



Bharath

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



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

Requisition Letter

Date: 27-01-2020

From
Dr. K.P.Kaliyamurthi,
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 “**Soft Computing techniques**” -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 “**Soft Computing techniques**” in our campus premises on **03-02-2020**, students would be participating in this course. We request you kindly to give permission to organize this event.

Venue: **CSE Smart Room**

Timing : 9:30 AM to 12:30 PM (FN) and 1:30 PM to 4:30 PM(AN) and Saturday (FN&AN).

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


HOD

HEAD OF DEPARTMENT
Department of Computer Science & Engg.,
Bharath Institute of Higher Education & Res
Chennai-600 073, INDIA



DEAN ENGINEERING
DEAN (Engineering)

Bharath Institute of Science & Technology
BHARATH INSTITUTE OF HIGHER EDUCATION & RESEARCH
(Declared as Deemed to be University U/S 3 of UGC Act. 1956)
Selaiyur, Chennai-600 073.





CIRCULAR

29-01-2020

The school of computing, Bharath Institute of Higher Education and Research is planned to conduct a certification value added course on **Certificate Course of Soft Computing techniques** for the benefit of students. This course is scheduled from 03-02-2020 to 15-02-2020 which includes theory and practical. The timings are 9:30 AM to 12:30 PM (FN) and 1:30 PM to 4:30 PM (AN) and Saturday (FN&AN).

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	Mr. G. Michael	Professor
2	Mr. G. Kevithe .	Assistant Professor


Head of Department

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

To

Copy to CSE

Copy to IT



CERTIFICATE COURSE ON STATISTICS WITH SOFT COMPUTING TECHNIQUES

Date of Introduction of the Course: 02-03-2020

COURSE SYLLABUS

1. Introduction to Soft Computing

Concept of computing systems, "Soft" computing versus "Hard" computing, Characteristics of Soft computing, Some applications of Soft computing techniques

2. Introduction to fuzzy set theory

Probabilistic reasoning, Fuzzy sets, mathematics of fuzzy set theory, operations on fuzzy sets, comparison of fuzzy and crisp set theory.

3. Fuzzy logic & Defuzzification techniques

Fuzzy relations, rules, propositions, implications and inferences, Defuzzification techniques, Fuzzy logic controller design, some applications of Fuzzy logic

4. Fuzzy mapping

One to one mapping, max-min principle, extension principle, implication rules –implications

5. Membership functions

Universe of discourse, mapping inside fuzzy domain, fuzzy membership mapping methods, and application to real world problems.

6. Genetic Algorithms

Concept of "Genetics" and "Evolution" and its application to search techniques, GA operators: Encoding, Crossover, Selection, Mutation, etc.

7. Artificial Neural Networks

Artificial Neural Networks (ANN) and their biological roots and motivations.

8. Biological Neural Networks

Comparison between Artificial and Biological Neural Networks, Applications of Neural network.

9. Multi-objective Optimization Problem Solving

Concept of multi-objective optimization problems (MOOPs) and issues of solving them. Multi-Objective Evolutionary Algorithm (MOEA).

10. Types of learning

Learning Laws: Hebb's rule, Delta rule, Widrow - Hoff (The Least-Mean-Square) learning rule

11. Supervised and unsupervised learning laws

Correlation learning rule, instar and out-star learning rules, Competitive learning, Credit Assignment Problem, Error Correction learning, Memory based learning, Boltzmann learning.

12. The Perceptron and its learning law

Classification of linearly separable patterns, Multi-Layer Perceptron, Supervised Learning, Back-Propagation Learning law. Feed forward networks, Recurrent Networks

COURSE OBJECTIVES

This course will cover fundamental concepts used in Soft computing. The concepts of Fuzzy logic (FL) will be covered first, followed by Artificial Neural Networks (ANNs) and optimization techniques using Genetic Algorithm (GA).

