

B.TECH VII SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	1505701	Big Data Technologies	PJ	3	1	0	30	70	3
2.	1505702	Cloud Computing	PJ	4	0	0	30	70	3
3.	1505703	Artificial Intelligence	PJ	4	0	0	30	70	3
4.	1505704	Software Testing	PJ	4	0	0	30	70	3
5.	1505705 1505706 1505707	CBCC-III i. Computer Graphics ii. Mobile Computing iii. Natural Language Processing	PJ	3	1	0	30	70	3
6.	1505708	Internet of Things	PJ	4	0	0	30	70	3
7.	1505709	Software Testing Lab	PJ	0	0	3	50	50	2
8.	1505710	Internet of Things Lab	PJ	0	0	3	50	50	2
		Total:		22	2	6	280	520	22

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S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	1505801	Software Project Management	PJ	4	0	0	30	70	3
2.	1505802	Ethical Hacking	PJ	4	0	0	30	70	3
3.	1525803	Management Science	PN	3	1	0	30	70	3
4.	1505804 1505805 1505806	CBCC-IV i. Digital Image Processing ii. Social Network Mining and Analysis iii. Soft Computing	PJ	4	0	0	30	70	3
5.	1505807	Technical Seminar	PJ	0	0	0	100	-	4
6.	1505808	Project Work	PJ	4	0	0	50	50	10
		Total:		19	1	0	270	330	26

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(1505701)Big Data Technologies

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Course Objectives:

- To introduce big data concepts
- Understanding Hadoob
- Understanding Big data Applications (HBASE, HIVE)

UNIT - I

Introduction to Big Data, Why is Big Data, Why Big Data is important, Meet Hadoop, Data, Data Storage and Analysis, Comparison with other systems, Grid Computing, A brief history of Hadoop, Apache Hadoop and the Hadoop Ecosystem, Linux refresher; VMWare Installation of Hadoop.

UNIT - II

The Design of HDFS, HDFS Concepts, Command Line interface to HDFS Hadoop File Systems, Interfaces, Java Interface to Hadoop, Anatomy of a file read, Anatomy of a file write, Replica placement and Coherency Model, Parallel copying with distcp, Keeping an HDFS cluster balanced,

UNIT - III

Introduction, Analyzing data with unix tools, Analyzing data with Hadoop, Java MapReduce classes(new API), Data flow, combiner functions, Running a distributed MapReduce job, Configuration API, Setting up the developing environment, Managing configuration, Writing a unit test with MRUnit, Running a job in local job runner, Running on a cluster, Launching a job, The MapReduce WebUI.

UNIT - IV

Class MapReduce, Job submission, Job initialization, Task Assignment, Task execution, Progress and status updates, Job Completion, Shuffle and sort on Map and Reducer side, Configuration tuning, Map Reduce types, Input formats, Sorting, Map side and Reduce side joins.

UNIT - V

The Hive Shell, Hive services, Hive clients, The meta store, comparison with traditional databases, Hive QL, Hbasics, Concepts, implementation, Java and Map reduce clients, Loading Data, Web queries.

Text Books:

1. Tom White, Hadoop, "The Definitive Guide" , 3rd Edition, O'Reilly Publications, 2012
2. Dirk deRoos, Chris Eaton, George Lapis, Paul Zikopoulos, Tom Deutsch, "Understanding Big Data Analytics for Enterprise class Hadoop and Streaming Data", 1st Edition, TMH, 2012.

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(1505702)CLOUD COMPUTING

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Course Objective:

- To explain the cloud paradigms.
- To introduce the various levels of services that can be achieved by cloud.
- To know about service providers of cloud.

Course Outcomes:

- Understand the evolution of cloud computing paradigm and its architecture.
- Explain and characterize different cloud deployment models and service models.
- Identify the service providers in cloud computing.

UNIT I:

Computing Paradigms:

High-Performance Computing, Parallel Computing, Distributed Computing, Cluster Computing, Grid Computing, Cloud Computing, Biocomputing, Mobile Computing, Quantum Computing, Optical Computing, Nano computing, Network Computing.

Cloud Computing Fundamentals:

Motivation for Cloud Computing: The Need for Cloud Computing. Defining Cloud Computing: NIST Definition of Cloud Computing, Computing Is a Service, Cloud Computing Is a Platform. Principles of Cloud computing: Five Essential Characteristics, Four Cloud Deployment Models, Three Service Offering Models, Cloud Ecosystem, Requirements for Cloud Services, Cloud Application, Benefits and Drawbacks.

