# SOFT COMPUTING LABORATORY

II Semester: CSE								
Course Code	Category	Hours / Week		Credits	Maximum Marks			
DCCD10	Core	L	Т	Р	С	CIA	SEE	Total
BC2B13		0	0	4	2	30	70	100
Contact Classes: Nil	Total Tutorials: Nil	Total Practical Classes: 36 Total Classes: 3			es: 36			
I. COURSE OVERVIEW:	<b>-</b> -					•		

In this laboratory sessions, students will engage in hands-on exercises, programming assignments, and data analysis tasks. By actively working with these soft computing techniques, students will develop a practical understanding of their applications and gain valuable skills for solving complex problems in various domains.

# II. OBJECTIVES:

#### The students will try to learn:

- I. The Fuzzy concepts
- II. Neural networks with back propagation and without preparation
- **III.** The operators of genetic algorithms Practice on crisp partitions

### **III. COURSE OUTCOMES:**

#### After successful completion of the course, students should be able to:

CO 1	Develop an ANN model with or without backpropagation.	Create
CO 2	Show fuzzy relations on fuzzy relations to handle uncertainty and solve	Remember
	engineering problems.	
CO 3	Apply genetic algorithms to optimization problems	Apply
CO 4	Use the ANOVA model for analyzing the covariance of data.	Create
CO 5	Solve real problems using a soft computing approach.	Create

# IV. SYLLABUS

LIST OF EXPERIMENTS					
Week-1	PERCEPTRON				
Create a perceptron algorithm until no c	with appropriate number of inputs and outputs. Train it using fixed increment learning hange in weights is required. Output the final weights				
Week-2	ARTIFICIAL NEAURAL NETWORKS				
Write a program to program to impleme	implement artificial neural network without back propagation. Write a ent artificial neural network with back propagation.				
Week-3	FUZZY SETS				
Implement Union, Intersection, Complement and Difference operations on fuzzy sets. Also create fuzzy relation by Cartesian product of any two fuzzy sets and perform max-min composition on any two fuzzy relations.					
Week-4	GENETIC ALGORITHMS				
Implement travellin	g sales person problem (TSP) using genetic algorithms.				

Week-5	COVARIANCE			
Plot the correlation data. Analysis of co	plot on dataset and visualize giving an overview of relationships among data on soya bins ovariance: variance (ANOVA), if data have categorical variables on iris data.			
Week-6	DATA FITTING BY REGRESSION			
Implement linear re	egression and multi-regression for a set of data points.			
Week-7	CRISP MODEL			
Implement crisp pa	rtitions for real-life iris dataset.			
Week-8	PERCEPTRON RULE			
Write a program to implement Hebb's rule Write a program to implement Delta rule.				
Week-9	LOGIC GATES			
Write a program to	implement logic gates.			
Week-10	CLASSIFICATION			
Implement SVM c	assification by Fuzzy concepts.			
<b>Reference Books:</b>				
D.K Prathikar, "So	ft Computing", Narosa Publishing House, New Delhi, 2008.			
Web References:				
<ol> <li>https://ldrp.ac.in/images/syllabus/BE-Computer/802- 3%20soft%20computing.pdfhttp://itmgoi.in/download/CSE%20&amp;%20IT/Soft%20Computing%20IT%2 0(IT- 802).pdf</li> <li>http://mirlab.org/iang/book/</li> </ol>				
SOFTWARE AN SOFTWARE: Pyt HARDWARE: 18	D HARDWARE REQUIREMENTS FOR 18 STUDENTS: hon numbers of Intel Desktop Computers with 4 GB RAM			