VELTECH HIGH TECH

DR RANGARAJAN DR. SAKUNTHALA ENGINEERING COLLEGE

(Owned by Vel Trust 1997)

(AN ISO 9001: 2008 CERTIFIED INSTITUTION)

Accredited By NAAC with 'A' Grade and NBA Accredited Institution

(Approved by AICTE New Delhi and Govt. of Tamil Nadu, Affiliated to Anna University Chennai)

SYLLABUS

WEEKLY SCHEDULE

VII SEMESTER 2017 - 2018

DEPARTMENT OF CSE

IV YEAR DEGREE COURSE

#42, Avadi – Vel Tech Road,
Avadi
Chennai – 600062
Telephone – 044-26840181
E-mail: veltech@vsnl.com
Website : www.velhightech.com

INSTITUTION VISION AND MISSION

Accredited by NAAC with 'A' grade with an impressive score of 3.49.

INSTITUTION VISION

- Elevating well being of humanity by augmenting human resource potential through quality technical education and training

INSTITUTION MISSION

- To effectuate supremacy in technical education through articulation of research and industry practices for social relevance.
- To inculcate the habit of lifelong learning
- To exhibit professional ethics, commitment and leadership qualities

DEPARTMENT VISION

- To emerge as centre for academic excellence in the field of Computer Science and Engineering by exposure to research and industry practices

DEPARTMENT MISSION

- To provide good teaching and learning environment with conducive research atmosphere in the field of Computer Science and Engineering
- To propagate lifelong learning
- To impart the right proportion of knowledge, attitudes and ethics in students to enable them take up positions of responsibility in the society and make significant contributions

PROGRAMME EDUCATIONAL OBJECTIVES (PEOS)

The program educational objectives for the computer science and engineering program describe accomplishments that graduates are expected to attain within four years after graduation.

- Graduates applied their expertise for problem solving, be engaged professionally
- They will be motivated to continue to go for higher studies
- Graduates applied their expertise for problem solving, be engaged professionally
- They will contribute their organizations through leadership and teamwork.
- More specifically, within four years of graduation, the objectives are expertise, engage, leadership and teamwork
-

PROGRAMME OUTCOMES (POS)

- Apply knowledge of mathematics, natural science, engineering fundamentals and system fundamentals, software development, networking & communication, and information assurance & security to the solution of complex engineering problems in computer science and engineering.
- Ability to identify, formulate and analyze complex Computer Science and Engineering problems in the areas of hardware, software, theoretical Computer Science and applications to reach significant conclusions by applying Mathematics, Natural sciences, Computer Science and Engineering principles.
- Design solutions for complex computer science and engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- Ability to use research based knowledge and research methods to perform literature survey, design experiments for complex problems in designing, developing and maintaining a computing system, collect data from the experimental outcome, analyze and interpret valid/interesting patterns and conclusions from the data points.
- Ability to create, select and apply state of the art tools and techniques in designing, developing and testing a computing system or its component.
- Apply ethical principles and commit to professional ethics and responsibilities and norms of computer science and engineering practice.

WEEK DETAILS

SL.NO.	WEEK	FROM	TO
1	WEEK1	24.06.2017	25.06.2017
2	WEEK2	27.06.2017	02.07.2017
3	WEEK3	04.07.2017	09.07.2017
4	WEEK4	11.07.2017	16.07.2017
5	WEEK5	18.07.2017	23.07.2017
6	WEEK6	25.07.2017	30.07.2017
7	WEEK7	01.08.2017	06.08.2017
8	WEEK8	08.08.2017	13.08.2017
9	WEEK9	15.08.2017	20.08.2017
10	WEEK10	22.08.2017	27.08.2017
11	WEEK11	29.08.2017	03.09.2017
12	WEEK12	06.09.2017	10.09.2017
13	WEEK13	12.09.2017	17.09.2017
14	WEEK14	19.09.2017	24.09.2017
15	WEEK15	26.09.2017	01.10.2017
16	WEEK16	03.10.2017	08.10.2017
17	WEEK17	13.10.2017	15.10.2017
18	WEEK18	17.10.2017	22.10.2017

