

**DEPARTMENT OF BIOMEDICAL ENGINEERING
FACULTY OF ENGINEERING AND TECHNOLOGY
SCHOOL OF BIO ENGINEERING
SRM UNIVERSITY**

LESSON PLAN

Course Code: BM0453

Course Title: Artificial Intelligence & Pattern Recognition

Semester: B.Tech IV year VII Sem (July 2014-Dec 2014)

Course Timings:

DAY ORDER	1	2	3	4	5	6	7
3				Y			
5	Y	Y					

Location : B602

Faculty Name : Ms.A Bhargavi Haripriya

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REFERENCE BOOKS

1. Rich & Knight, *Artificial Intelligence*, 2 nd Edn., John Wiley & Sons Inc., 2001
2. GEORGE.F.LUGER, *Artificial Intelligence- Structures and Strategies for Complex Problem Solving*, 4/e, 2002, Pearson Education
3. Earl Gose, Richard Johnsonbaugh, and Steve Jost; *Pattern Recognition and Image Analysis*, PHI Pvt. Ltd., NewDelhi-1, 1999.
4. Rochard O. Duda and Hart P.E, and david G Stork, *Pattern classification*, 2 nd Edn., John Wiley & Sons Inc., 2001.
 - Also Material from internet which will be provided simultaneously will class work

OBJECTIVES

1. To learn the fundamentals of AI components and algorithms
2. Knowledge Representation in AI
3. Pattern Recognition concepts
4. To learn supervised learning methods
5. To be able to identify topics relevant to Artificial Intelligence & Pattern Recognition
6. Apply the knowledge in assignments

Day order	Hour	Unit	Topic	Book/s
Day 3	4	INTRODUCTION TO AI	Definition of Artificial Intelligence, History and Applications	B1
Day 5	1		Components of AI – Types of tasks	B1
Day 5	2		state space search	B1
Day 3	4		Water jug problem	
Day 5	1		Searches - Data driven and goal driven search	B2
Day 5	2		Depth First and Breadth First Search, DFS with Iterative Deepening	B2
Day 3	4		Heuristic Search- Best First Search	B2
Day 5	1		A* Algorithm	B1, B2
Day 5	2		Constraint Satisfaction	B1, B2
Day 3	4	KNOWLEDGE REPRESENTATION IN AI	Propositional calculus	B1, B2
Day 5	1		Propositional calculus	B1, B2
Day 5	2		Predicate Calculus	B1, B2
Day 3	4		Theorem proving by Resolution	B1, B2
Day 5	1		Answer Extraction	B1, B2
Day 5	2		AI Representational Schemes- Semantic Nets	B1, B2
Day 3	4		Conceptual Dependency	B1, B2
Day 5	1		Scripts	B1, B2
Day 5	2		Frames	B1
Day 3	4	PATTERN RECOGNITION CONCEPTS	Introduction to statistical, syntactic and descriptive approaches	B3
Day 5	1		Features and feature extraction	B3
Day 5	2		Learning	B3
Day 3	4		Bayes Decision theory- introduction	B3
Day 5	1		Continuous case, 2-category classification	B3
Day 5	2		Minimum error rate classification, classifiers	B3
Day 3	4		Discriminant functions, and decision surfaces	B3
Day 5	1		Error probabilities and integrals	B3
Day 5	2		Normal density, discriminant functions for normal density	B3
Day 3	4		Bayes Decision theory Discrete case	B3
Day 5	1	LINEAR DISCRIMINANT FUNCTIONS	Linear discriminant functions	B3

Day 5	2		Decision surfaces	B3
Day 3	4		Generalized linear discriminant functions	B3, B4
Day 5	1		2-category linearly separable case	B3, B4
Day 5	2		non-separable behavior	B3, B4
Day 3	4		linear programming procedures	B3, B4
Day 5	1		Problems	B3, B4
Day 5	2		Surprise Test	B3, B4
Day 3	4	SUPERVISED LEARNING AND CLUSTERING	Supervised learning and clustering	B3, B4
Day 5	1		Mixture densities and identifiability	B3, B4
Day 5	2		Mixture densities and identifiability	B3, B4
Day 3	4		Maximum likelihood estimates	B3, B4
Day 5	1		Application to normal mixtures	B3, B4
Day 5	2		Unsupervised Bayesian learning	B3, B4
Day 3	4		Data description and clustering	B3, B4
Day 5	1		Hierarchical clustering	B3, B4
Day 5	2		Low dimensional representation of multidimensional map	B3, B4
Day 3	4		Revision	
Day 5	1		Project Submission based on Learning	

Total hours:47

Test Portions:

Cycle test I: Unit 1 & part of Unit 2

Cycle test II: Unit 2 & Unit 3

Model Exam: All 5 units

Assessment details:

Cycle Test 1 – 10marks

Cycle Test 1 – 10marks

Surprise Test 1 – 5 marks

Model Exam - 20 marks

Attendance - 5 marks