

Teaching and Evaluation Scheme

T.Y.B. Tech: Semester-VI

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks)		Practical (Marks)		
							Max.	Min. for Passing	Max.	Min. for Passing	
0ADOE305	Open Elective-II	3	-	-	3	ISE I	10	40	20	--	--
						MSE	30			--	--
						ISE II	10			--	--
						ESE	50			--	--
0ADPC306	Computer Vision	3	-	-	3	ISE I	10	40	20	--	--
						MSE	30			--	--
						ISE II	10			--	--
						ESE	50			--	--
0ADPC307	Cloud Computing	3	-	-	3	ISE I	10	40	20	--	--
						MSE	30			--	--
						ISE II	10			--	--
						ESE	50			--	--
0ADPC308	Machine Learning	3	-	-	3	ISE I	10	40	20	--	--
						MSE	30			--	--
						ISE II	10			--	--
						ESE	50			--	--
0ADPE3**	Professional Elective-III	3	-	-	3	ISE I	10	40	20	--	--
						MSE	30			--	--
						ISE II	10			--	--
						ESE	50			--	--
0ADHS507	Universal Human Values-2	2	-	-	2	ISE I	25	10	20	--	--
						ISE-II	25	10		--	--
0ADPC358	Computer Vision Laboratory	-	-	2	1	ISE	--	--	25	10	
						ESE	--	POE	50	20	
0ADPC359	Cloud Computing Laboratory	-	-	2	1	ISE	--	--	25	10	
						ESE	--	OE	25	10	
0ADPC360	Machine Learning Laboratory	-	-	2	1	ISE	--	--	25	10	
						ESE	--	POE	50	20	
0ADPE36*	Professional Elective-III Laboratory	-	-	2	1	ISE	--	--	25	10	



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0ADPR364	Minor Project	--	--	2	1	ISE	--	--	25	10
						ESE	--	PR	50	20
0ADCC399	Value Added Course-6	2	-	-	-	Audit				
Total		19	--	10	22	Total	550		300	
Total Contact Hours/Week: 29 hrs						Total=550+300=850				

Course Category	HS	BS	ES	PC	PE	OE	PR
Credits	02	-	-	12	04	03	01
Cumulative Sum	9	17	18	58	10	06	03

Students should complete internship/industrial training for minimum of four weeks at the end of the semester-VI during summer vacation. The evaluation will be done in semester-VII.

Open Elective-II	
0ADOE305	Deep Learning

Professional Elective - III		Professional Elective – III Laboratory	
0ADPE309	Game Theory In AI	0ADPE361	Game Theory In AI Laboratory
0ADPE310	Intelligent Precision Agriculture	0ADPE362	Intelligent Precision Agriculture Laboratory
0ADPE311	Artificial Intelligence and Robotics	0ADPE363	Artificial Intelligence and Robotics Laboratory



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADOE305 Open Elective – II Deep Learning
Prerequisite/s	Machine Learning Basic calculus (derivatives) Basic linear algebra (matrices, vectors) Basic probability and statistics
Teaching Scheme: Lecture/Tutorial /Practical	3/0/0
Total Contact Hours:	42 Hours
Credits	03
Evaluation Scheme: ISE I / MSE / ISE II /ESE	10/30/10/50

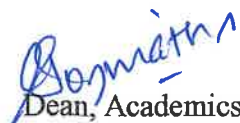
Course Outcomes (COs):	
0ADOE305_1	Describe the fundamentals of neural networks (K2)
0ADOE305_2	Design feed forward networks with back propagation (K3)
0ADOE305_3	Develop different deep learning models for given tasks (K3)
0ADOE305_4	Formulate& analyze the correct parameters and hyper-parameters of
0ADOE305_5	Build real-world applications using deep learning mechanisms and demonstrate effectively with verbal and written skills (K6)

Course Contents

Course Contents:		
Unit No.	Unit Name	Contact Hours
Unit 1	Introduction Shallow feed forward neural networks representation: Multilayer perceptron (MLP), representation power of MLPs, Activation functions: linear & nonlinear activation functions, Derivatives of activation functions	7 Hrs.
Unit 2	Optimization Techniques: Gradient descent and the back propagation algorithm, Saddle point problem in neural networks, the vanishing gradient problem and ways to mitigate it, Regularization methods (dropout, drop connect, batch normalization), ReLU Heuristics for avoiding bad local minima, Heuristics for faster training, Nestors accelerated gradient descent	7 Hrs.



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Unit 3	Convolutional Neural Networks (CNN): Introduction to CNN, blocks of CNN, Transfer Learning, LeNet, AlexNet, ZF-Net, VGGNet, GoogLeNet, ResNet, Visualizing CNNs, Guided Back propagation, Fooling Convolutional Neural Networks.	7 Hrs.
Unit 4	Auto encoders: Auto encoders, Regularization in auto encoders, Denoising autoencoders, Sparse auto encoders, Contractive auto encoders, Regularization: Bias Variance Tradeoff, L2 regularization, Early stopping, Dataset augmentation, Parameter sharing and tying, Injecting noise at input, Ensemble methods.	7 Hrs.
Unit 5	Case Study & Applications of Deep Learning Applications of Deep Learning Computer Vision: Image segmentation, object detection, automatic image captioning, Classification using Convolutional Neural Networks	7 Hrs.
Unit 6	Applications of Deep Learning to NLP : Introduction to NLP and Vector Space Model of Semantics, Word Vector Representations: Continuous Skip-Gram Model, Continuous Bag-of-Words model (CBOW) Applications of Deep Learning to Unsupervised Learning	7 Hrs.

Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Deep Learning	Ian Good fellow	The MIT Press	-	2016
2	Pattern Recognition and Machine Learning	T2. Bishop, C. , M.,	Springer	1st edition	2006
3	Neural Networks: A Systematic Introduction	Raúl Rojas	-	-	1996

Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Deep Learning with Python	Francois Chollet,	Manning Publications	1st	2017



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPC306 Computer Vision
Prerequisite/s	Fundamentals of Digital Image Processing
Teaching Scheme: Lecture/Tutorial /Practical	3/0/0
Total Contact Hours:	42 Hours
Credits	03
Evaluation Scheme: ISE I / MSE / ISE II /ESE	10/30/10/50

Course Outcomes (COs):

0ADPC306_1	Explain the underlying theories and algorithms used in computer vision
0ADPC306_2	Apply the concepts of color image processing, fundamentals of texture analysis, object recognition methods, video processing concepts, 3D imaging
0ADPC306_3	Analyze problems and algorithms to build solutions to the real world computer vision problems
0ADPC306_4	Design algorithms and evaluate results with justification
0ADPC306_5	Understand the concept of Image Enhancement & Applications

Course Contents

Unit No.	Unit Name	Contact Hours
Unit 1	Color Image Processing Color Fundamentals, Color models, Gray level to color transformations, Basics of Color Image Processing, Color Transformations, Smoothing and Sharpening, Color Segmentation	07 Hrs.
Unit-2	Texture Analysis Definition, Types of texture, Texels, Texture analysis – concept and categories, Approaches to texture analysis, Statistics, Texture descriptors - statistical - Auto-correlation, co-occurrence matrices and features, edge density and direction, local binary partition, Law’s texture energy measures, Wavelets and texture analysis.	08 Hrs.



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Unit-3	Representation & Description Representation, Boundary Descriptors, Regional Descriptors, Use of Principal components for description, Relational Descriptors.	06 Hrs.
Unit-4	Object Recognition & Restoration Object Recognition: Object Detection Vs recognition, Patterns and Pattern Classes, Knowledge Representation, Statistical Pattern Recognition, Neural Nets, Syntactic Pattern Recognition, Optimization Techniques in Recognition. Restoration: Image Restoration Model, Noise Models, Restoration using spatial filtering, Reduction using frequency domain filtering..	07 Hrs.
Unit-5	Moving Object Detection and Tracking Introduction, Background Modeling, Connected Component Labeling, Shadow Detection, Single Object Tracking, Discrete Kalman Filtering, Particle-filter based tracking, Mean-shift tracking, Segmentation tracking via graph cuts	07 Hrs.
Unit-6	3D Vision Introduction to 3D imaging and its applications. Study of any Research Paper(s) based on the current trends in 3D imaging or any case study.	07 Hrs.

Text Books:

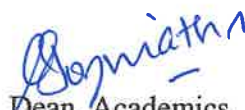
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Digital Image Processing	Gonzalez R. C., Woods R. E	PHI, Second Edition	-	2002
2	Digital Image Processing and Computer Vision	Sonka Milan, Vaclav Hlavac, Boyle	Cengage Learning	3rd	2013

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Digital Image Processing	S. Jayaraman, S. Esakkirajan, T. Veerkumar	Tata McGraw Hill	3rd	2010
2	Computer Vision – A Modern approach.	D. A. Forsyth, J. Ponce	Pearson Education, Prentice Hall		2005



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPC307 Cloud Computing
Prerequisite/s	Computer Organization & Databases
Teaching Scheme: Lecture/Tutorial /Practical	3/0/0
Total Contact Hours:	42 Hours
Credits	03
Evaluation Scheme: ISE I / MSE / ISE II /ESE	10/30/10/50

Course Outcomes (COs):	
0ADPC307_1	Interpret the basic concepts of Cloud Computing and there evaluation
0ADPC307_2	Analyze the service oriented architecture. Identify the virtualization, Virtualization flexibility in disaster recovery.
0ADPC307_3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models
0ADPC307_4	Understand the concepts of inter cloud, Identify the cloud Security challenges
0ADPC307_5	Recognize the Hadoop and Map Reduce, identify the levels of federation, services, future of federation
0ADPC307_6	Interpret the what are the vitalization system, attacks in datasecurity, IAM Architecture

Course Contents		
Unit No.	Unit Name	Contact Hours
Unit-1	Introduction Introduction to Cloud Computing , Definition of Cloud , Evolution of Cloud Computing , Underlying Principles of Parallel and Distributed Computing , Cloud Characteristics , Elasticity in Cloud , On-demand Provisioning.	07 Hrs.
Unit-2	Cloud Enabling Technologies Service Oriented Architecture , REST and Systems of Systems , Web Services , Basics of Virtualization , Types of Virtualization , Implementation Levels of Virtualization , Virtualization Structures , Tools and Mechanisms, Virtualization of CPU – Memory – I/O Devices , Virtualization Support and Disaster Recovery.	07 Hrs.
Unit-3	Cloud Architecture, Services And Storage Layered Cloud Architecture Design , NIST Cloud Computing Reference	07 Hrs.

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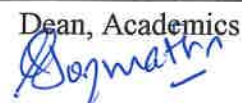
	Architecture , Public, Private and Hybrid Clouds , IaaS, PaaS, SaaS , Cloud Storage , Storage-as-a-Service , Advantages of Cloud Storage , Cloud Storage Providers.	
Unit-4	Resource Management And Security In Cloud Inter Cloud Resource Management , Resource Provisioning and Resource Provisioning Methods , Global Exchange of Cloud Resources , Security Overview , Cloud Security Challenges , Software-as-a-Service Security , Security Governance , Virtual Machine Security IAM , Security Standards	07 Hrs.
Unit-5	Cloud Technologies And Advancements Hadoop, Map Reduce – Virtual Box , Google App Engine, Programming Environment for Google App Engine , Open Stack, Federation in the Cloud, Four Levels of Federation, Federated Services and Applications , Future of Federation.	07 Hrs.
Unit-6	Cloud Security Virtualization System, Specific Attacks: Guest hopping, VM migration attack, hyper jacking. Data Security and Storage, Identity and Access Management (IAM) - IAM Challenges, IAM Architecture and Practice.	07 Hrs.

Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Distributed and Cloud Computing, From Parallel Processing to the Internet of Things"	Kai Hwang, Geoffrey C. Fox	Morgan Kaufmann Publishers	2nd	2012
2	Cloud Computing: Implementation, Management and Security	John W James F. Ransome	CRC Press	3rd	2017

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of
					Edition
1	Mastering Cloud Computing	Buyya, Vecchiola and Selvi	McGraw Hill Education	2nd	2017
2	Cloud Computing: A Practical Approach", McGraw Hill Education	Toy Velte, Antony Velte	Tata Mcgraw Hill	2nd	2009
3	Cloud Application Architectures: Building Applications and Infrastructure	George Reese			2009


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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPC308 Machine Learning
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial /Practical	3/0/0
Total Contact Hours:	42 Hours
Credits	03
Evaluation Scheme: ISE I / MSE / ISE II /ESE	10/30/10/50

Course Outcomes (COs):

0ADPC308_1	Understand the machine learning concepts
0ADPC308_2	Understand the supervised and unsupervised learning algorithms in ML
0ADPC308_3	Implement the Regression and classification algorithms
0ADPC308_4	Solve machine learning problems using advance machine learning technique.
0ADPC308_5	Use different machine learning libraries

Course Contents:

Unit No.	Unit Name	Contact Hours
Unit 1	Machine Learning Basics Introduction to Machine Learning (ML) , Essential concepts of ML – ,Types of learning , Machine learning methods based on Time , Dimensionality ,Linearity and Non linearity Early trends in Machine learning.	7 Hrs.
Unit 2	Supervised Learning What is supervised learning Regression: K-Nearest Neighbor, Linear Regression, Logistic Regression, Ridge Regression, Bayesian Linear Regression Classification: – k-Nearest Neighbors , Decision Trees ,Random Forest model ,Support Vector Machines.	7 Hrs.



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Unit 3	Unsupervised Learning Mixture Models and EM ,K-Means Clustering – Dirichlet Process Mixture Models ,Spectral Clustering ,Hierarchical Clustering, The Curse of Dimensionality ,Dimensionality Reduction , Principal Component Analysis ,Latent Variable Models(LVM) ,Latent Dirichlet Allocation (LDA).	7 Hrs.
Unit 4	Advanced Learning Reinforcement Learning ,Representation Learning , Neural Networks , Active Learning , Ensemble Learning , Bootstrap Aggregation , Boosting , Gradient Boosting Machines	7 Hrs.
Unit 5	Machine Learning In Practice Ranking , Recommendation System , Designing and Tuning model pipelines- Performance measurement , Azure Machine Learning , Open-source Machine Learning libraries , Amazon’s Machine Learning Tool Kit: Sage maker	7 Hrs.
Unit 6	Applications Of Machine Learning Image Recognition, Speech Recognition, Email spam and Malware Filtering, Online fraud detection, Medical Diagnosis.	7 Hrs.

Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Introduction to Machine Learning	EthemAlpaydin	Prentice Hall of India	3 rd Edition	2015
2	Master machine learning algorithms	Jawson Browleen	Machine Learning Mastery, 2016	-	2016
3	Introduction to Machine Learning	Prentice Hall of India,	-	3rd Edition	2015
4	Machine Learning	Tom Mitchell	McGraw-Hill	-	2017



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Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Pattern Recognition and Machine Learning	Christopher M. Bishop	Springer Publications	-	2011
2	Artificial Intelligence: A Modern Approach	Stuart Jonathan Russell	Prentice Hall	3rd Edition	2020
3	Machine Learning Dummies	John Paul Muller, Luca Massaron	Wiley Publications	2016 Edition	2021



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Annasaheb Dange College of Engineering and Technology
Artificial Intelligence and Data Science Department

Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPE309 Professional Elective III: Game Theory in AI
Prerequisite/s	Neural Networks & Fuzzy logic & Natural Language processing
Teaching Scheme: Lecture/Tutorial /Practical	3/0/0
Total Contact Hours:	42 Hours
Credits	03
Evaluation Scheme: ISE I / MSE / ISE II /ESE	10/30/10/50

Course Outcomes (COs):	
0ADPE309_1	Analyze the concept of Games and Solutions appropriation tools
0ADPE309_2	Understand the basics of Game theory to provide insights.
0ADPE309_3	Study the basic concepts for Fundamentals of SQL Language
0ADPE309_4	Apply the Theoretical Knowledge of Computer Science and Computational
0ADPE309_5	Understands the various Platform and Games application

Course Contents:		
Unit No.	Unit Name	Contact Hours
Unit 1	Introduction: Introduction Making rational choices: basics of Games strategy preferences payoffs Mathematical basics Game theory Rational Choice Basic solution concepts-non-cooperative versus cooperative games Basic computational issues finding equilibrium and learning in games- Typical application areas for game theory (e.g. Google's sponsored search, eBay auctions, electricity trading markets)	07 Hrs.
Unit-2	Games with Impact Information Games with Imperfect Information- Bayesian Games Motivational Examples- General Definitions- Information aspects Illustrations- Extensive Games with	07 Hrs.