SUBJECT CONTENTS

SL.NO	SUBJECT CODE	SUBJECT NAME
THEORY		
1	CS6701	Cryptography and Network Security
2	CS6702	Graph Theory and Applications
3	CS6703	Grid and Cloud Computing
4	CS6704	Resource Management Techniques
5	CS6003/ IT6801	Ad hoc and sensor networks/ Service Oriented Architecture
6	EC6703/ IT6006	Embedded and real time systems / Data Analytics
PRACTICAL		
7	CS6711	Security Laboratory
8	CS6712	Grid and Cloud Computing Laboratory

TEST / EXAM SCHEDULE

SL.NO	SUBJECT CODE	SUBJECT NAME	UNIT TEST I	UNIT TEST II	Pre Model Exam	MODEL EXAM
1	CS6701	Cryptography and Network Security	14.07.2017 FN	01.08.2017 FN	06.09.2017	04.10.2017
2	CS6702	Graph Theory and Applications	14.07.2017 AN	01.08.2017 AN	07.09.2017	06.10.2017
3	CS6703	Grid and Cloud Computing	15.07.2017 FN	02.08.2017 FN	08.09.2017	08.10.2017
4	CS6704	Resource Management Techniques	15.07.2017 AN	02.08.2017 AN	09.09.2017	13.10.2017
5	CS6003/ IT6801	Ad hoc and sensor networks/Service Oriented Architecture	16.07.2017 FN	03.08.2017 FN	10.09.2017	15.10.2017
6	EC6703/ IT6006	Embedded and real time systems / Data Analytics	16.07.2017 AN	03.08.2017 AN	12.09.2017	17.10.2017

CS6701 CRYPTOGRAPHY AND NETWORK

SECURITY UNIT I: INTRODUCTION

WEEK 1: Services, Mechanisms and attacks-the OSI security architecture-Network security modeL-Classical Encryption techniques (Symmetric cipher model,

WEEK 2: substitution techniques, transposition techniques, steganography). FINITE FIELDS AND NUMBER THEORY: Groups, Rings, Fields-Modular arithmetic

WEEK 3: Euclid's algorithm-Finite fields- Polynomial Arithmetic –Prime numbers-Fermat's and Euler's theorem

WEEK 4: Testing for primality -The Chinese remainder theorem- Discrete logarithms

UNIT II: BLOCK CIPHERS & PUBLIC KEY CRYPTOGRAPHY

WEEK 4: UNIT TEST-I

WEEK 5: Data Encryption Standard-Block cipher principles-block cipher modes of operation-Advanced Encryption Standard (AES)-Triple DES-Blowfish-RC5 algorithm.

WEEK 6: Public key cryptography: Principles of public key cryptosystems-The RSA algorithm-Key management - Diffie Hellman Key exchangeElliptic curve arithmetic-Elliptic curve cryptography.

WEEK 7: UNIT TEST-II

UNIT III HASH FUNCTIONS AND DIGITAL SIGNATURES

Authentication requirement – Authentication function

WEEK 8: MAC – Hash function – Security of hash function and MAC –MD5 - SHA – HMAC

WEEK 9: CMAC - Digital signature and authentication protocols – DSS – EI Gamal – Schnorr

UNIT IV SECURITY PRACTICE & SYSTEM SECURITY

:Authentication applications – Kerberos

WEEK 10: X.509 Authentication services - Internet Firewalls for Trusted System: Roles of Firewalls – Firewall related terminology- Types of Firewalls – Firewall designs - SET for E-Commerce Transactions. Intruder

WEEK 11: Intrusion detection system – Virus and related threats – Countermeasures – Firewalls design principles – Trusted systems – Practical implementation of cryptography and security.