UNIT II:

Cloud Computing Architecture and Management : Cloud Architecture, Anatomy of the Cloud, Network Connectivity in Cloud Computing, Applications on the Cloud, Managing the Cloud, Migrating Application to Cloud.

UNIT III:

Cloud Deployment Models : Private Cloud, Public Cloud, Community Cloud, Hybrid Cloud

Cloud Service Models : Infrastructure as a Service, Platform as a Service, Software as a Service, Other Cloud Service Models

UNIT IV:

Programming Models in Cloud : Cloud Application Development Platforms: Windows Azure, Google App Engine, Force.com, Manjrasoft Aneka

Cloud Computing APIs: Rackspace, IBM, Intel

Software Development in Cloud : Introduction, Different perspectives on SaaS development, New challenges, Cloud aware software development using PaaS technology

Unit V:

Networking for Cloud Computing : Introduction, Overview of Data Center Environment, Networking Issues in Data Centers.

Cloud Service Providers : Introduction, EMC, Google, Amazon Web Services, Microsoft, IBM, Salesforce, Rackspace

Text books:

1. K. Chandrasekaran, Essentials of Cloud Computing, CRC Press, 2015

Reference books:

1. Barrie Sosinsky, Cloud Computing Bible, Wiley-India, 2010
2. RajkumarBuyya, James Broberg, Andrzej M. Goscinski, Cloud Computing: Principles and Paradigms, Wiley, 2011
3. Nikos Antonopoulos, Lee Gillam, Cloud Computing: Principles, Systems and Applications, Springer, 2012

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(1505703)ARTIFICIAL INTELLIGENCE

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Course Objectives:

- To understand how a computer making intelligent decisions.
- To understand the searching techniques
- To know the knowledge representation and learning
- To enable the students to apply these techniques in application which involve perception, reasoning and learning
- To know the features of expert systems.

UNIT I

Introduction to Artificial Intelligence; Problem, Problem Spaces and Search; Heuristic Search Techniques.

UNIT II

Knowledge Representation Issues, Predicate Logic, Representing Knowledge using Rules.

UNIT III

Symbolic Reasoning under Uncertainty, Statistical Reasoning.

UNIT IV

Weak Slot-and-Filler Structures, Strong Slot-and-Filler Structures, Knowledge Representation Summary.

UNIT V

Game Playing, Natural Language Processing, Expert Systems

TEXT BOOKS:

1. Elain Rich, Kevin Knight and Shivashankar B Nair, Artificial Intelligence, 3rd Edition, Tata McGraw Hill, 2009.

REFERENCE BOOKS:

1. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 2nd Edition, Pearson Education, 2003.
2. Padhy N P, Artificial Intelligence and Intelligent Systems, Oxford University Press, 2005.

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(1505704)SOFTWARE TESTING

Course Objectives:

- Basic software debugging methods.
- Various testing methodologies.
- The procedure for designing test cases.
- The significance of software testing

UNIT I

Introduction: Purpose of testing, Dichotomies, Model for testing, Consequences of bugs, Taxonomy of bugs.

Flow graphs and Path testing: Path testing basics, Predicates, Path Predicates and Achievable paths, Path Sensitizing, Path Instrumentation, and Application of path testing.

UNIT II

Paths, Path products and Regular expressions: Path products & Path expression, Reduction Procedure, Regular Expressions & Flow Anomaly Detection.

Dataflow testing: Basics of dataflow testing, Strategies in dataflow testing, Application of dataflow testing.

UNIT III

Domain Testing: Domains and Paths, Nice & Ugly Domains, Domain Testing, Domains and Interfaces Testing, Domains and Testability.

Logic Based Testing: Overview, Decision Tables, and Path Expressions.

UNIT IV

State, State Graphs and Transition Testing: State Graphs, Good & Bad State Graphs, State Testing.

Transaction Flow Testing: Transaction Flows, Transaction Flow Testing Techniques.

UNIT V

Graph Matrices and Application: Matrix of Graph, Power of a Matrix, Node Reduction Algorithm, Win runner Testing Tool.(Student should have exposure to the win runner testing tool).

TEXT BOOKS:

1. Software Testing techniques, Boris Beizer, Dreamtech, Second Edition.
2. Software Testing Tools, Dr.K.V.K.K.Prasad, Dreamtech.