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	Imperfect Information Strategies- Nash Equilibrium Repeated Games- the Prisoner's Dilemma Bargaining-Games with Perfect Information — Strategic games — prisoner's dilemma, matching pennies - Nash equilibria —mixed strategy equilibrium — zero-sum games	
Unit-3	Games with Imperfect Information Games with Imperfect Information- Bayesian Games -Motivational Examples- General Definitions - Information aspects - Illustrations -Extensive Games with Imperfect - Information - Strategies -Nash Equilibrium -Repeated Games -The Prisoner's Dilemma- Bargaining.	09 Hrs.
Unit-4	Mechanism Design Aggregating Preferences Social Choice Formal Model -Voting Existence of social functions –Ranking systems Protocols for Strategic Agents: Mechanism Design Mechanism design with unrestricted preference.	07 Hrs.
Unit-5	Non-Cooperative Game Theory- Self-interested agents - Games in normal Form-Analyzing games: from optimality to equilibrium - Computing Solution Concepts of Normal - Form Games- Computing Nash equilibria of two-player, zero-sum games -Computing Nash equilibria of two players, general- sum games - Identifying dominated strategies	07 Hrs.
Unit-6	AI Game Playing and CSP Game theory – optimal decisions in games – alpha-beta search – monte-carlo tree search – stochastic games – partially observable games. Constraint satisfaction problems – constraint propagation – backtracking search for CSP – local search for CSP – structure of CSP	05 Hrs.

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	An Introduction to Game Theory.	M. J. Osborne,	Oxford University Press,	3 rd	2012
2	Game Theory	M. Machler, E. Solan, S. Zamir,	Cambridge University Press	-	2013
3	Algorithmic Game Theory	N. Nisan, T. Roughgarden, E. Tardos, and V. V. Vazirani,	Cambridge University Press	-	2017
4	Games of Strategy,	A.Dixit and S. Skeath,	W W Norton & Co Inc,	2 nd	2004


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Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	"Game Theory in Wireless and Communication Networks"	Zhu Han, Dusit Niyato, Walid Saad, Tamer Basar and Are Hjorungnes	Cambridge University, Press		2012



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPE310 Professional Elective III: Intelligent precision Agriculture
Prerequisite/s	--
Teaching Scheme: Lecture / Tutorial / Practical	3/0/0
Total Contact Hours:	42 Hours
Credits	3
Evaluation Scheme: ISE I / MSE / ISE II / ESE	10/30/10/50

Course Outcomes (COs):	
Upon successful completion of this course, the student will be able to:	
0ADPE310_1	Understand the applications of AI in agriculture
0ADPE310_2	Understand how a greenhouse can be automated and its advantages.
0ADPE310_3	Analyze weather models, their inputs and applications.
0ADPE310_4	Implement AI tools and techniques in agriculture
0ADPE310_5	Developing innovative processes, products, and technologies to meet the challenges in agriculture and farming practices

Course Contents:		
Unit No.	Unit Name	Contact Hours
Unit 1	Introduction To Precision Farming History of Mechanized Agriculture - Farming Operations and Related Machines - Tillage, Planting Cultivation, and Harvesting, Agricultural Automation	07 Hrs.
Unit 2	Precision Agriculture Sensors – types and agricultural applications, Global Positioning System (GPS) - GPS for civilian use, GIS and mapping software, Yield mapping systems, Crop production modeling, Indian Geo Systems	07 Hrs.
Unit 3	Environment Control Systems Artificial light systems, management of crop growth in greenhouses, simulation of CO2 consumption in greenhouses, on-line measurement of plant growth in the greenhouse, models of plant production.	07 Hrs.



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Unit 4	Agricultural Systems Management and Public Policies Agricultural systems – managerial overview, Reliability of agricultural systems, Simulation of crop growth and field operations, Research& Development, Need for improved measurement methods, New approaches to research in agriculture	07 Hrs.
Unit 5	Weather Prediction Models Importance of climate variability and seasonal forecasting, Understanding and predicting world’s climate system, Global climatic models and their potential for seasonal climate forecasting, General systems approach to applying seasonal climate forecasts.	07 Hrs.
Unit 6	AI Tools and Techniques expert systems like IS, DIS, Crop Doctor(CD), Drone technology using AI for agriculture, Image Processing, ecommerce, e-governance, Artificial intelligence and decision support systems.	07hrs

Text Books:					
Sr.No	Title	Author	Publisher	Edition	Year of Edition
1	Precision Agriculture in the 21st Century	National Research Council	National Academies Press, Canada	-	1997
2	Engineering Principles of Agricultural Machines	Ajit K. Srivastava, Carroll E. Goering, Roger P. Rohrbach, Dennis R. Buckmaster	ASAE Publication,	-	2006
3	Drone Technology in Architecture, Engineering and Construction: A Strategic Guide to Unmanned Aerial Vehicle Operation and Implementation	<u>Daniel Tal, John Altschuld</u>	John Wiley & Sons, Inc.	-	2021



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Reference Books:					
Sr.No	Title	Author	Publisher	Edition	Year of Edition
1	Agricultural Systems Management	Peart R.M., and Shoup W. D.	Marcel Dekker, New York	-	2004
2	Applications of Seasonal Climate	Hammer, G.L., Nicholls, N., and Mitchell, C.,	Springer, Germany	-	2000



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Artificial Intelligence and Data Science Department

Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPE311- Professional Elective III: Artificial Intelligence and Robotics
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	3/0/0
Total Contact Hours:	42 Hours
Credits	03
Evaluation Scheme: ISE I / MSE / ISE II /ESE	10/30/10/50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

0ADPE311_1	Understand the concept of Artificial Intelligence and methods of solving problems using Artificial Intelligence (k2).
0ADPE311_2	Apply appropriate AI methods to solve assembly problem (k3).
0ADPE311_3	Identify appropriate AI planning methods to solve a given problem (k4).
0ADPE311_4	Implement basic AI algorithms for Speech recognition and making decisions(k5)
0ADPE311_5	Develop learning algorithms for autonomous driving tasks (k5).