PREMODEL EXAM

WEEK12: PREMODEL EXAM

WEEK 13: **UNIT V E-MAIL, IP & WEB SECURITY**

E-mail Security: Security Services for E-mail-attacks possible through E-mail

- establishing keys privacy-authentication of the source-Message Integrity-Non- repudiation-Pretty Good Privacy-S/MIME. IPSecurity: Overview of IPSec – IP and IPv6-Authentication Header

WEEK 14: r-Encapsulation Security Payload (ESP)-Internet Key Exchange (Phases of IKE, ISAKMP/IKE Encoding). Web Security: SSL/TLS Basic Protocol-computing the keys- client authentication-PKI as deployed by SSLAttacks fixed in v3- Exportability-Encoding-Secure Electronic Transaction (SET).

WEEK 15: MODEL PRACTICALS

REVISION CLASS

WEEK 16: REVISION CLASS

MODEL THEORY EXAM

TEXT BOOK

1. William Stallings, Cryptography and Network Security, 6 th Edition, Pearson Education, March 2013. (UNIT I,II,III,IV).
2. Charlie Kaufman, Radia Perlman and Mike Speciner, **"**Network Security**"**, Prentice Hall of India, 2002. (UNIT V).

REFERENCES

1. Behrouz A. Ferouzan, **"**Cryptography & Network Security**"**, Tata Mc Graw Hill, 2007.
2. Man Young Rhee, **"**Internet Security: Cryptographic Principles**"**, **"**Algorithms and Protocols**"**, Wiley Publications, 2003.
3. Charles Pfleeger, **"**Security in Computing**"**, 4 th Edition, Prentice Hall of India, 2006.
4. Ulysess Black, **"**Internet Security Protocols**"**, Pearson Education Asia, 2000.
5. Charlie Kaufman and Radia Perlman, Mike Speciner, **"**Network Security, Second Edition, Private Communication in Public World**"**, PHI 2002.
6. Bruce Schneier and Neils Ferguson, **"**Practical Cryptography**"**, First Edition, Wiley Dreamtech India Pvt Ltd, 2003.
7. Douglas R Simson **"**Cryptography – Theory and practice**"**, First Edition, CRC Press, 1995.
8. http://nptel.ac.in/.

CS6702 GRAPH THEORY AND APPLICATIONS

UNIT I: INTRODUCTION

WEEK 1: Graphs – Introduction – Isomorphism – Sub graphs – Walks, Paths, Circuits.

WEEK 2: Components – Euler graphs – Hamiltonian paths and circuits

WEEK 3: Trees – Properties of trees – Distance and centers in tree

WEEK 4: Rooted and binary trees.

UNIT II: TREES, CONNECTIVITY & PLANARITY

WEEK 4: UNIT TEST-I

WEEK 5: Spanning trees – Fundamental circuits – Spanning trees in a weighted graph – cut sets – Properties of cut set – All cut sets – Fundamental circuits and cut sets -

Connectivity and separability

WEEK 6: Network flows – 1-Isomorphism – 2-Isomorphism – Combinational and geometric graphs – Planer graphs – Different representation of a planer graph

.

WEEK 7: UNIT TEST-II

UNIT III MATRICES, COLOURING AND DIRECTED GRAPH

Chromatic number – Chromatic partitioning

WEEK 8: Chromatic polynomial – Matching – Covering – Four color problem – Directed graphs – Types of directed graphs

WEEK 9: Digraphs and binary relations – Directed paths and connectedness – Euler Graphs

UNIT IV PERMUTATIONS & COMBINATIONS

Fundamental principles of counting - Permutations and combinations

WEEK 10: Binomial theorem - combinations with repetition - Combinatorial numbers

WEEK 11: Principle of inclusion and exclusion - Derangements - Arrangements with forbidden positions. PREMODEL EXAM

WEEK12: PREMODEL EXAM

WEEK 13: UNIT V GENERATING FUNCTIONS

Generating functions - Partitions of integers - Exponential generating function – Summation operator - Recurrence relations

WEEK 14: First order and second order – Non-homogeneous recurrence relations Method of generating functions. T

