CS-VII

B. TECH. VII SEMESTER COMPUTER SCIENCE & ENGG.							
COURSE CONTENTS (UEC SCHEME)							
CS8301	Cloud Computing & Applications	L	T	P	C	Max. Marks	Min. Marks
Duration	3 Hours	2	1	2	4	70	22

Course Objective:

This course gives students an insight into the basics of cloud computing along with virtualization, Cloud computing is one of the fastest growing domain from a while now. It will provide the students Basic understanding about cloud and virtualization along with it how one can migrate over it.
Course Contents:

Syllabus:

UNIT -I:
Origins of Cloud computing – Cloud components - Essential characteristics – On-demand self-Service, Broad network access, Location independent resource pooling, rapid elasticity, measured Service, Comparing cloud providers with traditional IT service providers, Roots of cloud computing.

UNIT-II:
Architectural influences – High-performance computing, Utility and Enterprise grid computing, Cloud scenarios – Benefits: scalability, simplicity, vendors, security, Limitations – Sensitive Information - Application development- security level of third party - security benefits, Regularity Issues: Government policies.

UNIT- III:
Layers in cloud architecture, Software as a Service (SaaS), features of SaaS and benefits, Platform as a Service (PaaS), features of PaaS and benefits, Infrastructure as a Service (IaaS), features of IaaS And benefits, Service providers, challenges and risks in cloud adoption. Advantages of Cloud computing.

UNIT-IV:
Introduction to Simulator, understanding CloudSim simulator, CloudSim Architecture (User code, CloudSim, GridSim, SimJava) Understanding Working platform for CloudSim, Introduction to GreenCloud.

UNIT-V:
Basics of VMWare, advantages of VMware virtualization, using Vmware workstation, creating virtual Machines-understanding virtual machines, create a new virtual machine on local host, cloning virtual Machines virtualize a physical machine, starting and stopping a virtual machine.

Course Outcomes:

At the end of the course, the student would be able to:-

1. Understand theoretical and practical aspects of Cloud Computing & Applications.
2. Study and identify various issues related to the development of Cloud Computing & Applications.
3. Understand the design aspects of object-oriented Cloud Computing & Applications.

Text Books:

1. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter, TATA McGraw- Hill , New Delhi – 2010
2. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008

References Books:

3. Cloud computing for dummies- Judith Hurwitz , Robin Bloor , Marcia Kaufman ,Fern Halper, Wiley Publishing, Inc, 2010
4. Cloud Computing (Principles and Paradigms), Edited by Rajkumar Buyya, James Broberg, Andrzej Goscinski, John Wiley & Sons, Inc. 2011

List of Experiment:

1. Install Virtual box/VMware Workstation with different flavors of Linux or windows OS on top Of windows7 or 8.
2. Install a C compiler in the virtual machine created using virtual box and executes Simple Programs
3. Install Google App Engine. Create hello world app and other simple web applications using python/java.
4. Use GAE launcher to launch the web applications.
5. Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim.
6. Find a procedure to transfer the files from one virtual machine to another virtual machine.
7. Find a procedure to launch virtual machine using try stack (Online Open stack Demo Version)
8. Install Hadoop single node cluster and run simple applications like word count.

ME-8347

B.Tech. VIII SEMESTER MECHANICAL ENGINEERING							
COURSE CONTENTS (AICTE FLEXIBLE CURRICULA) OEC-IV							
OEC - IV ~~**ME-8337**~~	**Robotics**	**L**	**T**	**P**	**C**	**Max. Marks**	**Min. Marks**
Duration	3 Hours	3	-	-	3	70	22

Course Outcomes:

At the end of the course:

1. Students would able to configure degrees of freedom, topology, parameterization, task space, and workspace.
2. The students shall give competence in designing and implementation of robot systems.
3. The course shall give knowledge about Industrial robots, Robot kinematics, coordinate frames, and Robot dynamics.
4. In the programming stage of Robot building, students work on various combinations of computer programming codes. They write, test, run, find an error and fix the issues in their codes

Unit-I

Introduction: Need and importance, basic concepts, structure and classification of industrial robots, terminology of robot motion, motion characteristics, resolution, accuracy, repeatability, robot applications.

Unit-II

End Effectors and Drive systems: Drive systems for robots, salient features and comparison, different types of end effectors, design and applications.

Unit-III

Sensors: Sensor evaluation and selection, piezoelectric sensors, linear position and displacement sensing, revolvers, encoders, velocity measurement, proximity, tactile, compliance and range sensing. Image Processing and object recognition.

Unit-IV

Robot Programming: Teaching of robots, manual, walk through, teach pendant, off line programming concepts and languages, applications.

Unit-V

Safety and Economy of Robots: Work cycle time analysis, economics and effectiveness of robots, safety systems and devices, concepts of testing methods and acceptance rule for industrial robots.