Course Contents:

Unit No.	Unit Name	Contact Hours
Unit 1	Introduction Types of Robot–Technology-Robot classifications and specifications- controls, operations, Sensors - work cell - Programming languages. History, state of the art, Need for AI in Robotics. Thinking and acting humanly, intelligent agents, structure of agents.	08 Hrs.
Unit 2	Problem Solving: Solving problems by searching –Informed search and exploration–Constraint satisfaction problems–Adversarial search, knowledge and reasoning– knowledge representation – first order logic.	07 Hrs.

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Unit 3	Planning Planning with forward and backward State space search – Partial order planning – Planning graphs– Planning with propositional logic – Planning and acting in real world.	06 Hrs.
Unit 4	Reasoning Uncertainty – Probabilistic reasoning–Filtering and prediction–Hidden Markov models–Kalman filters– Dynamic Bayesian Networks, Speech recognition, making decisions.	07 Hrs.
Unit 5	Learning Forms of learning – Knowledge in learning – Statistical learning methods – reinforcement learning, communication, perceiving and acting, Probabilistic language processing, perception. Usage of learning algorithms in autonomous driving tasks	07 Hrs.
Unit 6	Ai In Robotics Introduction to Genetic algorithm (GA) and Artificial Neural Network (ANN). Robotic assembly sequence planning and generation using AND/OR Graph and GA. Robotic perception, localization, mapping- configuring space, planning uncertain movements, Application of ANN in industrial and mobile robots.	07 Hrs.

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Artificial Intelligence: A modern approach	Stuart Russel	Pearson Education		2009
2	Artificial Intelligence: A guide to Intelligent Systems	Negnevitsky, M,	Harlow: Addison-Wesley,		2011

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Artificial Intelligence: Foundations of Computational Agents	David L. Poole and Alan K. Mackworth	Cambridge University Press		2010
2	Artificial Intelligence: A Systems Approach	Tim Jones M,	Jones & Bartlett Learning.	1st edition	2008



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3	A first course in Artificial Intelligence	Deepak Khemani	McGraw Hill, India		2018
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Alternative NPTEL/SWAYAM Course:

S. No.	NPTEL Course Name	Instructor	Host Institute
1	An Introduction to Artificial Intelligence	Prof. Mausam	IIT Delhi
2.	Artificial Intelligence	Prof. Sudeshna Sarkar	IIT Kharagpur
3.	Introduction to Robotics	Prof. Asokan T, Prof. Balaraman Ravindran, Prof. Krishna Vasudevan	IIT Madras
4.	Robotics	Prof. Dilip Kumar Pratihar	IIT Kharagpur



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADHS507 Universal Human Values- II
Prerequisite/s	Students Induction Program (SIP), UHV-I
Teaching Scheme: Lecture/Tutorial/Practical	2/0/0
Total Contact Hours:	28 Hours
Credits	02
Evaluation Scheme: ISE I/ ISE II	25/25

Course Outcomes (COs):	
Upon successful completion of this course, the student will be able to:	
0ADHS507_1	Integrate the process of self-exploration to achieve Harmony in the human being's based on Holistic perspective of value education.
0ADHS507_2	Understanding Harmony in human being, family, society and nature /existence, based on methods to fulfill human aspiration
0ADHS507_3	Apply the human values for maintaining the relationships with oneself and others using the principals of harmony
0ADHS507_4	Adopt the professional ethics as an individual based on holistic understanding of harmony
0ADHS507_5	Apply the holistic technologies and strategies for one self-based on universal human orders.

Course Contents:		
Unit No.	Course Contents	Hours
Unit 1	Introduction to Universal Human Value Content and Process for Value Education, Self-Exploration, Basic Human Aspirations of Continuous Happiness and Prosperity, Correct priority of Right understanding, Relationship and Physical Facility, Holistic development	04
Unit 2	Harmony in the Human Being Human being as a co-existence of the self and Body. Needs, activities, response of self and body. Sanyam and Health	03



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<p>Unit 3</p>	<p>Understanding Harmony in the Family and Society Harmony in Human -Human Relationship, Nine universal values in relationships and Justice in relationship. Understanding the harmony in the society: comprehensive Human Goals, human order systems and dimensions. Process of Development - In an environment of Relationship and domination Understanding the harmony in the society (society being an extension of family): comprehensive Human Goals. Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.</p>	<p align="center">07</p>
<p>Unit 4</p>	<p>Harmony in the Nature and Existence - Whole existence as Coexistence Understanding the harmony in the Nature, Interconnectedness and mutual fulfilment among the four orders of nature recyclability and self-regulation in nature. Understanding Existence as Co-existence of mutually interacting units in all pervasive space, Holistic perception of harmony at all levels of existence. Include practice sessions to discuss human being as cause of imbalance in nature (film “Home” can be used), pollution, depletion of resources and role of technology etc.</p>	<p align="center">06</p>
<p>Unit 5</p>	<p>Implications of Holistic Understanding of Harmony on Professional Ethics Natural acceptance of human values, Definitiveness of Ethical Human Conduct, Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order, Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people friendly and eco-friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems.</p>	<p align="center">04</p>



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Unit 6	<p>Case studies of typical holistic technologies and Strategies Case studies of typical holistic technologies, management models and production systems Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations</p>	04
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Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Understanding Human Being, Nature and Existence Comprehensively	UHV Team	UHV	1 st	2022
02	A Foundation Course in Human Values and Professional Ethics	R. R. Gaur, R. Asthana, G P Bagaria	Excel Books	2 nd	2019
03	Teachers' Manual for A Foundation Course in Human Values and Professional Ethics	R. R. Gaur, R. Asthana, G P Bagaria	Excel Books,	2 nd	2019
04	Human Values	A.N Tripathy	New Age International	2 nd	2006