WEEK 15: MODEL PRACTICALS

REVISION CLASS

WEEK 16: REVISION CLASS

MODEL THEORY EXAM

TEXT BOOK

1. Narsingh Deo, **"**Graph Theory: With Application to Engineering and Computer Science**"**, Prentice Hall of India, 2003.
2. Grimaldi R.P. **"**Discrete and Combinatorial Mathematics: An Applied Introduction**"**, Addison Wesley, 1994. AULibrary.com 74

REFERENCES:

1. Clark J. and Holton D.A, **"**A First Look at Graph Theory**"**, Allied Publishers, 1995.
2. Mott J.L., Kandel A. and Baker T.P. **"**Discrete Mathematics for Computer Scientists and Mathematicians**"** , Prentice Hall of India, 1996.
3. Liu C.L., **"**Elements of Discrete Mathematics**"**, Mc Graw Hill 1985.
4. Rosen K.H., **"**Discrete Mathematics and Its Applications**"**, Mc Graw Hill, 2007.

CS6703 GRID AND CLOUD COMPUTING

UNIT I: INTRODUCTION

WEEK 1: Evolution of Distributed computing: Scalable computing over the Internet – Technologies for network based systems

WEEK 2: Clusters of cooperative computers - Grid computing Infrastructures – cloud computing

WEEK 3: Service oriented architecture – Introduction to Grid Architecture and standards

WEEK 4: Elements of Grid – Overview of Grid Architecture.

UNIT II: GRID SERVICES

WEEK 4: UNIT TEST-I

WEEK 5: Introduction to Open Grid Services Architecture (OGSA) – Motivation – Functionality Requirements

WEEK 6: Practical & Detailed view of OGSA/OGSI – Data intensive grid service models – OGSA services.

UNIT III VIRTUALIZATION

Cloud deployment models: public, private, hybrid, community

WEEK 8: Categories of cloud computing: Everything as a service: Infrastructure, platform, software - Pros and Cons of cloud computing – Implementation levels of virtualization

WEEK 9: virtualization structure – virtualization of CPU, Memory and I/O devices – virtual clusters and Resource Management – Virtualization for data center automation.

UNIT IV PROGRAMMING MODEL

Open source grid middleware packages – Globus Toolkit (GT4) Architecture , Configuration

WEEK 10: Usage of Globus – Main components and Programming model - Introduction to Hadoop Framework - Mapreduce, Input splitting, map and reduce functions, specifying input and output parameters, configuring and running a job

WEEK 11: Design of Hadoop file system, HDFS concepts, command line and java interface, dataflow of File read & File write. PREMODEL EXAM

WEEK12: PREMODEL EXAM

WEEK 13: UNIT V SECURITY

Trust models for Grid security environment – Authentication and Authorization methods – Grid security infrastructure – Cloud Infrastructure security: network, host and application leve

WEEK 14: Aspects of data security, provider data and its security, Identity and access management architecture, IAM practices in the cloud, SaaS, PaaS, IaaS availability in the cloud, Key privacy issues in the cloud.

WEEK 15: MODEL PRACTICALS

REVISION CLASS

WEEK 16: REVISION CLASS

MODEL THEORY EXAM

TEXT BOOK

1. Kai Hwang, Geoffery C. Fox and Jack J. Dongarra, **"**Distributed and Cloud Computing: Clusters, Grids, Clouds and the Future of Internet**"**, First Edition, Morgan Kaufman Publisher, an Imprint of Elsevier, 2012.

REFERENCES:

1. Jason Venner, **"**Pro Hadoop- Build Scalable, Distributed Applications in the Cloud**"**, A Press, 2009
2. Tom White, **"**Hadoop The Definitive Guide**"**, First Edition. O'Reilly, 2009.
3. Bart Jacob (Editor), **"**Introduction to Grid Computing**"**, IBM Red Books, Vervante, 2005
4. Ian Foster, Carl Kesselman, **"**The Grid: Blueprint for a New Computing Infrastructure 2 nd Edition, Morgan Kaufmann.
5. Frederic Magoules and Jie Pan, **"**Introduction to Grid Computing**"** CRC Press, 2009
6. Daniel Minoli, **"**A Networking Approach to Grid Computing**"**, John Wiley Publication, 2005.
7. Barry Wilkinson, **"**Grid Computing: Techniques and Applications**"**, Chapman and Hall, CRC, Taylor and Francis Group, 2010.

