Bharath
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)
NAAC

BHARATH INSTITUTE OF SCIENCE AND TECHNOLOGY
No.173, Agharam Road, Selaiyur, Chennai , T.N - 600 073.

Requisition Letter

From

Date: 27.10.2021

Dr. K.P.Kaliyamurthie,
Professor & Head,
Department of CSE,
Bharath Institute of Higher Education and Research,
Chennai

To
The Dean Engineering,
Bharath Institute of Higher Education and Research,
Chennai

Respected sir

Subject: Request of Permission to conduct a value added course on "**Machine Learning and Data Science**" -Reg

With reference to above subject, I would like to bring to your kind notice that, our department interested to organize value added course on "**Machine Learning and Data Science**" in our campus premises on **01/11/2021**.

38 students would be participating in this course. We request you kindly to give permission to organize this event.

Venue: **CSE Smart Room**

Timing : **9 am to 4.30 pm**

Submitted to Principal for approval to organize this value added course.

HOD/CSE

HEAD OF DEPARTMENT
Department of Computer Science & Engg.,
Bharath Institute of Higher Education & Research
(Declared as Deemed to be University U/S 3 of UGC Act, 1956)
Chennai-600 073. INDIA

DEAN ENGINEERING

Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Declared as Deemed-to-be University under section 3 of UGC Act 1956)

CIRCULAR

31.10.2021

The School of computing, Bharath Institute of Higher Education and Research is planned to conduct a certification value added course on **Machine Learning and Data Science** for the benefit of II, III and IV year students. This course is scheduled from 01.11.2021 for 30 hours which includes theory and practical. The timings are 9:30 AM to 12:30 PM

All Registered Students must attend all the classes without fail. The following faculty members are assigned to handle the course. S.NO	Name of the Faculty	Designation
1	Dr.C.Nalini	Professor
2	Mrs.C.Anuradha	Assistant Professor

Head of Department

To

Copy to CSE

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CERTIFICATE COURSE ON MACHINE LEARNING AND DATA SCIENCE

Date of Introduction of the Course:01.11.2021

COURSE SYLLABUS

1.Introduction: Machine Learning

Machine Learning Overview, ML Techniques, Validation Techniques (Cross-Validations), Feature Reduction/Dimensionality reduction, Principal components analysis (Eigen values, Eigen vectors, Orthogonality).

2.Supervised Learning

Linear regression, Random forest for classification, Support vector machines.

3.Unsupervised Learning

K-means for clustering problems, Apriori algorithm for association rule learning, Principal Component Analysis.

4.Reinforcement Learning

Reinforcement Learning Algorithms, Positive and Negative Reinforcement Learning, Learning Models of Reinforcement

5.Clustering

Distance measures, Different clustering methods (Distance, Density, Hierarchical), Iterative distance-based clustering, Measures of quality of clustering.

6.Classification

Model Assumptions, Probability estimation, Required data processing, M-estimates, Feature selection: Mutual information, Classifier.

7.K-Nearest Neighbors

Computational geometry; Voronoi Diagrams; Delaunay Triangulations, K-Nearest Neighbor algorithm; Wilson editing and triangulations

8. Support Vector Machines

Linear learning machines and Kernel space, Making Kernels and working in feature space, SVM for classification and regression problems.

9.Association Rule mining

Applications of Association Rule Mining: Market Basket, Recommendation Engines,Association analysis vs. classification, FP-trees.

10. Predictive Modeling

Regression, Classification, Data Preprocessing, Model Evaluation and Ensembles

11. Data Science Introduction

Data Science Overview, Components: Machine Learning, Big Data, Business Intelligence

12. Tools of Data Science

R-Language, Python coding, Hadoop Platform, SQL database/coding.

13. Data Analysis

Getting and Cleaning Data: Static Files, SQL, Web Scraping, APIs and Messy Data

14. Statistical Inference

Event Space, Probability, Distributions and Hypothesis Testing.