Specifically, the course has the following objectives:

1. Understanding fuzzy set theory
2. Understanding Fuzzy logic & Defuzzification techniques
3. Know about Genetic Algorithms
4. Comparison between Artificial and Biological Neural Networks
5. Understanding Supervised and unsupervised learning laws



COURSE COORDINATOR



HEAD OF THE DEPARTMENT

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



CERTIFICATE COURSE ON STATISTICS WITH SOFT COMPUTING TECHNIQUES

Date of Introduction of the Course: 02-03-2020

The timings are 9:30 AM to 12:30 PM (FN) and 1:30 PM to 4:30 PM(AN)
Saturday (FN&AN).

Time Table & Lesson plan

CLASS	DATE	TOPIC
1	03-02-2020 (FN)	1. Introduction to Soft Computing Concept of computing systems, "Soft" computing versus "Hard" computing, Characteristics of Soft computing, Some applications of Soft computing techniques
2	04-02-2020 (FN)	2. Introduction to fuzzy set theory Probabilistic reasoning, Fuzzy sets, mathematics of fuzzy set theory, operations on fuzzy sets, comparison of fuzzy and crisp set theory.
3	05-02-2020 (FN)	3. Fuzzy logic & Defuzzification techniques Fuzzy relations, rules, propositions, implications and inferences, Defuzzification techniques, Fuzzy logic controller design, some applications of Fuzzy logic
4	06-02-2020 (FN)	4. Fuzzy mapping One to one mapping, max-min principle, extension principle, implication rules –implications
6	07-02-2020 (FN)	5. Membership functions Universe of discourse, mapping inside fuzzy domain, fuzzy membership mapping methods, and application to real world problems.
7	08-02-2020 (FN & AN)	6. Genetic Algorithms Concept of "Genetics" and "Evolution" and its application to search techniques, GA operators: Encoding, Crossover, Selection, Mutation, etc.
8	10-02-2020 (FN)	7. Artificial Neural Networks

		Artificial Neural Networks (ANN) and their biological roots and motivations.
10	11-02-2020(FN)	8. Biological Neural Networks Comparison between Artificial and Biological Neural Networks, Applications of Neural network.
11	12-02-2020 (FN)	9. Multi-objective Optimization Problem Solving Concept of multi-objective optimization problems (MOOPs) and issues of solving them. Multi-Objective Evolutionary Algorithm (MOEA).
12	13-02-2020 (FN)	10. Types of learning Learning Laws: Hebb's rule, Delta rule, Widrow - Hoff (The Least-Mean-Square) learning rule
13	14-02-2020 (FN)	11. Supervised and unsupervised learning laws Correlation learning rule, instar and out-star learning rules, Competitive learning, Credit Assignment Problem, Error Correction learning, Memory based learning, Boltzmann learning.
14	15-02-2020 (FN)	12. The Perceptron and its learning law Classification of linearly separable patterns, Multi-Layer Perceptron, Supervised Learning, Back-Propagation Learning law. Feed forward networks, Recurrent Networks

G. Kavitha

COURSE COORDINATOR



HEAD OF THE DEPARTMENT

HEAD OF DEPARTMENT
Department of Computer Science & Engg.
E. G. Vengal Rao Institute of Higher Education & Research
(Proclamation of the Government of India U/S 3 OF UGC Act, 1956)
Chennai - 600 077, INDIA



Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH

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BHARATH INSTITUTE OF SCIENCE AND TECHNOLOGY

No. 173, Agharam Road, Selaiyur, Chennai , T.N - 600 073.