CS6704 RESOURCE MANAGEMENT TECHNIQUES

UNIT I: LINEAR PROGRAMMING

WEEK 1: Principal components of decision problem

WEEK 2: Modeling phases – LP Formulation and graphic solution

WEEK 3: Resource allocation problems – Simplex method

WEEK 4: Sensitivity analysis.

UNIT II: DUALITY AND NETWORKS

WEEK 4: UNIT TEST-I

WEEK 5: Definition of dual problem – Primal – Dual relation ships – Dual simplex methods

WEEK 6: Post optimality analysis – Transportation and assignment model - Shortest route problem.

WEEK 7: UNIT TEST-II

UNIT III INTEGER PROGRAMMING

Cutting plan algorithm

WEEK 8: Branch and bound methods

WEEK 9: Multistage (Dynamic) programming.

UNIT IV CLASSICAL OPTIMISATION THEORY

Unconstrained external problems, Newton – Ralphson method

WEEK 10: Equality constraints – Jacobean methods

WEEK 11: Lagrangian method – Kuhn – Tucker conditions – Simple problems.
PREMODEL EXAM

WEEK12: **PREMODEL EXAM**

WEEK 13: **UNIT V OBJECT SCHEDULING**
Network diagram representation – Critical path method

WEEK 14: Time charts and resource leveling – PERT.

WEEK 15: MODEL PRACTICALS
REVISION CLASS

WEEK 16: REVISION CLASS
MODEL THEORY EXAM

TEXT BOOK:

1. H.A. Taha, "Operation Research", Prentice Hall of India, 2002.

REFERENCES:

1. Paneer Selvam, 'Operations Research', Prentice Hall of India, 2002
2. Anderson 'Quantitative Methods for Business', 8th Edition, Thomson Learning, 2002.
3. Winston 'Operation Research', Thomson Learning, 2003.
4. Vohra, 'Quantitative Techniques in Management', Tata Mc Graw Hill, 2002.
5. Anand Sarma, 'Operation Research', Himalaya Publishing House, 2003.

CS6003 AD HOC AND SENSOR NETWORKS

UNIT I: INTRODUCTION

WEEK 1: Fundamentals of Wireless Communication Technology – The Electromagnetic Spectrum

WEEK 2: Radio propagation Mechanisms – Characteristics of the Wireless Channel

WEEK 3: Mobile ad hoc networks (MANETs) and wireless sensor networks (WSNs) :concepts and architectures

WEEK 4: Applications of Ad Hoc and Sensor networks. Design Challenges in Ad hoc and Sensor Networks.

UNIT II: MAC PROTOCOLS FOR AD HOC WIRELESS NETWORKS

WEEK 4: UNIT TEST-I

WEEK 5: Issues in designing a MAC Protocol- Classification of MAC Protocols- Contention based protocolsContention based protocols with Reservation Mechanisms

WEEK 6: Contention based protocols with Scheduling Mechanisms – Multi channel MAC-IEEE 802.11

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WEEK 7: UNIT TEST-II

UNIT III ROUTING PROTOCOLS AND TRANSPORT LAYER IN AD- HOC WIRELESS NETWORKS

Issues in designing a routing and Transport Layer protocol for Ad hoc networks

WEEK 8: proactive routing, reactive routing (on-demand), hybrid routing

WEEK 9: Classification of Transport Layer solutions-TCP over Ad hoc wireless Networks.

