COURSE TITLE	**SOFT COMPUTING**
COURSE CODE	**01CT0822**
COURSE CREDITS	**3**

Objective:

1 Students completing this course will gain a broad understanding of soft computing theories and basics as well as the fundamentals of cutting-edge technologies and methods for tackling challenging problems in the real world.

Course Outcomes: After completion of this course, student will be able to:

1 Understand the basic concepts of soft computing.

2 Use the concepts of Fuzzy logic in various other domains.

3 Apply the techniques of Genetic Algorithms

4 Understand the methods for optimizations of algorithms.

5 Apply the neural network and its architecture in different real-world problems.

Pre-requisite of course: Students should have critical thinking and problem solving skills. They should have knowledge of Object Oriented Programming.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Module** Introduction to soft computing techniques, Basic concepts of fuzzy logic, artificial neural networks, Fuzzy Systems: Fuzzy sets, Fuzzy Relations and Fuzzy reasoning, Fuzzy decision making, Neuro - Fuzzy Modelling, Concept of "Genetics" and "Evolution" and its application to probabilistic search techniques, Encoding, Crossover, Selection, Mutation, Multi-objective Optimization Problem Solving, Pareto-based approaches to solve MOOPs. Some applications with MOEAs, Artificial Neural Networks, Basic concepts - Single layer perception - Multilayer Perception -Supervised and Unsupervised learning, Application of Soft Computing.	42
Total Hours		**42**

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Textbook :

1 Fuzzy Logic: A Practical approach, F. Martin, Mc neill, and Ellen Thro,, AP Professional, 2000

2 Neural Networks and Learning Machines,, Simon Haykin, PHI Learning,, 2011

References:

1 Fuzzy Logic with Engineering Applications , Fuzzy Logic with Engineering Applications , Timothy J. Ross,, Willey,, 2010

2 Fuzzy Logic for Embedded Systems Applications, , Fuzzy Logic for Embedded Systems Applications, , Ahmed M. Ibrahim,, Elsevier Press, 2004

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	20.00	40.00	30.00		

Instructional Method:

1 Students may use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory, etc.

Supplementary Resources:

1 MOOC Course, NPTEL, COURSERA, Udemy, Infosys, Springboot, SWYAM etc. Online learning platform

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