Reference Books / Handbooks

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	A Foundation Course in Human Values and Professional Ethics	R.R. Gaur, R. Sangal, G.P. Bagaria	Excel Books	3 rd	2010
02	Indian Ethos and Modern Management: Amalgam of the Best of the Ideas from the East and the West	B.L. Bajpai	New Royal Book	1 st	2004
03	Small Is Beautiful	E. F. Schumacher	Hartley & Marks	1 st	1999
04	An Introduction to Ethics	William Lilly	Allied	1 st	1967



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPC358 Computer Vision Laboratory
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	01
Evaluation Scheme: ISE / ESE	25/50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

0ADPC358_1	Apply the concepts of color image processing, fundamentals of texture analysis
0ADPC358_2	Implement object recognition methods, video processing concepts, 3D imaging
0ADPC358_3	Compare different algorithms and build solutions to the real world computer vision problems.
0ADPC358_4	Understand the Fundamental Image Processing Techniques for Computer Vision
0ADPC358_5	Apply knowledge of computer vision to real life scenarios.

Course Contents:

Expt. No.	Title of Experiment	Contact Hours
1.	Image Classification: Implement a convolutional neural network (CNN) to classify images into different categories (e.g., cats vs. dogs, digits, or various objects).	4 Hrs.
2.	Object Detection: Use models like YOLO (You Only Look Once) or Faster R-CNN to detect and locate multiple objects within an image.	4 Hrs.
3.	Facial Recognition: Develop a system to recognize and identify individuals' faces from images or live video streams.	4 Hrs.
4.	Image Segmentation: Utilize techniques like U-Net or Mask R-CNN to segment images into meaningful regions or identify specific objects' boundaries.	4 Hrs.
5.	Image Super-Resolution: Enhance the resolution of low-resolution images using deep learning models to generate higher-quality versions.	4 Hrs.
6.	Optical Character Recognition (OCR): Build a system that can extract text from images or documents and convert it into editable text.	4 Hrs.

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Digital Image Processing	Gonzalez R. C., Woods R. E	PHI, Second Edition	2 nd	2002

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2	Digital Image Processing	Sonka Milan, Vaclav Hlavac,	Cengage Learning	3rd	2013
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Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Digital Image Processing	S. Jayaraman, S. Esakkirajan, T. Veerkumar	Tata McGraw Hill	-	2010
2	Computer Vision – A Modern approach	D. A. Forsyth, J. Ponce,	Pearson Education, Prentice Hall,		2005
3	Computer Vision	Linda Shapiro, George C. Stockman	Prentice Hall	-	2000



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPC359 Cloud Computing Laboratory
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE/ESE	25/25

Course Outcomes (COs):	
Upon successful completion of this course, the student will be able to:	
0ADPC359_1	Analyze virtual box with different OS and virtual machine (k4)
0ADPC359_2	Understanding the concept of Virtual Machine and Use of Google app engine (k3)
0ADPC359_3	Remembering the Google Search Engine & Articulate GAE for web application (k3)
0ADPC359_4	Executing the cloud scenario (k3)
0ADPC359_5	Building Hadoop node and simple application(k6)
0ADPC359_6	Analyze case studies of cloud scenarios (k4)

Course Contents:		Contact hours
1.	Introduction to cloud computing.	2 Hrs
2.	Install Virtual box /VMware Workstation with different flavors of Linux or windows Oson top of windows7 or 8.	2 Hrs
3.	Install a C compiler in the virtual machine created using virtual box and execute Simple Programs	2 Hrs
4.	Install Google App Engine. Create hello world app and other simple web applications using python/java.	2 Hrs
5.	Use GAE launcher to launch the web applications.	2 Hrs
6.	Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim.	2 Hrs
7.	Find a procedure to transfer the files from one virtual machine to another virtual machine	2 Hrs
8.	Find a procedure to launch virtual machine using trystack (Online Openstack Demo Version)	2 Hrs
9.	Install Hadoop single node cluster and run simple applications like wordcount.	2 Hrs
10	Use GAE launcher to launch the web applications.	2 Hrs
11	Case Study: PAAS(Facebook, Google App Engine)	2 Hrs

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12	Case Study: Student can undertake any one case study on public or private cloud	2 Hrs
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Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Distributed and Cloud Computing, From Parallel Processing to the Internet of Things"	Kai Hwang, Geoffrey C. Fox	Morgan Kaufmann Publishers		2012
2	Cloud Computing: Implementation, Management and Security	John W James F. Ransome	CRC Press		2017

Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Mastering Cloud Computing	Buyya, Vecchiola and Selvi	McGraw Hill Education	-	2017
2	Cloud Computing: A Practical Approach", McGraw Hill Education	Toy Velte, Antony Velte	Tata Mcgraw Hill	-	2009
3	Cloud Application Architectures: Building Applications and Infrastructure in the Cloud	George Reese	-	-	2009



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Course Details:

Class	T. Y. B. Tech. / Semester VI
Course Code and Course Title	0ADPC360 Machine Learning Laboratory
Prerequisite/s	Probability and Programming languages.
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE /POE	25/50

Course Outcomes (COs):	
Upon successful completion of this course, the student will be able to:	
0ADPC360_1	Analyze the use of machine Learning libraries,& Preprocessing techniques(K3)
0ADPC360_2	Use of Support vector machine (k3)
0ADPC360_3	Articulate the use of neural network(k3)
0ADPC360_4	Executing a Bayesian network (k3)
0ADPC360_5	Building character recognition using Multilayer Perceptron (k6)
0ADPC360_6	Building machine learning algorithm for problem solving (k6)