REFERENCE BOOKS:

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing, Third Edition, P.C.Jorgensen, Aurbach Publications (Dist.by SPD).
3. Software Testing, N.Chauhan, Oxford University Press.
4. Introduction to Software Testing, P.Ammann and J.Offutt, Cambridge Univ. Press.
5. Effective methods of Software Testing, Perry, John Wiley, Second Edition, 1999.
6. Software Testing Concepts and Tools, P.Nageswara Rao, Dreamtech Press.
7. Software Testing, M.G.Limaye, TMH.
8. Software Testing, Desikan, G.Ramesh, Pearson.
9. Foundations of Software Testing, D.Graham and Others, Cengage Learning.
10. Foundations of Software Testing, A.P.Mathur, Pearson.

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(1505705) COMPUTER GRAPHICS

Course Objectives:

- To apply the rules and algorithms in generating graphical outputs.
- To develop multi-dimensional objects using suitable transformations.
- To Develop real-time rendering graphics.

Introduction: Usage of Graphics and their applications, Presentation Graphics- Computer Aided

Design- Computer Art- Entertainment- Education and Training- Visualization- Image Processing Graphical User Interfaces.

Overview of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems Graphics monitors and workstations-Input devices-hard copy devices- Graphics software.

UNIT II

Scan Converting Lines – Basic Incremental algorithm, Midpoint algorithm and additional issues; Scan converting Circles, Scan Converting Ellipses, Solid Filling, Pattern Filling, Thick Primitives, Cohen – Sutherland line clipping algorithm, Parametric line clipping algorithms, Sutherland – Hodgeman polygon clipping algorithm, Generating characters.

UNIT III

Geometrical transformations – 2D transformations, Homogeneous coordinates, Matrix representation of 2D transformations, Composition of 2D transformations, Window to view-port transformation, Matrix representation of 3D transformations, Composition of 3D transformations.

Representing Curves and Surfaces – Polygon meshes, Parametric cubic curves, Parametric bicubic surfaces and Quadratic surfaces.

UNIT IV

Viewing in 3D – Projections, Specifying an arbitrary 3D view.

Solid Modeling – Representing Solids, Regularized Boolean set operations, Primitive instancing, Sweep Representation, Boundary Representations, Spatial-Partitioning Representations.

Achromatic and Colored Light – Achromatic light, Chromatic color, Color models for raster graphics, Reproducing color, Using color in computer graphics.

UNIT V

Illumination Models – Ambient light, Diffuse reflection, Atmospheric attenuation.

Shading Models – Constant shading, Interpolated shading, Polygon mesh shading, Gouraud shading, Phong shading.

Animation – Conventional and Computer-Assisted animation, Animation languages, Methods of controlling animation, Basic rules of animation, Problems peculiar to animation.

TEXT BOOKS:

1. Foley, Van Dam, Feiner and Hughes, Computer Graphics – Principles and Practice, 2nd Edition in C, Pearson Education, 2004
2. Donald Hearn and M. Pauline Baker, Computer graphics, C version, Prentice – Hall, 1997.

REFERENCE BOOKS:

1. William M. Newman, Robert F. Sproull, Principles of interactive computer graphics, 12th Edition, McGraw – Hill, 1986
2. David F. Rogers, Rae A. Earnshaw, Computer Graphics Techniques : Theory and Practice, Springer-Verlag, 1990
3. Computer Graphics using Open GL by Francis S Hill Jr Pearson Education, 2004

(1505706)MOBILE COMPUTING (MCP)

UNIT I:

Wireless transmission: Frequencies for radio transmission, Signals, Antennas, Signal propagation, Multiplexing, Modulation, Spread spectrum, Cellular systems.

UNIT II:

Medium access control: Motivation for a Specialized MAC, SDMA, FDMA, TDMA, CDMA, Comparison of S/T/F/CDMA.

UNIT III:

Telecommunications System: GSM, DECT, TETRA.

UNIT IV:

Wireless LAN: Infrared Vs Radio Transmission, Infra Red and ad-hoc network, IEEE 802.11.

UNIT V:

Mobile Network Layer: Mobile IP, Dynamic host Configuration protocol. Mobile Transport Layer: Traditional TCP, Classical TCP improvements.

