

GANPAT UNIVERSITY								
FACULTY OF ENGINEERING & TECHNOLOGY								
Programme	Master of Technology				Branch/Spec.	Biomedical Engineering		
Semester	I				Version	1.0.0.0		
Effective from Academic Year		2018-19			Effective for the batch Admitted in		July 2018	
Subject code	3BM204	Subject Name			Artificial Intelligence			
Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total
	L	TU	P	TW				
Credit	3	-	1	-	4	Theory	40	60
Hours	3	-	2	-	5	Practical	30	20
Pre-requisites: Basic knowledge of neural system and classical logic								
<p>Learning Outcome: The educational objectives of the course are to educate students to attain the following:</p> <ul style="list-style-type: none"> • Understanding fuzzy rule based expert system. • Understanding of hybrid intelligent system. • Understanding of genetic algorithm based system. • Understanding of different types of machine learning. 								
Theory syllabus								
Unit	Content							Hrs
	Introduction to the overview and importance of the course.							
1	Artificial Intelligence: Definition, Intelligent machines, Foundation & history of artificial intelligence, Intelligent Agents, Benefits & risks of AI.							04
2	Rule-based expert systems: Rules as a knowledge representation technique, Structure, fundamental characteristics, advantages and disadvantages.							05
3	Fuzzy System: Introduction, Fuzzy rule, Fuzzy inference Engine: Left and Right hand side of computation, Mamdani-style inference, Sugeno-style inference, Type 1 and Type 2 fuzzy system, Fuzzy C Mean clustering, Application of fuzzy logic in biomedical engineering.							10
4	Machine Learning: Definition, Types of Learning: Supervised, Unsupervised, Active, Passive, Batch learning.							03
5	Artificial Neural Network: Introduction, Single layer, multilayer network, Perceptron, Hopfield, Back propagation, Habbian,							08
6	Hybrid Intelligent Systems: Natural Expert System, Neuro – Fuzzy System, ANFIS – Adaptive Neuro – Fuzzy Inference System, Evolutionary neural and fuzzy system,							08
7	Genetic Algorithm: Introduction to optimization, Principle of natural selection, Simple genetic algorithm, Operators and parameters, Crossover, encoding methods, mutation.							07
Practical content: Term Work and Practical shall be based on the above syllabus.								
Text Books:								
1	Artificial Intelligence: A Guide to Intelligent Systems by Michael Negnevitsky, Pub: Addison Wesley							
Reference Books								
1	Artificial Intelligence: A Modern Approach By: Stuart J. Russell and Peter Norvig Pub: Prentice Hall							
2	Understanding Machine Learning By: Shai Shalev-Shwartz Shai Ben-David Publisher : Cambridge University Press							
3	Machine Learning by Tom M. Mitchell, Pub: McGraw-Hill							

Note:

Version 2.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme,Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision)

L=Lecture, TU=Tutorial, P= Practical/Lab., TW= Term work, DT= Direct Teaching, Lab.= Laboratory work

CE= Continuous Evaluation, SEE= Semester End Examination