UNIT IV WIRELESS SENSOR NETWORKS (WSNS) AND MAC PROTOCOLS:

Single node architecture: hardware and software components of a sensor node

WEEK 10: WSN Network architecture: typical network architectures-data relaying and aggregation strategies

WEEK 11: MAC layer protocols: self-organizing, Hybrid TDMA/FDMA and CSMA based MAC- IEEE 802.15.4. PREMODEL EXAM

PREMODEL EXAM

WEEK12:

WEEK 13: **UNIT V WSN ROUTING, LOCALIZATION & QOS**

Issues in WSN routing – OLSR- Localization – Indoor and Sensor Network Localization-absolute and relative localization, triangulation

WEEK 14: n-QOS in WSN-Energy Efficient Design-Synchronization-Transport Layer issues.

WEEK 15: MODEL PRACTICALS

REVISION CLASS

WEEK 16: REVISION CLASS

MODEL THEORY EXAM

TEXT BOOK

1. C. Siva Ram Murthy, and B. S. Manoj, "Ad Hoc Wireless Networks: Architectures and Protocols ", Prentice Hall Professional Technical Reference, 2008.

REFERENCES:

1. Carlos De Morais Cordeiro, Dharma Prakash Agrawal **"**Ad Hoc & Sensor Networks: Theory and Applications**"**, World Scientific Publishing Company, 2006.
2. Feng Zhao and Leonides Guibas, "Wireless Sensor Networks",Elsevier Publication - 2002.
3. Holger Karl and Andreas Willig **"**Protocols and Architectures for Wireless Sensor Networks**"**, Wiley, 2005
4. Kazem Sohraby, Daniel Minoli, & Taieb Znati, **"**Wireless Sensor Networks- Technology, Protocols, and Applications**"**, John Wiley, 2007.
5. Anna Hac, **"**Wireless Sensor Network Designs**"**, John Wiley, 2003

EC6703 EMBEDDED AND REAL TIME SYSTEMS

UNIT I INTRODUCTION TO EMBEDDED COMPUTING AND ARM PROCESSORS

WEEK 1: Complex systems and micro processors– Embedded system design process – Design example: Model train controller

WEEK 2:

Instruction sets preliminaries - ARM Processor – CPU: programming input and output

WEEK 3: supervisor mode, exceptions and traps – Co-processors

WEEK 4: Memory system mechanisms – CPU performance- CPU power consumption.

UNIT II: EMBEDDED COMPUTING PLATFORM DESIGN

WEEK 4: UNIT TEST-I

WEEK 5: The CPU Bus-Memory devices and systems–Designing with computing platforms – consumer electronics architecture – platform-level performance analysis - Components for embedded programsModels of programs-Assembly, linking and loading

WEEK 6: compilation techniques- Program level performance analysis – Software performance optimization – Program level energy and power analysis and optimization – Analysis and optimization of program size- Program validation and testing.

WEEK 7: UNIT TEST-II

UNIT III PROCESSES AND OPERATING SYSTEMS Introduction

WEEK 8: – Multiple tasks and multiple processes – Multirate systems

Preemptive real-time operating systems- Priority based scheduling-

WEEK 9: Interprocess communication mechanisms

Evaluating operating system performance- power optimization strategies for processes – Example Real time operating systems-POSIX-Windows CE.

UNIT IV SYSTEM DESIGN TECHNIQUES AND NETWORKS:

Design methodologies- Design flows - Requirement Analysis

WEEK 10: Specifications-System analysis and architecture design

WEEK 11: Quality Assurance techniques- Distributed embedded systems – MPSoCs and shared memory multiprocessors. PREMODEL EXAM

WEEK12: PREMODEL EXAM

WEEK 13: UNIT V CASE STUDY

Data compressor - Alarm Clock - Audio player - Software modem-Digital still camera

WEEK 14: Telephone answering machine-Engine control unit – Video accelerator.

WEEK 15: MODEL PRACTICALS

REVISION CLASS

WEEK 16: REVISION CLASS

MODEL THEORY EXAM

TEXT BOOK

1. Marilyn Wolf, "Computers as Components - Principles of Embedded Computing System Design", Third Edition "Morgan Kaufmann Publisher (An imprint from Elsevier), 2012.

