SOFT AND EVOLUTIONARY COMPUTING
(Effective from the academic year 2018 -2019)
SEMESTER – VIII

Subject Code	18AI822	CIE Marks	40
Number of Contact Hours/Week	3:0:0	SEE Marks	60
Total Number of Contact Hours	40	Exam Hours	3 Hrs

CREDITS – 03

Course Learning Objectives: This course will enable students to:

- Describe the basics of Soft computing
- Explain the process Fuzzy &Genetic Algorithm to solve the optimization problem.
- Analyse the Neuro Fuzzy system for clustering and classification.
- Illustrate the process of swarm intelligence system to solve real world problems.

Module – 1	Contact Hours
Introduction to Soft computing: Neural networks, Fuzzy logic, Genetic algorithms, Hybrid systems and its applications. **Introduction to classical sets and fuzzy sets:** Classical relations and fuzzy relations, Membership functions. **T1: Chapter 1 and 7& 8**	08
Module – 2	
Fuzzification and Defuzzification **T1: Chapter 9 & 10**	08
Module – 3	
Genetic algorithms: Introduction, Basic operations, Traditional algorithms, Simple GA General genetic algorithms, Operators, Stopping conditions for GA flow. **T1: Chapter 15.1 To 15.10** **RBT: L1, L2**	08
Module – 4	
Swarm Intelligence System: Introduction, background of SI, Ant colony system Working of ant colony optimization, ant colony for TSP. **T2: 8.1 to 8.5** **RBT: L1, L2**	08
Module – 5	
Unit commitment problem, particle Swarm Intelligence system Artificial bee colony system, Cuckoo search system. **T2: 8.6 to 8.9** **RBT: L1, L2**	08

Course outcomes: The students should be able to:

- Implement machine learning through neural networks.
- Design Genetic Algorithm to solve the optimization problem.
- Develop a Fuzzy expert system.

• Model Neuro Fuzzy system for clustering and classification
Question Paper Pattern:
• The question paper will have ten questions.
• Each full Question consisting of 20 marks
• There will be 2 full questions (with a maximum of four sub questions) from each module.
• Each full question will have sub questions covering all the topics under a module.
• The students will have to answer 5 full questions, selecting one full question from each module.
Textbooks:
1. Principles of Soft computing, Shivanandam, Deepa S. N, Wiley India, 2011/Reprint2014   2. Soft Computing with MATLAB Programming, N. P. Padhy, S.P. Simon, Oxford, 2015.
Reference Books:
1. Neuro-fuzzy and soft computing, .S.R. Jang, C.T. Sun, E. Mizutani, Phi (EEE edition), 2012   2. Soft Computing, SarojKaushik, SunitaTiwari, McGrawHill, 2018