15. Summarizing and Visualizing Data

Descriptive Statistics, Univariate and Multivariate Exploratory Data Analysis.
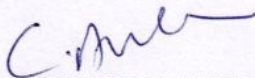
COURSE OBJECTIVES

In this course we plan to give students an overview of the field of Machine Learning and Data Science, and an in-depth study into its enabling technologies and main building blocks. Students will gain hands-on experience solving relevant problems through projects that will utilize existing public cloud tools. It is our objective that students will develop the skills needed to become a practitioner or carry out research projects in this domain.
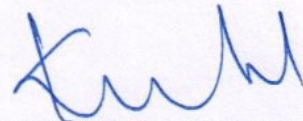
Specifically, the course has the following objectives:

Students will learn

1) To introduce students to the basic concepts and techniques of Machine Learning.
2) To develop skills of using recent machine learning software for solving practical problems.
3) To gain experience of doing independent study and research.
4) To develop the ability to build and assess data-based models.
5) To apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively

COURSE COORDINATOR

HEAD OF THE DEPARTMENT

Bharath
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CERTIFICATE COURSE ON MACHINE LEARNING AND DATA SCIENCE

Date of Introduction of the Course: 01.11.2021

Time Table & Lesson plan

CLASS	DATE	TOPIC
1,2	01-11-2021(FN)	**1. Introduction: Machine Learning** Machine Learning Overview, ML Techniques, Validation Techniques (Cross-Validations), Feature Reduction/Dimensionality reduction, Principal components analysis (Eigen values, Eigen vectors, Orthogonality).
3,4	04-11-2021(FN)	**2. Supervised Learning** Linear regression, Random forest for classification, Support vector machines.
5,6	05-11-2021 (FN) 05-11-2021(AN)	**3. Unsupervised Learning** K-means for clustering problems, Apriori algorithm for association rule learning, Principal Component Analysis.
7,8	11-11-2021(FN)	**4. Reinforcement Learning** Reinforcement Learning Algorithms, Positive and Negative Reinforcement Learning, Learning Models of Reinforcement
9,10	12-11-2021(FN)	**5. Clustering** Distance measures, Different clustering methods (Distance, Density, Hierarchical), Iterative distance-based clustering, Measures of quality of clustering.
11,12	12-11-2021(AN) 18-11-2021(FN)	**6. Classification** Model Assumptions, Probability estimation, Required data processing, M-estimates, Feature selection: Mutual information, Classifier.
13,14	19-11-2021(FN)	**7. K-Nearest Neighbors** Computational geometry; Voronoi Diagrams; Delaunay Triangulations, K-Nearest Neighbor algorithm; Wilson editing and triangulations
15,16	19-11-2021(AN)	**8. Support Vector Machines** Linear learning machines and Kernel space, Making Kernels and working in feature space, SVM for classification and regression problems.

17,18	25-11-2021(FN) 26-11-2021(FN)	**9. Association Rule mining** Applications of Association Rule Mining: Market Basket, Recommendation Engines, Association analysis vs. classification, FP-trees.
19,20	26-11-2021(AN)	**10. Predictive Modeling** Regression, Classification, Data Preprocessing, Model Evaluation and Ensembles
21,22	01-12-2021(FN)	**11. Data Science Introduction** Data Science Overview, Components: Machine Learning, Big Data, Business Intelligence
23,24	02-12-2021(FN)	**12. Tools of Data Science** R-Language, Python coding, Hadoop Platform, SQL database/coding.
25,26	02-12-2021(AN)	**13. Data Analysis** Getting and Cleaning Data: Static Files, SQL, Web Scraping, APIs and Messy Data
27,28	08-12-2021(FN)	**14. Statistical Inference** Event Space, Probability, Distributions and Hypothesis Testing.
29,30	09-12-2021(FN) 09-12-2021(AN)	**15. Summarizing and Visualizing Data** Descriptive Statistics, Univariate and Multivariate Exploratory Data Analysis.

COURSE COORDINATOR

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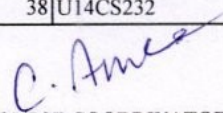(Declared as Deemed-to-be University under section 3 of UGC Act 1956)

CERTIFICATE COURSE ON MACHINE LEARNING AND DATA SCIENCE
Date of Introduction of the Course: 01.11.2021
School of Computing
Registered Students Name List