References:

1. Mittal RK, Nagrath IJ; Robotics and Control; TMH
2. Groover M.P, Weiss M, Nagel, OdreyNG; Industrial Robotics-The Appl; TMH
3. Groover M.P; CAM and Automation; PHI Learning
4. Spong Mark and Vidyasagar; Robot Modeling and control; Wiley India
5. Yoshikava; Foundations of Robotics- analysis and Control; PHI Learning;
6. Murphy; Introduction to AI Robotics; PHI Learning
7. FU KS, Gonzalez RC, Lee CSG; Robotics Control, sensing; TMH
8. Shimon, K; Handbook of Industrial Robots; John Wiley & Sons,
9. Ghosal Ashitava; Robotics Fundamental concepts and analysis; Oxford
10. Saha S; Introduction to Robotics; TMH
11. Yu Kozyhev; Industrial Robots Handbook; MIR Pub.

2021-22 session

B.TECH. VIII SEMESTER COMPUTER SCIENCE & ENGG.							
COURSE CONTENTS (UEC SCHEME)							
CS831X	Artificial Intelligence	L	T	P	C	Max. Marks	Min. Marks
Duration		2	1	2	4	70	22

Course Description:

Artificial intelligence (AI) is a research field that studies how to realize the intelligent human behaviours on a computer. AI include: problem solving, reasoning, planning, natural language understanding, computer vision, automatic programming, machine learning, and so on. The ultimate goal of AI is to make a computer that can learn, plan, and solve problems autonomously. The course covers the theory and applications of neural networks, fuzzy logic, evolutionary strategies and genetic algorithms in developing intelligent systems with examples.

Course Objective

- Introduce the basic principles of AI towards problem solving, inference, perception, knowledge representation and learning. Fundamentals of artificial and neural networks, fuzzy sets and fuzzy logic and genetic algorithms.
- Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural Networks and other machine learning models.
- Explore the current scope, potential, limitations, and implications of intelligent systems.
- To have a basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language.

Syllabus

Unit - I: Overview & Search Techniques:

Introduction to AI, Problem Solving, State space search, Blind search: Depth first search, Breadth first search, Informed search: Heuristic function, Hill climbing search, Best first search, A* & AO* Search, Constraint satisfaction. Game tree, Evaluation function, Mini-Max search, Alpha-beta pruning, Games of chance.

Unit - II: Knowledge Representation (KR):

Introduction to KR, Knowledge agent, Predicate logic, WFF, Inference rule & theorem proving forward chaining, backward chaining, resolution; Propositional knowledge, Boolean circuit agents. Rule Based Systems, Forward reasoning: Conflict resolution, backward reasoning: Use of Back tracking, Structured KR: Semantic Net - slots, inheritance, Frames- exceptions and defaults attached predicates, Conceptual Dependency formalism and other knowledge representations.

Unit - III: Neural Networks

Neuron, Artificial Neuron and its model, activation functions, Neural network architecture: single layer and multilayer feed forward networks, recurrent networks. Various learning techniques; perception and convergence rule, Auto-associative and hetro-associative memory. Architecture: perceptron model, solution, single layer artificial neural network, multilayer perception model; back propagation learning methods, effect of learning rule co-efficient ;back propagation algorithm, factors affecting backpropagation training, applications.

Unit - IV: Fuzzy Logic

Basic concepts of fuzzy logic, Fuzzy sets and Crisp sets, Fuzzy set theory and operations, Properties of fuzzy sets, Fuzzy and Crisp relations, Fuzzy to Crisp conversion. Membership functions, interference in fuzzy logic, fuzzy if-then rules, Fuzzy implications and Fuzzy algorithms, Fuzzyfications & Defuzzificataions, Fuzzy Controller, Industrial applications.

Unit - V: Genetic Algorithm

Basic concepts, working principle, procedures of GA, flow chart of GA, Genetic representations, (encoding) Initialization and selection, Genetic operators: Crossover, Mutation, Generational Cycle, GA optimization problem, applications.

Course Outcomes:

After successful completion of the course, students will be able

- Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
- Demonstrate proficiency in applying scientific method to models of machine learning and to building intelligent systems through soft computing techniques.
- Recognize the feasibility of applying a soft computing methodology for a particular problem.
- Develop intelligent machines to provide solutions to real world problems, which are not modelled or too difficult to model mathematically.
- Exploit the tolerance for Approximation, Uncertainty, Imprecision, and Partial Truth in order to achieve close resemblance with human like decision making.

Text Books:-

- Artificial Intelligence by Elaine Rich and Kevin Knight, Tata McGraw Hill.
- Introduction to Artificial Intelligence and Expert Systems by Dan W.Patterson, Prentice Hall of Ind
- Principles of Soft Computing- S N Sivanandam, S N Deepa, Wiley India, 2007.
- Soft Computing and Intelligent System Design -Fakhreddine 0 Karray, Clarence D Silva, Pe 2004.

Reference Books:-

- Principles of Artificial Intelligence by Nils J.Nilsson, Narosa Publishing house.