Text Books:

1. Jochen Schiller [2008], [Second Edition], Mobile Communications, Low price edition Pearson Education.

Reference books:

1. Talukder [2008], Mobile Computing: Technology, Applications & service creation, TMH.

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(1505707) NATURAL LANGUAGE PROCESSING

Objectives

Upon completion, students will be able to explain and apply fundamental algorithms and techniques in the area of natural language processing (NLP). In particular, students will:

- Understand approaches to syntax and semantics in NLP.
- Understand current methods for statistical approaches to machine translation.
- Understand language modeling.
- Understand machine learning techniques used in NLP

UNIT I

Introduction to Natural Language Understanding, Syntactic Processing: Grammars and Parsing

UNIT II:

Features and Augmented Grammars, Toward Efficient Parsing, Ambiguity Resolution.

UNIT III

Statistical Methods: Probabilistic Context-Free Grammars, Best-First Parsing.

UNIT IV

Semantic Interpretation: Linking Syntax and Semantics, Ambiguity Resolution, other Strategies for Semantic Interpretation.

UNIT V

Context and World Knowledge: Using World Knowledge, Discourse Structure, Defining a Conversational Agent.

TEXT BOOK:

1. Natural Language Understanding – James Allen, Second Edition, Pearson Education.

REFERENCE BOOKS:

1. Speech and Language Processing – Daniel Jurafsky, James H.Martin.

2. Foundations of Statistical Natural Language Processing – Christopher Manning, Hinrich Schutze, MIT Press.

3. Charniack, Eugene, Statistical Language Learning, MIT Press, 1993.

4. Jurafsky, Dan and Martin, James, Speech and Language Processing, 2nd Edition, Prentice Hall, 2013-2014

5. Manning, Christopher and Henrich, Schutze, Foundations of Statistical Natural Language Processing, MIT Press, 1999.

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(1505708) INTERNET OF THINGS

Course Objective: This course provides an overview on basic principles of IOT, various IOT platforms and application development.

Course Outcomes:

- Understand the basic principles of IoT.
- Differentiate the features of various IoT platforms.

UNIT I:

INTRODUCTION TO IoT:

Definition and Characteristics of IoT, Physical Design of IoT, Logical Design of IoT, IoT Enabling Technologies, IoT Levels and Development Templates

UNIT II:

DOMAIN SPECIFIC IoTS

Introduction, Home Automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health & Lifestyle

UNIT III:

IOT and M2M:

Introduction, M2M, Difference between IoT and M2M, SDN and NFV for IoT

IoT Platform Design Methodology:

Introduction, IoT Design Methodology, Case Study on IoT System for Weather Monitoring

UNIT IV:

Logical Design using Python:

Introduction, Installing Python, Python Data types and Data Structures, Control Flow, Functions, Modules, Packages, File Handling, Data/Time Operations, classes, Python packages of Internet for IoT.

UNIT V:

IOT Physical Devices:

What is an IOT device, basic building blocks of an IOT device, Exemplary device: Raspberry Pi, about the board, linux on raspberry Pi, raspberry Pi interfaces.

Text books:

1. ArshdeepBahga, Vijay Madiseti “ Internet of Things(A hands on approach)” 1ST edition, VPI publications,2014.

Reference Book:

1. Raj Kamal, “Internet of Things”, McGraw Hill, 1st Edition, 2016.

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(1505709) SOFTWARE TESTING LAB

Course Objectives:

This course helps the students to understand the procedure of testing. Student can come to know how to write the Test Cases in order to test the application. This course helps the students to know how to write the Testing Document. The course helps the student to learn the working of the Win runner Testing Tool.

1. Write programs in 'C' Language to demonstrate the working of the following constructs:
 - i) do...while
 - ii) while
 - iii) if...else
 - iv) switch
 - v) for
2. A program written in 'C' language for Matrix Multiplication fails. Introspect the causes for its failure and write down the possible reasons for its failure.
3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
4. Write the test cases for any known application (e.g. Banking application)
5. Create a test plan document for any application (e.g. Library Management System)
6. Study of Win runner and its implementation. How Win Runner identifies GUI (Graphical User Interface) objects in an application and describes the two modes for organizing GUI map files.

7. How to record a test script and explains the basics of Test Script Language (TSL) using Win runner Testing Tool.

8. How to create a test that checks GUI objects and compare the behavior of GUI objects in different versions of the sample application using Win runner testing tool.