Course Contents:		Contact hours
1.	Write a python program to import and export data using Pandas library functions	2 Hrs
2.	Demonstrate various data pre-processing techniques for a given dataset	2 Hrs
3.	Implement the concept of decision trees with suitable data set from real world problem and classify the data set to produce new sample.	2 Hrs
4.	Detecting Spam mails using Support vector machine	2 Hrs
5.	Implement facial recognition application with artificial neural network	2 Hrs
6.	Study and implement Amazon toolkit: Sage maker	2 Hrs
7.	Implement character recognition using Multilayer Perception	2 Hrs
8.	Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.	2 Hrs
9.	Implement sentiment analysis using random forest optimization algorithm	2 Hrs
10	Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.	2 Hrs
11	Choose best machine learning algorithm to implement online fraud detection	2 Hrs
12	Mini-project: students work in team on any socially relevant problem that needs a machine learning based solution, and evaluate the model performance	2 Hrs


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Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Introduction to Machine Learning	Ethem Alpaydin	Prentice Hall of India	3 rd Edition	2015
2	Master machine learning algorithms	Jawson Browleen	Machine Learning Mastery, 2016	-	2016
3	Introduction to Machine Learning	Prentice Hall of India,		3 rd Edition	2015
4	Machine Learning	Tom Mitchell	McGraw-Hill	-	2017

Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Pattern Recognition and Machine Learning	Christopher M. Bishop	Springer Publications	-	2011
2	Artificial Intelligence: A Modern Approach	Stuart Jonathan Russell	Prentice Hall	3 rd Edition	2020
3	Machine Learning Dummies	John Paul Muller, Luca Massaron	Wiley Publications	2016 Edition	2021



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPE361 Game theory in AI Laboratory
Prerequisite/s	-
Teaching Scheme: Lecture /Tutorial /Practical	0/0/2
Credits	01
Evaluation Scheme: ISE	25

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:


0ADPE361_1	Understand the notion of strategic thinking and rational choice by using the tools of game theory, and modeling applications
0ADPE361_2	Introduce the student to the notion of a game, its solutions concepts, and other basic notions and tools of game theory,
0ADPE361_3	Apply game theory in searching, auctioning and trading.
0ADPE361_4	Analyze and Distinguish a game situation from a pure individual decision problem
0ADPE361_5	Understand the Sequential game tree, backward induction to solve problems.

Course Contents:

Expt. No.	Title of Experiment	Contact Hours
1	Write a Game theory Code for AI The Prisoner's Dilemma Game theory problem	2 Hrs
2	Write a AI Code to satisfy Rock-Paper-Scissors Game theory problem	2 Hrs
3	Write a AI Code for Violations of Nash Equilibrium Game theory problem	2 Hrs
4	Write a AI Code for Logic Regression with Linear Effects & OLS with Non-Linear Effects	2 Hrs
5	Write a OLS with Linear Effects including Subject Fixed Effects	2 Hrs
6	Write a CODE Games with infinite strategy sets & C condensed Best Response Digraphs for Symmetric Games	2 Hrs
7	Implementation of Alpha-Beta Tree Search for any game search problem	2 Hrs
8	Develop an Elementary Chabot for any suitable customer interaction application	2 Hrs
9	Implementation of Greedy Search Algorithm for the following application: Single-Source Shortest Path algorithm.	2 Hrs
10	Implementation of A* Search Algorithm for any game search problem	2 Hrs



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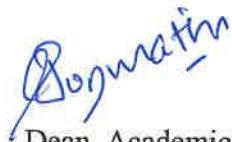
11	Implementation of Greedy Search Algorithm for the following application: Single-source Shortest path problem.	2 Hrs
12	Write a Code for Prisoner's dilemma.	2 Hrs

Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	An Introduction to Game Theory.	M. J. Osborne,	Oxford University Press,	3 rd	2012
2	Game Theory	M. Machler, E. Solan, S. Zamir,	Cambridge University Press	-	2013
3	Algorithmic Game Theory	N. Nisan, T. Roughgarden, E. Tardos, and V. V. Vazirani,	Cambridge University Press	-	2017
4	Games of Strategy,	A. Dixit and S. Skeath,	W W Norton & Co Inc,	2 nd	2004

Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	"Game Theory in Wireless and Communication Networks"	Zhu Han, Dusit Niyato, Walid Saad, Tamer Basar and Are Hjorungnes	Cambridge University, Press		2012



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Course Details:

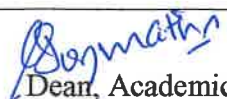
Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPE362 Intelligent Precision Agriculture Laboratory
Prerequisite/s	-
Teaching Scheme: Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	25

Course Outcomes (COs):	
Upon successful completion of this course, the student will be able to:	
0ADPE362_1	Understanding the Basic Principles of Mendalian Inheritance
0ADPE362_2	To demonstrate an ability to engage in critical thinking by analyzing situations and constructing and selecting viable solutions to solve problems.
0ADPE362_3	To demonstrate an understanding of and appreciation for the importance of the impact of globalization and diversity
0ADPE362_4	To understand and analyze the current events and issues that are occurring in agriculture and how they affect futuristic agriculture
0ADPE362_5	Knowledge of Weather codes and Symbols, Reading and Recording of weather and climatic data

Course Contents:		
Expt. No.	Title of Experiment	Contact Hours
1	Soil and water monitoring system using AI, GPS and ZigBee	2 Hrs
2	Soil fertility map by GIS	2 Hrs
3	Monitoring the crop from plantation to cultivation	2 Hrs
4	Fertilizer sprayers using Arduino	2 Hrs
5	Monitoring using Arduino	2 Hrs
6	Multispectral remote sensing for soil mapping	2 Hrs
7	Creation of productivity and management zone by GIS	2 Hrs
8	VRT technique for fertilizer recommendation.	2 Hrs
9	Agriculture survey by GPS and DGPS	2 Hrs
10	Implementation of A* Search Algorithm for any game search problem	2 Hrs



