SANKALCHAND PATEL UNIVERSITY
।। अथातो ज्ञानजिज्ञासा ।।

Ph. D. Program
(Jan-2022 batch)

Subject Code: 1RI3000102	Subject Title: Essentials of Disciplinary Research Subject-1 Big Data Processing & Applications
Pre-requisite Subject	

Objectives of course: This course provides practical foundation level training that enables immediate and effective participation in big data projects. The course provides grounding in basic to big data processing technology and tools, including usage in IoT and Cloud environments.

Learning outcomes:

Upon successful completion of this course the student would be able to:

- Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop
- Apply Hadoop ecosystem components
- Use of Big Data in IoT and Cloud environment

Teaching Scheme (Credit Distribution)				Evaluation Scheme(% Marks)	Total Marks
Lecture	Tutorial	Practical	Credit	Continuous (Internal) Assessment	
3	1	--	4	100%	100

Unit	Content	Lecture	Wt. (%)
1	Introduction to big data, Big Data characteristics, Role of Big Data in IoT, Role of Big Data in Cloud Computing	9	30%
2	Hadoop Ecosystem & Architecture, Hadoop Ecosystem, Hadoop Components – HDFS, MapReduce, YARN, Hadoop Job Scheduling	9	30%
3	Big Data in IoT, Big Data Processing in Cloud Environments	6	20%
4	Big Data Applications in Healthcare, Smart City, Case study	6	20%

List of References:

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, “Professional Hadoop Solutions”, Wiley, 2015.
2. Chris Eaton, Dirk deroos et al., “Understanding Big data”, McGraw Hill, 2012.
3. Tom White, “HADOOP: The definitive Guide”, O Reilly 2012
4. Vijender Kumar Solanki, Vicente García Díaz, J. Paulo Davim, “Handbook of IoT and Big Data”

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Ph. D. Program
(Jan-2022 batch)

Subject Code: 1RI3000103	**Subject Title: Essentials of Disciplinary Research Subject-2 Fundamentals of Machine Learning**
Pre-requisite Subject	**- NONE -**

Objectives of course: This course provides great insight in the field of AI and Machine Learning and its techniques are being used in many areas which directly affect human life. Advanced concepts in the fields of AI such as Machine Learning, Deep Learning, and Natural Language Processing are introduced.

Learning outcomes:
Upon successful completion of this course the student would be able to:

- Explore the fundamental issues and challenges in Machine Learning including data and model selection and complexity
- Evaluate the various Supervised and Unsupervised Learning algorithms using appropriate Dataset
- Design and implement various machine learning algorithms in a range of real-world applications

Teaching Scheme (Credit Distribution)				**Evaluation Scheme(% Marks)**	**Total Marks**
Lecture	**Tutorial**	**Practical**	**Credit**	**Continuous (Internal) Assessment**	
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Unit	**Content**	**Wt. (%)**
1	Introduction to Machine Learning, Types of Machine Learning	10%
2	Data Pre-processing, Regression Algorithm	15%
3	Classification Techniques: Logistic Regression, K-NN, SVM, Naïve Bayes, Decision Tree Classification, Random Forest Classification	35%
4	Classification Techniques: K-Means Clustering, Hierarchical Clustering	20%
5	Deep Learning, Neural Networks	20%

List of References:

1. Machine Learning, Saikat Dull, S. Chjandramouli, Das, Pearson
2. Pattern Recognition and Machine Learning, by Christopher Bishop
3. Machine Learning with Python for Everyone, Mark E. Fenner, Pearson
4. Deep Learning: Methods and Applications, Li Deng and Dong Yu
5. Neural Networks and Deep Learning, Michael Nielsen