9. How to create and run a test that checks bitmaps in a application and run the test on different versions of the sample application using Win runner testing tool.

10. How to Create Data-Driven Tests which supports to run a single test on several sets of data from a data table using Win runner testing tool.

11. How to create a batch test that automatically runs the tests using Win runner testing tool.

12. How to synchronize a test when the application responds slowly using Win runner testing tool .

TEXT BOOKS:

1. “Software Testing Tools”, Dr.K.V.K.K.Prasad, Dreamtech.
2. “Effective software Testing Methodologies” by William .E. Perry 3rd Edition.

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(1505710) INTERNET OF THINGS LAB

Course Objectives:

- Student should get the knowledge of Python and Eclipse background.
- Student should get the knowledge of Control statements in python
- Student should get the knowledge of Arduino IDE and different types of Arduino Board.
- Student should get the knowledge of Raspberry Pi

Course Outcomes:

- Student will be aware of Python and Eclipse background.
- Student will develop basic programs in python.
- Student will be get knowledge of Arduino IDE & Arduino Boards.
- Student will get knowledge on Raspberry Pi.

Experiments:-

1. Study and Install Python in Eclipse and data types in python.
2. Write a Program for arithmetic operation in Python.
3. Write a Program for looping statement in Python.
4. Study and Install IDE of Arduino and different types of Arduino
5. Digital Output (Blinking of LED)
6. Digital Input (Push Button)
7. Analog Output (Fading)
8. Communication between Computer and Arduino
9. Displaying messages on LCD
10. Servo Motor Control
11. Study and Configure Raspberry Pi
12. Write a Program for LED blink using Raspberry Pi

Books:

1. ArshdeepBahga, Vijay Madiseti “Internet of Things (A hands on approach)” IST edition, VPI publications, 2014
2. Getting Started with Arduino, 3rd Edition, Massimo Banzi and Michael Shiloh
3. Getting Started with Raspberry pi, Matt Richardson & Shawn Wallace, O’Reilly – 2014

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(1505801) SOFTWARE PROJECT MANAGEMENT

Course Objectives:

The main goal of software development projects is to create a software system with a predetermined functionality and quality in a given time frame and with given costs. For achieving this goal, models are required for determining target values and for continuously controlling these values. This course focuses on principles, techniques, methods & tools for model-based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experience-based creation & improvement of models (process management). The goals of the course can be characterized as follows:

1. Understanding the specific roles within a software organization as related to project and process management.
2. Describe the principles, techniques, methods & tools for model-based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experience-based creation & improvement of models (process management).
3. Understanding the basic infrastructure competences (e.g., process modeling and measurement).
4. Understanding the basic steps of project planning, project management, quality assurance.
5. Process management and their relationships.

UNIT I

Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

UNIT II

The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

Life cycle phases: Engineering and production stages, Inception, Elaboration, Construction, Transition phases.

Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, pragmatic artifacts.

Model based software architectures: A Management perspective and technical perspective.

UNIT III

Work Flows of the process: Software process workflows, Iteration workflows.

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT IV

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

UNIT V

Tailoring the Process: Process discriminates.

Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.

Case Study: The command Center Processing and Display system- Replacement (CCPDS-R). Process Improvement and Mapping to the CMM.

TEXT BOOK:

1. Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCE BOOKS :

1. Software Project Management, Bob Hughes and Mike Cotterell, Tata McGraw-Hill Edition.

2. Software Project Management, Joel Henry, Pearson Education.

3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

4. Software Project Management, Shere K.D, 1998,PHI.

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(1505802) ETHICAL HACKING

OBJECTIVES

- To learn about the importance of information security
- To learn different scanning and enumeration methodologies and tools
- To understand various hacking techniques and attacks
- To be exposed to programming languages for security professionals
- To get familiarized with the different phases in penetration testing

UNIT I INTRODUCTION TO HACKING Introduction to Hacking – Importance of Security – Elements of Security – Phases of an Attack – Types of Hacker Attacks – Hacktivism – Vulnerability Research – Introduction to Footprinting – Information Gathering Methodology – Footprinting Tools – WHOIS Tools – DNS Information Tools – Locating the Network Range – Meta Search Engines.

UNIT II SCANNING AND ENUMERATION Introduction to Scanning – Objectives – Scanning Methodology – Tools – Introduction to Enumeration – Enumeration Techniques – Enumeration Procedure – Tools.