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11	Drone based experiment	2 Hrs
12	Micro Project	2 Hrs

Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	National Research Council, "Precision Agriculture in the 21st Century",	H. Krug, Liebig	National Academies Press,	Second Edition	1997

Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	"Agricultural Systems Management	Hammer, G.L., Nicholls, N., and Mitchell, C.,	Marcel Dekker,	2 ND	2004
2	"Applications of Seasonal Climate"	Peart, R.M., and Shoup, W. D.,	Springer, Germany	2 ND	2000



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPE363- Artificial Intelligence and Robotics Laboratory
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	01
Evaluation Scheme: ISE	25

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

0ADPE363_1	Use of any robotic simulation software to model the different types of robots and calculate work volume for different robots (k3)
0ADPE363_2	Apply Feature Extraction, Image pre-processing algorithm in real time robot(k3).
0ADPE363_3	Analyze and implement search strategies (k4).
0ADPE363_4	Evaluate systems with logical reasoning (k5)
0ADPE363_5	Evaluate systems with probabilistic reasoning (k5)

Course Contents:

Expt. No.	Title of Experiment	Contact Hours
1	Implement basic search strategies – 8-Puzzle, 8 - Queens problem, Cryptarithmic	2 Hrs
2	Implement A* Search algorithm	2 Hrs
3	Implement AO* Search algorithm.	2 Hrs
4	Implement Minimax algorithm for game playing (Alpha-Beta pruning)	2 Hrs
5	Implement propositional model checking algorithms	2 Hrs
6	Robot programming and simulation for pick and place.	2 Hrs
7	Robot programming and simulation for Color identification.	2 Hrs
8	Robot programming and simulation for Shape identification.	2 Hrs
9	Robot programming and simulation for writing practice/3D printing.	2 Hrs
10	Robot programming and simulation for multi process	2 Hrs
11	Study on different kinds of vision sensors and lighting techniques.	2 Hrs
12	Micro project: Pre-processing techniques in image processing.	2 Hrs

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Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	A Classical Approach to Artificial Intelligence	M.C. Trivedi	Khanna Book Publishing	-	2019
2	Artificial Intelligence.	Rich and Knight	The McGraw Hill	3rd	2017
3	Introduction to AI Robotics	Robin R. Murphy	MIT press	2 nd	2001
4	Robotics: Everything You Need to Know About Robotics from Beginner to Expert	Peter McKinnon	Create space Independent Publishing Platform	-	2016

Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Artificial Intelligence: A modern approach	Stuart Russel	Pearson Education	-	2010
2	Artificial Intelligence	Luger	Pearson Education	-	2002
3	Robotics, Vision and Control: Fundamental Algorithms in MATLAB	Peter Corke	Springer	-	2011
4	Artificial Intelligence for Robotics: Build intelligent robots that perform human tasks using AI techniques	Francis X. Govers	Packt Publishers	-	2018



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Course Details:

Class	TY B. Tech., Sem. VI
Course Code and Course Title	0ADPR364- Minor Project
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	01
Evaluation Scheme: ISE/ESE	25/50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

0ADPR364_1	Identify Specific Problem Statement from a selected domain. (K3)
0ADPR364_2	Analyze the hardware and/or software requirements of the proposed work (k4).
0ADPR364_3	Identify and use relevant tools and technologies for documentation, designing coding, testing and debugging software/hardware retaining to their major project (k3)
0ADPR364_4	Defend or argue or appraise the results obtained during project work (K5)
0ADPR364_5	Design and construct a software system, component or process to meet desired needs (k6)

Course Details

1.	Mini project topics and the work for these groups in the batch shall be divided into mini project groups.
2.	Mini project topics and the work for these groups in the hatch shall be guided by a teacher for the batch, preferably on one of the topics which is selected by the students in his/her domain
3.	Allematively, a group may select another topics of relevance in consultation with senior students and teachers.
4.	A group shall undertake IBM TGMC (The Great Mind Challenge) projects, past Smart India Hackathon, KPIT Sparkle topic or the topic related to the courses the students have studied/studying
5.	The teacher shall periodically assess the performance of individual student in the mini project jointly with a teacher of another batch.
6.	Project group shall submit hardcopy of project report along with related code and documentation in soft form at the end of the semester.



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Course Details:

Class	B. Tech., Sem. VI
Course Code and Course Title	0ADCC399/VAC-6/Reasoning and Soft Skills Part-II
Prerequisite/s	VAC
Teaching Scheme: Lecture/Tutorial/Practical	2/0/0
Credits	02
Evaluation Scheme: ISE I / MSE / ISE II /ESE	--

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

0ADCC399_1	Understand to Provide Students an Understanding of the Expectations
0ADCC399_2	Analyze and Improve the Employability skills
0ADCC399_3	Apply the Knowledge of Industry aspects
0ADCC399_4	Understand and Improve the Employability Skills of Students
0ADCC399_5	Apply and ability holistic perspective gain more knowledge

Course Contents:

Unit No.	Unit Name	Contact Hours
Unit 1	Advance Probability Advance Permutation Combination	5 Hrs
Unit 2	Statement Assumption Syllogism	5 Hrs.
Unit 3	Mixed Bar Graph, Pie Chart Data Interpretation (Avg & Ratio Proportion based)	4 Hrs.
Unit 4	Gaming Round OR Capgemini Part 1 Gaming Round OR Capgemini Part 2	4 Hrs.
Unit 5	Company Specific Revision for Arithmetic (S.T.D., Time Rate Work) Revision of Calendar Reminder theorem Power Cycle	5 Hrs.
Unit 6	Verbal Ability Revision Part 1 Verbal Ability Revision Part 2 Interview Etiquettes & Grooming	5 Hrs.



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