S.NO	REG.NO	NAME OF THE STUDENT
1	U15CS007	ANJAR ALI
2	U15CS008	ANKAM MANJUNATH
3	U15CS009	ANNADI DHANUSH
4	U15CS011	ANUMOLU YESWANTH
5	U15CS012	ARAVAPALLI SIVA VINAYA
6	U15CS013	ARAVINDHAN K R
7	U15CS014	ARVIND KUMR YADAV
8	U15CS039	D N S HRUDAY BHARADWAJ
9	U15CS040	DADAM CHAITHRA
10	U15CS041	DEEPAK KUMAR SINGH
11	U15CS117	MANOJ KUMAR R
12	U15CS118	MANUGUNTA BHARGAVI
13	U15CS119	MARRIBOYINA GOVARDHAN YADAV
14	U15CS120	MARRIPUDI KRISHNA CHAITANYA
15	U15CS154	PERAM ANTONY
16	U15CS155	PERAM VENKATA KRISHNA REDDY
17	U15CS189	SANTHOSH RAJ M
18	U15CS190	SATHISH S
19	U15CS201	SMITHA C.S
20	U15CS202	SODISETTY SANDEEP
21	U15CS203	SUBASH CHANDRAN.V
22	U15CS204	SUBHAM RAY
23	U14CS003	ABDUL RAHIM.M
24	U14CS004	ABDUL RAZVI .M.K
25	U14CS005	ABDUR RASEED
26	U14CS006	ABHIKAMALI .A
27	U14CS032	BODA VEERA VENKATA RAVI TEJA
28	U14CS033	BOORAGADDA VAMSI KRISHNA
29	U14CS085	LAKSHMI PRIYA.A
30	U14CS086	LOKESHWARAN.A.
31	U14CS088	MADDIPATI BHARAT
32	U14CS508	INDHU GOPALAKRISHNAN
33	U14CS710	SHOPMINISTER
34	U14CS113	NALLAJARLA CHAKRADHAR
35	U14CS114	NANDALA SWETHA
36	U14CS115	NANDIPALLI MOUNICA
37	U14CS701	BALAJI
38	U14CS232	B.BALAKUMARAN