UNIT III SYSTEM HACKING Introduction – Cracking Passwords – Password Cracking Websites – Password Guessing – Password Cracking Tools – Password Cracking Counter measures – Escalating Privileges – Executing Applications – Keyloggers and Spyware.

UNIT IV PROGRAMMING FOR SECURITY PROFESSIONALS

Programming Fundamentals – C language – HTML – Perl – Windows OS Vulnerabilities – Tools for Identifying Vulnerabilities – Countermeasures – Linux OS Vulnerabilities – Tools for Identifying Vulnerabilities – Countermeasures.

UNIT V PENETRATION TESTING

Introduction – Security Assessments – Types of Penetration Testing- Phases of Penetration Testing – Tools – Choosing Different Types of Pen-Test Tools – Penetration Testing Tools

TOTAL : 45 PERIODS

OUTCOMES

Upon completion of this course, the student should be able to

- Defend hacking attacks and protect data assets
- Defend a computer against a variety of security attacks using various tools
- Practice and use safe techniques on the World Wide Web

REFERENCES:

1. Ec-Council, “Ethical Hacking and Countermeasures: Attack Phases”, Delmar Cengage Learning,2009.
2. Michael T. Simpson, Kent Backman, James E. Corley, “Hands-On Ethical Hacking and Network Defense”, Cengage Learning, 2012.
3. Patrick Engebretson, “The Basics of Hacking and Penetration Testing – Ethical Hacking and Penetration Testing Made Easy”, Syngress Media, Second Revised Edition, 2013.
4. Jon Erickson, “Hacking: The Art of Exploitation”, No Starch Press, Second Edition, 2008.

(1525803) MANAGEMENT SCIENCE

Course Objective:

- The objective of this course is to equip the student the fundamental knowledge of Management Science and its application to effective management of human resources, materials and operations of an organization. It also aims to expose the students about the latest and contemporary developments in the field of management.

UNIT I

INTRODUCTION TO MANGEMENT:

Concept of Management-Administration, Organization-Function of Management, Evolution of Management Thought-Organization: Principles of Organisation-Types-Organisation charts-managerial objectives and Social responsibilities of Management.

UNIT II

STRATEGIC MANAGEMENT:

Corporate Planning-mission, objectives and programmes-SWOT Analysis-Strategy Formulation and Implementation.-Plant location and Plant Layout concepts-Production control.

UNIT III

HRM AND INVENTORY MANAGEMENT:

Human Resource Management –Manpower Planning-Personnel Management-Basic functions of Personnel Management, Job Evaluation and Merit Rating-Incentive plans.

Inventory Management: Need for Inventory Control; EOQ,ABC Analysis, Purchase Procedure, Maintaining Store Records.

UNIT IV

OPERARIONS MANAGEMENT:

Productivity- Job, Batch and Mass Production-Work Study-Basic procedure involved in Method Study and Work Measurement. Statistical Quality Control-c chart, p chart, R chart, Acceptance sampling Deming’s contribution to Quality.

UNITV

PROJECT MANAGEMENT:

Network Analysis to project management- PERT/CPM- Application of network techniques to engineering problems-Cost Analysis-Project Crashing.

TEXT BOOK:

1.Aryasri: Management Science, TMH, 2008.

REFERENCE BOOKS:

1.Koontz& Weihrich:Essentials of Management,6/e, TMH, 2005

2.Kanishka Bedi:Production and Oerations Management, Oxford University Press, 2004

3.Parnell:Strategic Management, Biztantra, 2003.

4.LS Srinath: PERT/CPM, Affiliated East-West Press, 2005

(1505804)DIGITAL IMAGE PROCESSING

Course Objectives:

- Develop an overview of the field of image processing.
- Understand the Image segmentation, enhancement, compression etc., approaches and how to implement them.
- Prepare to read the current image processing research literature.
- Gain experience in applying image processing algorithms to real problems.

UNIT I

Introduction, Digital Image and its properties – Basic concepts, Image Digitization, Digital Image properties Data structures for Image analysis-Levels of image data representation, Traditional image data structures, Hierarchical structures.

UNIT II

Image Preprocessing – Pixel brightness transformations, Geometric transformation.

Image Restoration -- A Model of Restoration Process, Noise Models, Restoration in the presence of Noise only-Spatial Filtering – Mean Filters: Arithmetic Mean filter, Geometric Mean Filter, Order Statistic Filters – Median Filter, Max and Min filters; Periodic Noise Reduction by Frequency Domain Filtering – Bandpass Filters; Minimum Mean-square Error Restoration.

