

COURSE TITLE	TE142341: Soft Computing Credits: 2 Semester: I
LEARNING OBJECTIVES	<ul style="list-style-type: none"> • Student understand the concept and structure of the biological inspired computation. • Student can describe and examine the principle of the biological inspired computation.
COMPETENCY	<ul style="list-style-type: none"> • Student can develop and implement the simple software of the biological inspired computation to the field of computer and informatic problems through a simple simulation.
SUBJECTS	<ul style="list-style-type: none"> • Foundation of Artificial Neural Networks: basic concepts of neural networks, supervised learning algorithm: single-layer and multilayer perceptrons, & unsupervised learning algorithm: self-organizing maps Hopfield, ART, etc. Hybrid learning, others neural model. • Data Structure: Linear data structure: list, stack, queue; Non linear data structure: tree, graph; sorting and searching methods. • Fundamental of Fuzzy Logic: Topics covered include fuzzy set theory, fuzzy systems, membership function, rule base and inference engine development. • Introduction to Evolutionary Algorithm: genetic algorithm, genetic programming, ant colony method, particle swarm optimization, artificial immune system. • Hybrid Algorithm: neuro-fuzzy, neuro-ga, fuzzy-ga, immune-evolutionary, etc • Simple Project
MAIN REFERENCES	<ul style="list-style-type: none"> • Jang JSR. <u>Neuro Fuzzy & Soft Computing</u> Prentice Hall, 1997. • Purnomo, MH . <u>Supervised Learning Neural Networks</u> Graha Ilmu. 2006. • Purnomo, MH . <u>Diktat Algoritma Cerdas</u> PENS-ITS. 2002. • Matlab toolbox (NN, Fuzzy logic, GA). • Russel Norvig, <u>Artificial Intelligence A Modern Approach</u>, Prentice Hall, 2003. • Cormen T., Leiserson C., Rivest R., Stein C., <u>Introduction to Algorithms</u>, 2nd Edition, Mc Graw Hill international Edition, 2004. • SNNS manual. • Haykin, <u>Neural Networks</u> 1999.
OPTIONAL REFERENCES	Some thesis of S1, S2 & S3 which are implemented the soft computing.
PREREQUISITE	-