ARTIFICIAL INTELLIGENCE LABORATORY

II Semester: EPS

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
BPSB19	Core	-	-	4	2	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 48**				**Total Classes: 48**		

I. COURSEOVERVIEW:

This course deals with the load flow analysis, state estimation and other power system problems. It will also evaluate the economic dispatch of coordinated thermal unit. This course also concludes with artificial intelligence technique like fuzzy logic artificial neural networks and GAalgorithms.

II.COURSEOBJECTIVES:

The course should enable the students to:

I.   Explain the different state estimation techniques.
II.   Analyze and pick the best artificial intelligence technique for a given Power System problem.
III. Evaluate the economic dispatch of coordinated thermal unit.
IV.   Identifyandusemoderntoolslikefuzzylogic,artificialneuralnetworksandANFISforpowersystem problems
V.   Apply various evolutionary algorithms to power system problems.

III. COURSEOUTCOMES:

After successful completion of the course, students will be able to:		
CO 1	Analyze the best artificial intelligence technique for a given Power System problem	Remember
CO 2	Identify the modern tools like fuzzy logic, artificial neural networks and GA algorithms for power system problems.	Analyze
CO 3	Apply Evolutionary Techniques in Power Systems	Apply
CO 4	Develop economic dispatch of thermal plants using different control techniques	Analyze
CO 5	Examine load flow analysis and state estimation using neural networks	Apply
CO 6	Analyze the best artificial intelligence technique for a given Power System problem	Evaluate

IV. LIST OF EXPERIMENTS

Expt. 1	**LOAD FLOW ANALYSIS**
Load flow analysis using neural network.	

Expt.2	**STATE ESTIMATIONS**
State estimations using neural network.	

Expt.3	**CONTINGENCY ANALYSIS**
Contingency analysis using neural network.	

Expt.4	**POWER SYSTEM SECURITY**
Power system security using neural network.	

Expt.5	AGC - SINGLE AREA SYSTEM / TWO AREA SYSTEM
Fuzzy logic based AGC for single area system and two area systems.	
Expt.6	SMALL SIGNAL STABILITY ANALYSIS
Fuzzy logic based small signal stability analysis.	
Expt.7	ECONOMIC DISPATCH THERMAL UNITS
Economic dispatch of thermal UNITs using conventional and ANN algorithms.	
Expt.8	ECONOMIC DISPATCH THERMAL UNITS
Economic dispatch of thermal UNITs using conventional and GA algorithms.	
Expt.9	ECONOMIC DISPATCH THERMAL UNITS
Economic dispatch of thermal UNITs using conventional and Fuzzy logic.	
Expt.10	ECONOMIC DISPATCH OF THERMAL PLANTS
Economic dispatch of thermal plants using conventional and ANN algorithms.	
Expt.11	ECONOMIC DISPATCH OF THERMAL PLANTS
Economic dispatch of thermal plants using conventional and GA algorithms.	
Week-12	ECONOMIC DISPATCH OF THERMAL PLANTS
Economic dispatch of thermal plants using conventional and Fuzzy logic.	

References:

1. Chakrabarti, Abhijit, "Power System Dynamics and Simulation", PHI Learning, 2nd Edition,2012.
2. Barret J P, "Power System Simulation", Chapman and Hall, 2nd Edition,2013.

Web Reference:

1. http://www.iare.ac.in