UNIT III

Color Image Processing -- Color Fundamentals, Color Models, Converting Colors to different models, Color Transformation, Smoothing and Sharpening, Color Segmentation

Morphological Image Processing -- Introduction, Logic Operations involving Binary Images, Dilation and Erosion, Opening and Closing, Morphological Algorithms – Boundary Extraction, Region Filling, Extraction of Connected Components, Convex Hull, Thinning, Thickening

UNIT IV

Segmentation - Introduction, Region Extraction, Pixel-Based Approach, Multi-level Thresholding, Local Thresholding, Region-based Approach, Edge and Line Detection: Edge Detection, Edge Operators, Pattern Fitting Approach, Edge Linking and Edge Following, Edge

Elements Extraction by Thresholding, Edge Detector Performance, Line Detection, Corner Detection.

UNIT V

Linear discrete image transforms – basic theory, fourier transform, Hadamard transform, Discrete cosine transform, Wavelets, Applications of discrete image transforms.

Image data compression – Image data properties, Discrete image transform in image data compression, predictive compression methods, Vector quantization, hierarchical and progressive compression methods, Comparison of compression methods, JPEG and MPEG image compression.

TEXT BOOKS:

1. Milan Sonka, Vaclav Hlavac and Roger Boyle, Image processing, Analysis and Machine Vision, Second Edition, Thomson, Vikas Publishing House.
2. Digital Image Processing 2nd Edition, Rafael C. Gonzalvez and Richard E. Woods.
Published by: Pearson Education.

REFERENCE BOOKS:

1. Digital Image Processing and Computer Vision, R.J. Schalkoff. Published by: John Wiley and Sons, NY.
2. Fundamentals of Digital Image Processing, A.K. Jain. Published by Prentice Hall, Upper Saddle River, NJ

(1505805) SOCIAL NETWORK MINING AND ANALYSIS

OBJECTIVES

- To gain knowledge about the current web development and emergence of social web
- To study about the modeling, aggregating and knowledge representation of semantic web
- To appreciate the use of machine learning approaches for web content mining
- To learn about the extraction and mining tools for social networks
- To gain knowledge on web personalization and web visualization of social networks

UNIT I INTRODUCTION TO SOCIAL NETWORK ANALYSIS AND KNOWLEDGE REPRESENTATION

Introduction to Web - Limitations of current Web – Development of Semantic Web – Emergence of the Social Web - Network analysis - Development of Social Network Analysis - Key concepts and measures in network analysis- Knowledge Representation on the Semantic Web – Ontology languages for the Semantic Web – RDF and OWL - Modeling and aggregating social network data.

UNIT II SOCIAL MEDIA MINING

Data Mining Essential –Data Mining Algorithm - Web Content Mining – Supervised Learning – Decision tree- Naïve Bayesian Text Classification - Support Vector Machines - Ensemble of Classifiers. Unsupervised Learning - K-means Clustering - Hierarchical Clustering –Partially Supervised Learning – Markov Models - Probability-Based Clustering - Classification and Clustering – Vector Space Model – Latent semantic Indexing – Automatic Topic Extraction - Opinion Mining and Sentiment Analysis – Document Sentiment Classification.

UNIT III EXTRACTION AND MINING COMMUNITITES IN WEB SOCIAL NETWORKS

Extracting evolution of Web Community from a Series of Web Archive - Detecting Communities in Social Networks - Definition of Community - Evaluating Communities - Methods for Community Detection & Mining - Applications of Community Mining Algorithms - Tools for Detecting Communities Social Network Infrastructures and Communities -

Decentralized Online Social Networks- Multi- Relational Characterization of Dynamic Social Network Communities.

UNIT IV HUMAN BEHAVIOR ANALYSIS AND PRIVACY ISSUES

Understanding and Predicting Human Behavior for Social Communities - User Data Management, Inference and Distribution - Enabling New Human Experiences - Reality Mining - Context-Awareness - Privacy in Online Social Networks - Trust in Online Environment - Trust Models Based on Subjective Logic - Trust Network Analysis - Trust Transitivity Analysis - Combining Trust and Reputation – Trust Derivation Based on Trust Comparisons - Attack Spectrum and Countermeasures

UNIT V VISUALIZATION AND APPLICATIONS OF SOCIAL NETWORKS

Graph Theory- Centrality- Clustering - Node-Edge Diagrams, Matrix representation, Visualizing Online Social Networks, Visualizing Social Networks with Matrix-Based Representations- Matrix +Node-Link Diagrams, Hybrid Representations - Applications - Covert Networks - Community Welfare –Collaboration Networks - Co-Citation Networks- Recommendation in Social Media: Challenges-Classical Recommendation Algorithms-Recommendation Using Social Context-Evaluating Recommendations.

