective data visualizations to communicate findings and insights clearly.
- Provide a basic understanding of machine learning concepts and applications in data analytics.
- Apply data analytics techniques to real-world scenarios, using case studies and practical examples to demonstrate how these skills can be used in various industries.

COURSE WEEKLY CONTENTS

- 1 Course Aim, Course outlines, understanding what is data analytics
- 2 Data Analytics Life Cycle
- 3 Data Types and Representations
- 4 Data Preprocessing
- 5 Basic Statistics
- 6 Data Visualization
- 7 Data Visualization - 7th Week Assessment
- 8 Descriptive Analytics – Clustering – KMEANS - DBSCAN
- 9 Descriptive Analytics – Frequent Item Sets – Apriori - FPGrowth
- 10 Predictive Analytics – Linear and Logistic Regression
- 11 Predictive Analytics – Supervised vs, Unsupervised Learning - Classification – KNN
- 12 Predictive Analytics – Classification – Naïve Bayes - 12th week Assessment
- 13 Predictive Analytics – Classification – Decision Trees - Evaluation
- 14 Introduction to Artificial Neural Networks
- 15 Recap and Projects Presentations

STUDENT GRADING & ASSESSMENT

Weeks	Exams	Assign.	Quizzes	Reports	Present.	Lab.	Total
1 to 7	←		3 0	MARKS		→	30
8 to 12	←		2 0	MARKS		→	20
1 to 15	←		1 0	MARKS		→	10
16 or 17	40	Final					40

REFERENCES

Textbook	"A General Introduction to Data Analytics", João Moreira, Andre Carvalho, Tomás Horvath ISBN: 978-1-119-29626-3
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