Soft Computing techniques
Date of Introduction of the Course: 02-03-2020

School of Computing
Registered Students Name List

S.NO	REG.NO	NAME OF THE STUDENT
1	U19CS301	ERAKALA SAI TEJA
2	U19CS302	ERA VENI YASWANTH
3	U19CS303	EERELLA BHANU
4	U19CS304	E ESWAR
5	U19CS305	ETTABONIA AKHIL VARMA
6	U19CS306	FRANCY K
7	U19CS307	GADA SRIMANTH
8	U19CS308	GADDAM GANESH
9	U19CS309	GADDAM RANGA UDAY SUDHEER
10	U19CS310	GADDE PRAVALLIKA
11	U19CS311	GADE NIKHIL SAI
12	U19CS312	GADEY YASASWI KAMALA VAISHNAVI
13	U19CS313	GADIRAJU SUMANTH KUMAR VARMA
14	U19CS314	GAJJA ROHAN
15	U19CS315	GAJJALA RAM PRAKASH REDDY
16	U19CS316	GAJULA GOWTHAM
17	U19CS317	GAJULA PAVAN KUMAR
18	U19CS318	GAJULA SRI RANGANATH
19	U19CS319	GALI NAVEEN
20	U19CS320	GALI UMA MAHESWARA REDDY
21	U19CS321	GALLA AJAY KUMAR
22	U19CS322	GANDAVARAPU ROSHAN
23	U19CS323	GANDE KARTHIK RAJ
24	U19CS324	GANDEPALLI THARAKESWARA PRASAD
25	U19CS325	GANDHAM SAISUSHEEL

26	U19CS326	GANDLA HARI CHANDANA
27	U19CS327	GANDLURU BHANU PRAKASH REDDY
28	U19CS328	GANGAVARAPU MAHESH
29	U19CS329	GANGAVARAPU VENKATESH
30	U19CS330	GANGIREDDY ABHISHEK REDDY
31	U19CS331	GANGULA SHASHI KUMAR
32	U19CS332	GANIMINENI YASWANATH
33	U19CS333	GANJANABOINA RAMANJANEYULU
34	U19CS334	GANJI LAKSHMI PRASANNA KUMAR
35	U19CS335	GANJIKUNTA SANTOSH
36	U19CS336	GANTA DEEPAK
37	U19CS337	GARLANKALA VENKATA CHAITANYA
38	U19CS338	GASAGANI NIKITH
39	U19CS339	GATTA VENKATA SAI SIVA KUMAR
40	U19CS340	GAYAM GANESH KRISHNAREDDY
41	U19CS341	GEETA GARPATI
42	U19CS342	GELLE DEEPIKA
43	U19CS343	GEMBALI REVANTH
44	U19CS344	B GIRI
45	U19CS345	GODDINDLA JANARDHAN
46	U19CS346	GOGIREDDY LAKSHMI NARASIMHA REDDY
47	U19CS347	GOGULA ANIL KUMAR
48	U19CS348	GOKUL AJAY C P
49	U19CS349	GOLLA RAMJEE
50	U19CS350	GOLLADI SAI MAHESH VARDHAN
51	U19CS351	GOLLAPALLI VINAY JYOTHI
52	U19CS352	GOLLAPROLU NAGA KOTESWARA RAO
53	U19CS353	GONA VARUN KUMAR REDDY
54	U19CS354	GONDI VEERANJANEYULU
55	U19CS355	GONELA NARESH
56	U19CS356	GONUGUNTLA VAMSI KRISHNA

G. Kavitha

COURSE COORDINATOR

[Handwritten Signature]

HEAD OF THE DEPARTMENT

HEAD OF DEPARTMENT

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

COURSE FEEDBACK FORM

Academic Year		2019-2020			
Term					
Course Number					
Course Title		Soft Computing techniques			
Number of Credits					
Type of Course	Regular	Elective	Add-on	<input checked="" type="checkbox"/>	

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

1. Percentage of classes attended

0-20	20-40	40-60	60-80	<input checked="" type="checkbox"/>	80-100
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2. Number of hours per week spent on the course (Other than lecture hours)

0-2	2-4	4-6	6-8	8-10	<input checked="" type="checkbox"/>
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3. Preparation for the course by the student:

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

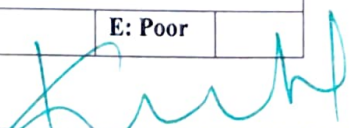
4. The expectations for taking the course by the student are:

(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	D	E
1.	Pace of the Teaching/lecture	<input checked="" type="checkbox"/>				
2.	Comment of the Subject		<input checked="" type="checkbox"/>			
3.	Clarity of expression	<input checked="" type="checkbox"/>				
4.	Level of preparation		<input checked="" type="checkbox"/>			
5.	Level of interaction	<input checked="" type="checkbox"/>				
6.	Accessibility outside the class	<input checked="" type="checkbox"/>				
7.	Others (please specify)	<input checked="" type="checkbox"/>				

A: Excellent	<input checked="" type="checkbox"/>	B: Very Good	C: Good	D: Satisfactory	E: Poor
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HEAD OF THE DEPARTMENT
 HEAD OF DEPARTMENT
 Department Of Computer Science & IT
 Edith Institute Of Higher Education, P.O.
 Box 12345, Durban, 4013, SOUTH AFRICA
 TEL: +27 31 201 2012

COURSE FEEDBACK FORM

Academic Year		2019-2020			
Term					
Course Number					
Course Title		Soft Computing techniques			
Number of Credits					
Type of Course	Regular		Elective		Add-on <input checked="" type="checkbox"/>

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0-2		2-4		4-6		6-8		8-10	<input checked="" type="checkbox"/>
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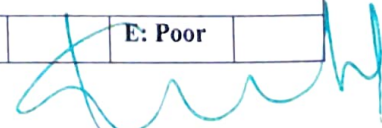
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5.	Level of interaction	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
6.	Accessibility outside the class		<input checked="" type="checkbox"/>			
7.	Others (please specify)	<input checked="" type="checkbox"/>				

A: Excellent		B: Very Good	<input checked="" type="checkbox"/>	C: Good		D: Satisfactory		E: Poor	
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HEAD OF THE DEPARTMENT


 HEAD OF DEPARTMENT
 Department of Computer Science & Engg.,
 Biju Patnaik University of Technology, Bhubaneswar
 (Deemed to be University) U.O. No. 1/2019
 Dated: 14-09-2019

COURSE FEEDBACK FORM

Academic Year		2019-2020			
Term					
Course Number					
Course Title		Soft Computing techniques			
Number of Credits					
Type of Course	Regular		Elective		Add-on <input checked="" type="checkbox"/>

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

1. **Percentage of classes attended**

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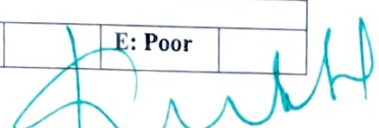
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6. Accessibility outside the class	<input checked="" type="checkbox"/>				
7. Others (please specify)	<input checked="" type="checkbox"/>				

A: Excellent	<input checked="" type="checkbox"/>	B: Very Good		C: Good		D: Satisfactory		E: Poor	
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HEAD OF THE DEPARTMENT
 HEAD OF DEPARTMENT
 Department of Computer Science & Engg.,
 Bharath Institute of Higher Secondary Education,
 (Declared as Deemed to be University by UGC, New Delhi, India)
 Chennai - 600 076, INDIA



Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH

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



BHARATH INSTITUTE OF SCIENCE AND TECHNOLOGY

No.373, Ashram Road, Selaiyur, Chennai, T.N - 600 073.

CERTIFICATE OF PARTICIPATION



Mr. GANDHAM SAISUSHEEL

For actively participating in the value added course "Soft Computing techniques" Conducted by School of Computing, BIHER from 03-02-2020 to 15-02-2020 .

G. Kavitha
Course Coordinator

Head of the Department

Director

**CERTIFICATE COURSE ON STATISTICS WITH SOFT COMPUTING
TECHNIQUES**

Introduction of the Course: 02-03-2020



G. Kavitly

Course Coordinator

K. K. K.

Head of the Department

HEAD OF DEPARTMENT
Department of Chemistry
Bhawanipally, Tirupathi, Andhra Pradesh
(Declared as Deemed to be University U.O. of UGC Act, 1956)
Chennai - 600 073, INDIA