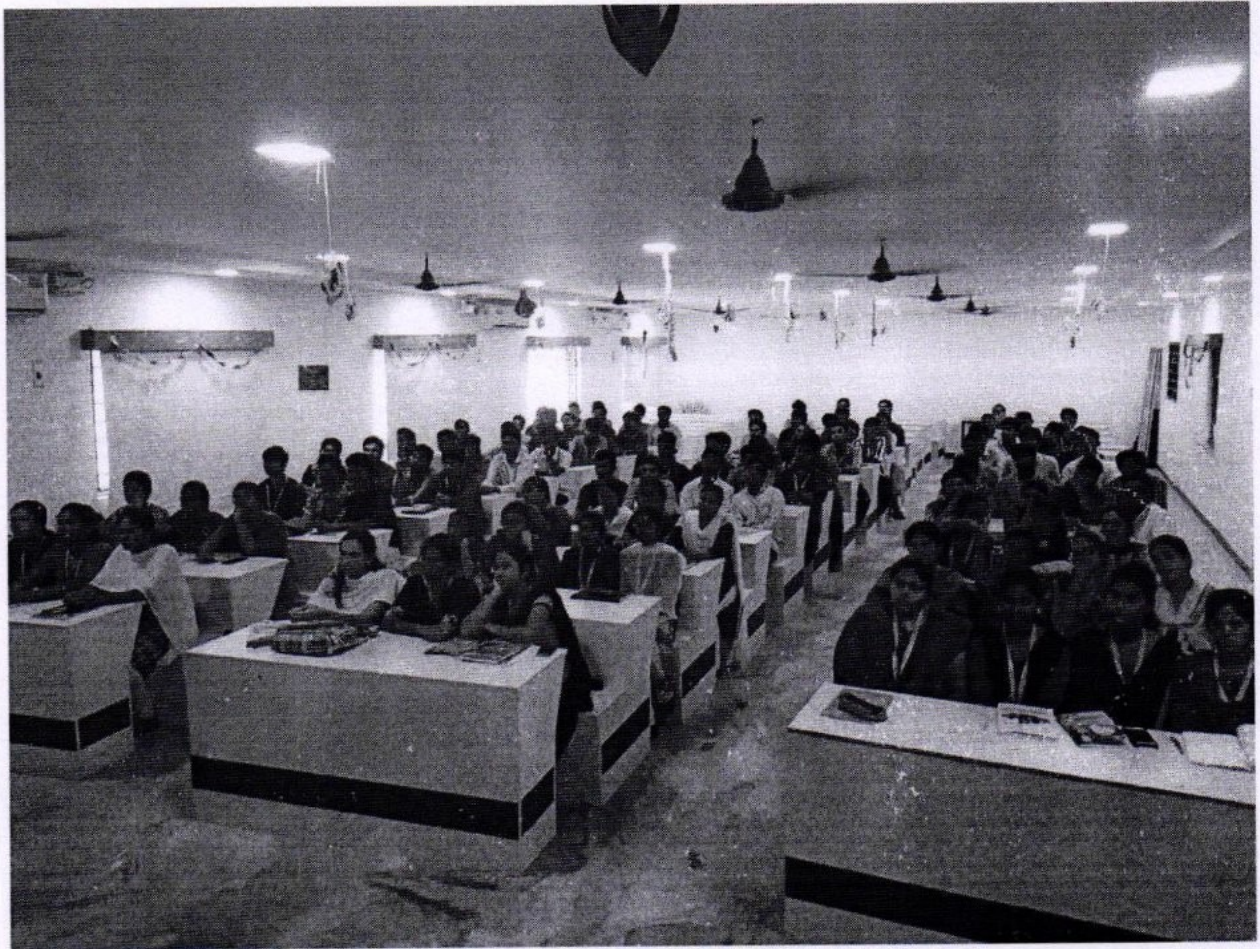COURSE COORDINATOR

HEAD OF THE DEPARTMENT

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CERTIFICATE COURSE ON MACHINE LEARNING AND DATA SCIENCE

COURSE CO-ORDINATOR　　　　　　**HEAD OF THE DEPARTMEMNT**

Bharath

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TO THE STARS BY HARD WORK
BIHER UNIVERSITY
INDIA

CERTIFICATE OF PARTICIPATION

This certificate is presented to

SMITHA C S

For actively participating in the value added course "Machine Learning and Data Science" Conducted by School of Computing, BIHER from 01.11.2021 to 09.12.2021.

COURSE COORDINATORS

HEAD OF THE DEPARTMENT

DIRECTOR

COURSE FEEDBACK FORM

Academic Year		2021 - 2022				
Term		ODD SEM				
Course Number						
Course Title		Machine Learning and Data Science				
Number of Credits						
Type of Course	Regular		Elective		Add-on	✓

I. Information on the Respondent: (Tick (√) Appropriately)

1. Percentage of classes attended

0-20		20-40		40-60	✓	60-80	

2. Number of hours per week spent on the course (Other than lecture hours)

0-2		2-4		4-6	✓	6-8	

3. Preparation for the course by the student:

(i)	Have done part of this course earlier	yes
(ii)	Has adequate prior exposure to the prerequisites	yes
(iii)	Had to pickup relevant additional topics through concurrent study	yes
(iv)	Have no exposure to the background material	yes

4. The expectations for taking the course by the student are:

(a)	Enhance by skill base in the area of specializations	yes
(b)	Get exposed to a relevant subject	yes
(c)	Curiosity	yes
(d)	Better Employment Opportunity	yes
(e)	Complete Course requirements	yes
(f)	To Improve CGPA	yes

About the Instructor: Information on the Respondent: (Tick (√) Appropriately)

		A	B	C	
1.	Pace of the Teaching/lecture		✓		
2.	Comment of the Subject		✓		
3.	Clarity of expression		✓		

1

4.	Level of preparation	✓			
5.	Level of interaction	✓			
6.	Accessibility outside the class	✓			
7.	Others (please specify	✓			

A: Excellent		B: Very Good		C: Good		D: Satisfactory	

HEAD OF THE
DEPARTMENT

COURSE FEEDBACK FORM

Academic Year		2021 - 2022					
Term		ODD					
Course Number							
Course Title		Machine Learning and Data Science					
Number of Credits							
Type of Course	Regular		Elective				Add-on ✓

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(d)	Better Employment Opportunity	yes
(e)	Complete Course requirements	yes
(f)	To Improve CGPA	yes

About the Instructor: Information on the Respondent: (Tick (√) Appropriately)

		A	B	C	
1.	Pace of the Teaching/lecture		✓		
2.	Comment of the Subject				
3.	Clarity of expression		✓		

1

4.	Level of preparation				
5.	Level of interaction				
6.	Accessibility outside the class				
7.	Others (please specify				

A: Excellent		B: Very Good		C: Good		D: Satisfactory	

HEAD OF THE DEPARTMENT