TOTAL : 45 PERIODS

OUTCOMES:

Upon completion of this course, the student should be able to

- Apply knowledge for current Web development in the era of social Web
- Model, aggregate and represent knowledge for Semantic Web
- Use machine learning approaches for Web Content Mining
- Design extraction and mining tools for Social networks
- Develop personalized web sites and visualization for Social networks

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1. Peter Mika, “Social networks and the Semantic Web”, Springer, 2007.
2. Borko Furht, “Handbook of Social Network Technologies and Applications”, Springer, 2010.
3. Bing Liu, “Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data (Data- Centric Systems and Applications)”, Springer; Second Edition, 2011.

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6. Dion Goh and Schubert Foo, "Social information retrieval systems: emerging technologies and Applications for searching the Web effectively", Idea Group, 2007.
7. Max Chevalier, Christine Julien and Chantal Soulé-Dupuy, "Collaborative and social Information retrieval and access: Techniques for Improved User Modelling", Information Science Reference, 2009.
8. John G. Breslin, Alexandre Passant and Stefan Decker, "The Social Semantic Web", Springer, 2010.

(1505806) SOFT COMPUTING

OBJECTIVES:

- To learn the key aspects of Soft computing and Neural networks
- To study the fuzzy logic components
- To gain insight onto neuro fuzzy modeling and control
- To know about the components and building block hypothesis of genetic algorithm
- To gain knowledge in machine learning through Support Vector Machines

UNIT I INTRODUCTION TO SOFT COMPUTING

Evolution of Computing - Soft Computing Constituents – From Conventional AI to Computational Intelligence - Machine Learning Basics

UNIT II GENETIC ALGORITHMS

Introduction to Genetic Algorithms (GA) – Applications of GA - Building block hypothesis- Representation– Fitness Measures – Genetic Operators-. GA based Machine Learning.

UNIT III NEURAL NETWORKS

Machine Learning using Neural Network, Adaptive Networks – Feed Forward Networks – Supervised Learning Neural Networks – Radial Basis Function Networks - Reinforcement Learning – Unsupervised Learning Neural Networks – Adaptive Resonance Architectures – Advances in Neural Networks.

UNIT IV FUZZY LOGIC

Fuzzy Sets – Operations on Fuzzy Sets – Fuzzy Relations – Membership Functions-Fuzzy Rules and Fuzzy Reasoning – Fuzzy Inference Systems – Fuzzy Expert Systems – Fuzzy Decision Making.

UNIT V NEURO-FUZZY MODELING

Adaptive Neuro-Fuzzy Inference Systems – Coactive Neuro-Fuzzy Modeling – Classification and Regression Trees – Data Clustering Algorithms – Rule base Structure Identification – Neuro-Fuzzy Control – Case Studies.

TOTAL : 45 PERIODS

OUTCOMES:

Upon completion of this course, the student should be able to

- Discuss on machine learning through neural networks
- Apply knowledge in developing a Fuzzy expert system
- Model Neuro Fuzzy system for clustering and classification
- Discover knowledge to develop Genetic Algorithm and Support vector machine based machine learning system

REFERENCES

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani, “Neuro-Fuzzy and Soft Computing”, Prentice-Hall of India, 2002.
2. Kwang H.Lee, “First course on Fuzzy Theory and Applications”, Springer, 2005.
3. George J. Klir and Bo Yuan, “Fuzzy Sets and Fuzzy Logic-Theory and Applications”, Prentice Hall, 1996.
4. James A. Freeman and David M. Skapura, “Neural Networks Algorithms, Applications, and Programming Techniques”, Addison Wesley, 2003.
5. David E.Goldberg, “Genetic Algorithms in Search, Optimization and Machine Learning”, Addison Wesley, 1989.
6. Mitchell Melanie, “An Introduction to Genetic Algorithm”, MIT Press, 1996.
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