

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY
Department of Electronics & Communication Engineering

LESSON PLAN

Subject Name: - Soft Computing
Year: - 4th

Subject Code: - ECO-13A
Semester: - 8th

Lecture No	Unit No	Topic	References
L 1	UNIT-I Soft Computing and Artificial Intelligence	Introduction of Soft Computing	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 2		Soft Computing vs. Hard Computing	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 3		Various Types of Soft Computing Techniques	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 4		Various Types of Soft Computing Techniques (Contd.)	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 5		Applications of Soft Computing	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and

			Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 6		AI Search Algorithm	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 7		Predicate Calculus	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 8		Rules of Interference	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 9		Semantic Networks	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 10		Frames, Objects	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
L 11		Hybrid Models	1. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House. 2. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.

			computing", Prentice Hall.
L 12	UNIT – II Artificial Neural Networks and Paradigms:	Introduction to Neuron Model,	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L 13		Neural Network Architecture,	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L 14		Learning Rules,	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L 15		Perceptrons, Single Layer Perceptrons,	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L16		Multilayer Perceptrons,	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L17		Back propagation Networks,	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L 18		Back propagation Networks (Contd.)	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L 19		Kohnen'sself-organizing networks,	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L 20		Hopfield network,	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L 21		Applications of NN.	Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.
L 22			Introduction

	UNIT-III Fuzzy Logic		McGraw Hill. 2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 23		Fuzzy sets and Fuzzy reasoning	1.Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill. 2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 24		Basic functions on fuzzy sets	1.Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill. 2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 25		Relations	1.Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill. 2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 26		rule-based models	1.Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill. 2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 27		Linguistic variables	1.Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill. 2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 28		Fuzzy controls	1.Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill.

			2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 29		Fuzzy decision making	1. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill. 2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 30		Applications of fuzzy logic	1. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill. 2. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
L 31	UNIT-IV Genetic Algorithms and Swarm Optimizations	Introduction, Genetic Algorithm,	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L 32		Fitness Computations,	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L 33		Cross Over, Mutation	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L 34		Evolutionary Programming	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L 35		Classifier Systems	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L 36		Genetic Programming Parse Trees	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y

L37		Variants of GA	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L38		Applications	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L39		Ant Colony Optimization	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L40		Particle Swarm Optimization	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y
L41		Artificial Bee Colony Optimization	D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y

Text Books:

1. Simon S. Haykin, Neural Networks, Prentice Hall, 2nd edition.
2. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill.
3. D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y.

Reference Books:

1. Zimmermann, "Fuzzy Set Theory and its Application", 3rd Edition.
2. B. Yegnanarayana, "Artificial Neural Networks", PHI.
3. Jacek M. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House.
4. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall.
5. Rajasekaran S., Vijayalaxmi Pai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI.