SCHEME OFCOURSE WORK

Department of Information Technology

CourseDetails:

COURSETITLE	INTRODUCTIONTOMACHINELEARNING		
COURSECODE	15IT11M3	LTPC	3 0 0 3
PROGRAM	B.TECH		
SPECIALIZATION	IT		
SEMESTER	VI		
PRE-REQUISITES	Mathematics,DMS,PSNM.		
COURSESTOWHICHITISAPRE-REQUISITE	AI		

CourseOutcomes(COs):

CO1	UnderstandRegressionandClassification.
CO2	UnderstandSupportVectorMachinesandArtificialNeuralNetworks.
CO3	UnderstandBayesianLearningandDecisionTrees.
CO4	UnderstandEvaluationMeasuresandHypothesisTesting.
CO5	UnderstandEnsembleMethods,ClusteringandGraphicalModels.

ProgramOutcomes(POs):

PO 1	Applytheknowledgeofmathematics,science,engineering fundamentalsandprinciples ofInformationTechnology tosolveproblems in differentdomains.

PO 2	Analyze a problem,identify andformulatethecomputing requirementsappropriatetoitssolution.
PO 3	Design&developsoftwareapplicationsthatmeetthedesiredspecificationswithintherealisticconstra intstoservetheneeds ofthesociety.
PO 4	Design andconductexperiments, aswell astoanalyzeandinterpretdata
PO 5	Useappropriatetechniquesand toolsto solveengineering problems.
PO 6	Understandtheimpactof informationtechnology onenvironmentandtheevolutionandimportanceof greencomputing.
PO 7	Analyzethelocalandglobal impactofcomputingon individual as well ason societyandincorporatetheresultsintoengineering practice.
PO 8	Demonstrateprofessionalethicalpracticesandsocialresponsibilities in globalandsocietalcontexts.
PO 9	Functioneffectivelyas anindividual,and as amember or leader in diverseandmultidisciplinary teams.
PO 10	Communicateeffectively with theengineering communityandwithsocietyatlarge.
PO 11	Understandengineering andmanagementprinciplesandapplytheseto one'sownwork, asamemberandleader in ateam,to manageprojects.
PO 12	Recognizetheneedforupdating theknowledge in thechosen fieldandimbibinglearning to learnskills.

CourseOutcomes(CO)versusProgramOutcomes(PO)

CourseOutcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3			3	3	3						2	3		
CO2	2	3	3	3		2							3		
CO3	3	3			3	3							3		
CO4		3	2	3	2	3						2	3		
CO5	3	3	3	3	3	3							3		

S -Stronglycorrelated,M-Moderatelycorrelated,Blank -Nocorrelation

	AssessmentMethods	Assignment/Quiz/Mid-Test

Teaching- Learning&Evaluation

Week	Topic/Contents	Course Outcomes	Samplequestions	Teaching learning strategy	Assessment method&schedule
1	Abriefintroductiontomachinelearning,SupervisedLearning,UnsupervisedLearning,	CO1	1. Differentiatebetweensupervisedandu	Lecture/ PPT	Assignment-1,Test1Quiz-1
2	ReinforcementLearning,LinearRegression,MultivariateRegression	CO1	1 nsupervisedLearning. sign amodelforthegivendatausinglinearregression	Lecture/ PPT	Assignment-1,Test1Quiz-1
3	LogisticRegression,LinearDiscriminatedAnalysis,WekaTutorial	CO1	1. Explainabout LogisticRegression.	Lecture/ PPT	Assignment-1,Test1Quiz-1
4	PerceptronLearning,SVMFormulation,SVM-Interpretation&Analysis,SVMsforLinearlyNonSeparableData,	CO2	1. Explaintheprocess ofinterpretationandanalysi	Lecture/ PPT	Assignment-1,Test1Quiz-1
5	SVMKernels,SVM-HingeLossFormulation,EarlyModels,BackpropagationI,	CO2	sinSVM. 1. Explainabo utBackpropagatio	Lecture/ PPT	Assignment-1,Test1Quiz-1
6	BackpropagationII,Initialization,Training&Validation	CO2	1. HowtotrainaNN usingBackpropagation	Lecture/ PPT	Assignment1,Test-1 Quiz-1
7	MaximumLikelihoodEstimate,	CO3	1. ExplainaboutBayesian	Lecture/	Assignment-1,
	Priors&MAPEstimate,BayesianP arameterEstimation		Learning.	PPT	Test1Quiz1

8	Test-1				
9	Introduction,RegressionTrees,St oppingCriteria&Pruning,LossFun ctionsforClassification,Categoric alAttributes	CO3	1. Whatispruning?	Lecture/ PPT	Assignment- 2,Test2Quiz-2
10	MultiwaySplits,MissingValues,I mputation&SurrogateSplits,Inst ability,Smoothness &RepeatedSubtrees,Tutorial	CO3	1. Explainaboutsmoothnessa ndrepeatedsubtrees.	Lecture/ PPT	Assignment- 2,Test2Quiz-2
11	EvaluationMeasuresI,Bootstrappin g&CrossValidation,2Class EvaluationMeasures	CO4	1. Whatisbootstrapping?	Lecture/ PPT	Assignment- 2,Test2Quiz-2
12	TheROCCurve,MinimumD escriptionLength &ExploratoryAnalysis	CO4	1. DevelopamodelusingROCC urve.	Lecture/ PPT	Assignment- 2,Test2Quiz-2
13	IntroductiontoHypothesisTesting,B asicConcepts,SamplingDistribution s&theZTest,Student\'sttest,TheTwoSample&PairedSample t-tests,ConfidenceIntervals	CO4	1. Explainabouthypothesist esting.	Lecture/ PPT	Assignment- 2,Test2Quiz-2
14	Bagging,CommitteeMachines&Sta cking,Boosting,GradientBoosting, RandomForest	CO5	1. Whatisbagging?	Lecture/ PPT	Assignment- 2,Test2Quiz-2
15	ThresholdGraphs,TheBIRCHAlg orithm,TheCUREAlgorithm	CO5	1. ExplainBIRCHalgorithm	Lecture/ PPT	Assignment- 2,Test2Quiz-2
16	NaiveBayes,BayesianNetworks,U ndirectedGraphicalModelsIntroduction	CO5	1. ExplainBayesianNetwork.	Lecture/ PPT	Assignment- 2,Test2Quiz-2

17	PotentialFunctions,HiddenMar kovModels,VariableElimination, BeliefPropagation	CO5	1. ExplainBeliefPropagation.	Lecture/ PPT	Assignment- 2,Test2Quiz-2
18	Test-2				
19/20	ENDEXAM				