REFERENCES:

1. Jonathan W.Valvano, "Embedded Microcomputer Systems Real Tim Interfacing", Third Edition Cengage Learning, 2012.
2. David. E. Simon, "An Embedded Software Primer", 1st Edition, Fifth Impression, Addison-Wesley Professional, 2007.
3. Raymond J.A. Buhr, Donald L.Bailey, "An Introduction to Real-Time Systems-From Design to Networking with C/C++", Prentice Hall,1999.
3. C.M. Krishna, Kang G. Shin, "Real-Time Systems", International Editions, Mc Graw Hill 1997
4. K.V.K.K.Prasad, "Embedded Real-Time Systems: Concepts, Design & Programming", Dream Tech Press, 2005.
5. Sriram V Iyer, Pankaj Gupta, "Embedded Real Time Systems Programming", Tata Mc Graw Hill, 2004.

IT6801 SERVICE ORIENTED ARCHITECTURE

UNIT I: INTRODUCTION TO XML

WEEK 1: XML document structure

WEEK 2: Well formed and valid documents

WEEK 3: Namespaces – DTD

WEEK 4: XML Schema – X-Files.

UNIT II: BUILDING XML- BASED APPLICATIONS

WEEK 4: UNIT TEST-I

WEEK 5: Parsing XML – using DOM, SAX – XML Transformation and XSL

WEEK 6: XSL Formatting – Modeling Databases in XML.

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WEEK 7: UNIT TEST-II

UNIT III SERVICE ORIENTED ARCHITECTURE

Characteristics of SOA, Comparing SOA with Client

WEEK 8: Server and Distributed architectures – Benefits of SOA -

WEEK 9: Principles of Service orientation – Service layers.

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UNIT IV WEB SERVICES

Service descriptions – WSDL

WEEK 10: Messaging with SOAP – Service discovery – UDDI

WEEK11: Message Exchange Patterns – Orchestration – Choreography –WS Transactions.. PREMODEL EXAM

WEEK12: PREMODEL EXAM

WEEK 13: UNIT V BUILDING SOA-BASED APPLICATIONS

Service Oriented Analysis and Design – Service Modeling – Design standards and guidelines

WEEK 14: Composition – WS-BPEL – WS-Coordination – WS-Policy – WS-Security – SOA support in J2EE

WEEK 15: MODEL PRACTICALS

REVISION CLASS

WEEK 16: REVISION CLASS

MODEL THEORY EXAM

TEXT BOOK

1.Ron Schmelzer et al. "XML and Web Services", Pearson Education, 2002

2. Thomas Erl, "Service Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005.

REFERENCES:

1. Frank P.Coyle, "XML, Web Services and the Data Revolution", Pearson Education, 2002

2. Eric Newcomer, Greg Lomow, "Understanding SOA with Web Services", Pearson Education, 2005

3. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004

4. James McGovern, Sameer Tyagi, Michael E.Stevens, Sunil Mathew, "Java Web Services Architecture", Morgan Kaufmann Publishers, 2003

IT6006 DATA ANALYTICS

UNIT I: INTRODUCTION TO BIG DATA

WEEK 1: Introduction to Big Data Platform – Challenges of conventional systems – Web data

WEEK 2: Evolution of Analytic scalability, analytic processes and tools, Analysis vs reporting

WEEK 3: Modern data analytic tools, Stastical concepts: Sampling distributions,

WEEK 4: resampling, statistical inference, prediction error

UNIT II: DATA ANALYSIS

WEEK 4: UNIT TEST-I

WEEK 5: Regression modeling, Multivariate analysis, Bayesian modeling, inference and Bayesian networks, Support vector and kernel methods, Analysis of time series:

linear systems analysis, nonlinear dynamics - Rule induction - Neural networks: learning and generalization

WEEK 6: competitive learning, principal component analysis and neural networks; Fuzzy logic: extracting fuzzy models from data, fuzzy decision trees, Stochastic search methods

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WEEK 7: UNIT TEST-II

UNIT III MINING DATA STREAMS

Introduction to Streams Concepts – Stream data model and architecture – StreamComputing, Sampling data in a stream

WEEK 8:

Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window

WEEK 9: Realtime Analytics Platform(RTAP) applications - case studies - real time sentiment analysis, stock market predictions.

