RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FOUR YEAR BACHELOR OF TECHNOLOGY (B. Tech..) DEGREE COURSE
SEMESTER: VI (C.B.C.S.)
BRANCH: COMPUTER SCIENCE AND ENGINEERING
Examination Scheme and Syllabus

Sixth Semester:-

S. N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Compiler Design	4	-	-	30	70	100	4	PCC-CS
2	Compiler Design -Lab	-	-	2	25	25	50	1	PCC-CS
3	Elective-II	3	-	-	30	70	100	3	PEC-CS
4	Elective-III	3	-	-	30	70	100	3	PEC-CS
5	Open Elective-I	3	-	-	30	70	100	3	OEC
6	Professional Skills Lab II	-	-	2	25	25	50	1	PCC-CS
7	Hardware Lab	-	-	2	25	25	50	1	ESC
8	Mini Project	-	-	6	50	50	100	3	PROJ-CS
9	Economics of IT Industry	2	-	-	15	35	50	2	HSMC
10	Intellectual Property Rights (AuditCourse)	2	-	-	50	-	-	Audit	PCC
	Total	**17**	**-**	**12**			**700**	**21**	

Elective-II: - 1. Machine Learning 2. Internet of Things 3. Cluster and Cloud Computing

Elective-III: - 1. Data Science 2. Distributed Operating Systems 3. Human Computer Interaction

Open Elective 1:- 1. Linux Fundamentals 2. Android Application Development 3. Blockchain Technologies

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Subject: **Elective 2: Machine Learning**   Subject Code: **BTECH_CSE-602.1T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
36 Hrs.	**3**	**30**	**70**	**100**

Aim: The use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.

Prerequisite(s): Statistics, Calculus, Linear Algebra and Probability & Programming Knowledge.

Course Objectives:

1.	To enable the Students with basic knowledge on Machine Learning Techniques.
2.	To develop skills of applying Machine Learning Techniques for solving real world problems.

Course Outcomes:

At the end of this course students will be able to:

CO1.	Understand basics of Machine Learning Techniques.
CO2.	Understand different types of Regression Techniques.
CO3.	Be capable of applying classification techniques.
CO4.	Apply unsupervised machine learning techniques.
CO5.	Apply & evaluate the machine learning techniques to real world problems.

SYLLABUS:

UNIT I: Introduction to Machine Learning
Human learning & it's types, Machine learning and it's types (Supervised ,unsupervised reinforcement),well-posed learning problems, Applications of Machine learning, issues in machine learning.
Types of data: Numerical and categorical data, data issues and remediation.

UNIT II: Supervised Learning: Regression
Data pre-processing: Dimensionally reduction, feature subset selection Types of regression: Multiple linear regression, Polynomial regression model.

UNIT III: Supervised Learning: Classification
Logistic regression, K-nearest neighbour (KNN),Naive Bayes Decision trees, Support vector machine, Recommendation Systems : Content based and collaborative techniques.

UNIT IV: Unsupervised Learning: Introduction
Clustering, K-means clustering, Apriori algorithm and association rule, anomaly detection algorithm, Hierarchial clustering , K-Medoids.

UNIT V: Trends and applications in Machine learning
Ensemble learning, Bagging, randomization, Boosting, Applications of Machine learning: Image recognition, speech recognition, Prediction recommendation: email spam and malware filtering, virtual personal assistant, online fraud detection.

Textbooks:
1. Machine Learning by Subramanian Chandramouli, Saikat Dutt, Amit Kumar Das
2. Introduction to Machine Learning by Dr. Nilesh Shelke, Dr. Narendra. V. Choudhary, Dr. Gopal Sakarkar, Das Ganu Publications, ISBN-978-93-84336-63-9
3. Machine Learning by Tom Mitchell, Mc.Graw Publications

Reference books:
1. Python Machine Learning Dr Randal S. Olson