UNIT IV FREQUENT ITEMSETS AND CLUSTERING

Mining Frequent itemsets - Market based model – Apriori Algorithm – Handling large data sets in Main memory

WEEK 10: Limited Pass algorithm – Counting frequent itemsets in a stream – Clustering Techniques – Hierarchical – K- Means – Clustering high dimensional data

WEEK11: CLIQUE and PROCLUS – Frequent pattern based clustering methods – Clustering in non-euclidean space – Clustering for streams and Parallelism.

PREMODEL EXAM

WEEK12: PREMODEL EXAM

WEEK 13: UNIT V FRAMEWORKS AND VISUALIZATION

MapReduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases - S3 - Hadoop Distributed file systems

WEEK 14: – Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications:

WEEK 15: MODEL PRACTICALS

REVISION CLASS

WEEK 16: REVISION CLASS

MODEL THEORY EXAM

TEXT BOOK

1. Michael Berthold, David J. Hand, Intelligent Data Analysis, Springer, 2007.
2. Anand Rajaraman and Jeffrey David Ullman, Mining of Massive Datasets, Cambridge University Press, 2012.

REFERENCES:

1. Bill Franks, Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with advanced analystics, John Wiley & sons, 2012.

2. Glenn J. Myatt, Making Sense of Data, John Wiley & Sons, 2007 Pete Warden, Big Data Glossary, O'Reilly, 2011

3. Jiawei Han, Micheline Kamber "Data Mining Concepts and Techniques", Second Edition, Elsevier, Reprinted 2008.

CS6711 SECURITY LABORATORY

LIST OF EXPERIMENTS

1. Implement the following SUBSTITUTION & TRANSPOSITION TECHNIQUES concepts: a) Caesar Cipher b) Playfair Cipher c) Hill Cipher d) Vigenere Cipher e) Rail fence – row & Column Transformation

2. Implement the following algorithms a) DES b) RSA Algorithm c) Diffiee-Hellman d) MD5 e) SHA-1

5. Implement the SIGNATURE SCHEME - Digital Signature Standard

6. Demonstrate how to provide secure data storage, secure data transmission and for creating digital signatures (GnuPG).

7. Setup a honey pot and monitor the honeypot on network (KF Sensor)

8. Installation of rootkits and study about the variety of options

9. Perform wireless audit on an access point or a router and decrypt WEP and WPA.(Net Stumbler)

10. Demonstrate intrusion detection system (ids) using any tool (snort or any other s/w)

CS6712 GRID AND CLOUD COMPUTING LABORATORY

LIST OF EXPERIMENTS

GRID COMPUTING LAB

Use Globus Toolkit or equivalent and do the following:

1. Develop a new Web Service for Calculator.
2. Develop new OGSA-compliant Web Service.
3. Using Apache Axis develop a Grid Service.
4. Develop applications using Java or C/C++ Grid APIs

5. Develop secured applications using basic security mechanisms available in Globus Toolkit. 6. Develop a Grid portal, where user can submit a job and get the result. Implement it with and without GRAM concept.

CLOUD COMPUTING LAB

Use Eucalyptus or Open Nebula or equivalent to set up the cloud and demonstrate.

1. Find procedure to run the virtual machine of different configuration. Check how many virtual machines can be utilized at particular time.

2. Find procedure to attach virtual block to the virtual machine and check whether it holds the data even after the release of the virtual machine.

3. Install a C compiler in the virtual machine and execute a sample program.

4. Show the virtual machine migration based on the certain condition from one node to the other.

5. Find procedure to install storage controller and interact with it. 78

6. Find procedure to set up the one node Hadoop cluster.
7. Mount the one node Hadoop cluster using FUSE.
8. Write a program to use the API's of Hadoop to interact with it.
9. Write a wordcount program to demonstrate the use of Map and Reduce tasks

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