VEL TECH MULTITECH
Dr RANGARAJAN Dr.SAKUNTHALA ENGINEERING COLLEGE

(An ISO 9001: 2008 Certified Institution)
(Owned by 'VEL Shree R. Rangarajan
Dr. Sakunthala Rangarajan Educational Academy)
(Approved by AICTE, New Delhi &
Govt. of Tamil Nadu and affiliated to Anna University)

SYLLABUS

WEEKLY SCHEDULE

VI SEMESTER 2015-16

DEPARTMENT OF IT

IV YEAR DEGREE COURSE

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SEM: VI **YEAR: III**

ACADEMIC YEAR (2015-16)
Regulation 2013

S. No	WEEKS	DATE	
		FROM	TO
1	WEEK1	18.01.16	23.01.16
2	WEEK2	25.01.16	30.01.16
3	WEEK3	01.02.16	06.02.16
4	WEEK4	08.02.16	13.02.16
5	WEEK5	15.02.16	20.02.16
6	WEEK6	22.02.16	27.02.16
7	WEEK7	29.02.16	05.03.16
8	WEEK8	07.03.16	12.03.16
9	WEEK9	16.03.16	20.03.16
10	WEEK10	22.03.16	26.03.16
11	WEEK11	27.03.16	02.04.16
12	WEEK12	03.04.16	09.04.16
13	WEEK13	11.04.16	16.04.16
14	WEEK14	18.04.16	23.04.16
15	WEEK 15	25.04.16	30.04.16

CONTENTS

TEST SCHEDULE

S.No	SUB CODE	SUBJECT NAME	UNIT TEST I	UNIT TEST II	PRE MODEL EXAM	MODEL EXAM
1	CS6601	Distributed Systems	01.02.16	15.02.16	29.02.06	01.04.16
2	CS6659	Artificial Intelligence	02.02.16	16.02.16	01.03.16	04.04.16
3	IT6601	Mobile Computing	03.02.16	17.02.16	02.03.16	06.04.16
4	IT6602	Software Architecture	04.02.16	18.02.16	03.03.16	08.04.16
5	IT6002	Information Theory and Coding Techniques	05.02.16	19.02.16	04.03.16	11.04.16
6	CS6660	Compiler Design	06.02.15	20.02.16	05.03.16	13.04.16

CS6601 DISTRIBUTED SYSTEMS

UNIT I INTRODUCTION

WEEK-1

Introduction – Examples of Distributed Systems–Trends in Distributed Systems

WEEK-2

Focus on resource sharing – Challenges. **Case study:** World Wide Web

WEEK-3

UNIT TEST-1

UNIT II COMMUNICATION IN DISTRIBUTED SYSTEM

WEEK-4

System Model – Inter process Communication - the API for internet protocols – External data representation and Multicast communication. **Network virtualization:** Overlay networks. **Case study:** MPI **Remote Method Invocation and Objects:**

WEEK 5

Remote Invocation – Introduction - Request-reply protocols - Remote procedure call - Remote method invocation **Case study:** Java RMI - Group communication - Publish-subscribe systems - Message queues - Shared memory approaches -Distributed objects - Case study: Enterprise Java Beans -from objects to components

WEEK-6

UNIT TEST-2

UNIT III PEER TO PEER SERVICES AND FILE SYSTEM

WEEK-7

Peer-to-peer Systems – Introduction - Napster and its legacy - Peer-to-peer – Middleware – Routing overlays **Overlay case studies:** Pastry, Tapestry- Distributed File Systems –Introduction - File service architecture – Andrew File system. **File System:** Features-File model -File accessing models **WEEK-8**

File sharing semantics **naming:** Identifiers, Addresses, and Name Resolution – Name Space Implementation – Name Caches – LDAP

WEEK-9

UNIT TEST-3

UNIT IV SYNCHRONIZATION AND REPLICATION

WEEK-10

Introduction - Clocks, events and process states - Synchronizing physical clocks- Logical time and logical clocks - Global states – Coordination and Agreement – Introduction - Distributed mutual exclusion

WEEK-11

Elections – Transactions and Concurrency Control– Transactions - Nested transactions – Locks – Optimistic concurrency control - Timestamp ordering – Atomic Commit protocols -Distributed deadlocks – Replication – Case study – Coda

WEEK-12

UNIT TEST-4

UNIT V PROCESS & RESOURCE MANAGEMENT

WEEK-13

Process Management: Process Migration: Features, Mechanism - Threads: Models, Issues, Implementation

WEEK-14

Resource Management: Introduction- Features of Scheduling Algorithms –Task Assignment Approach – Load Balancing Approach – Load Sharing Approach

WEEK-15

UNIT TEST-5

WEEK-16

MODEL EXAMINATION-I (5 UNITS)

WEEK-17

MODEL PRACTICAL EXAMINATION

TEXT BOOKS

1. George Coulouris, Jean Dollimore and Tim Kindberg, "Distributed Systems Concepts and Design", Fifth Edition, Pearson Education, 2012.

REFERENCE BOOKS

1. Pradeep K Sinha, "Distributed Operating Systems: Concepts and Design", Prentice Hall of India, 2007.
2. Tanenbaum A.S., Van Steen M., “Distributed Systems: Principles and Paradigms”, Pearson Education, 2007.
3. Liu M.L., “Distributed Computing, Principles and Applications”, Pearson Education, 2004.
4. Nancy A Lynch, “Distributed Algorithms”, Morgan Kaufman Publishers, USA, 2003

IT6601 MOBILE COMPUTING

UNIT I INTRODUCTION

WEEK-1

Mobile Computing – Mobile Computing Vs wireless Networking – Mobile Computing Applications – Characteristics of Mobile computing

WEEK-2

Structure of Mobile Computing Application MAC Protocols – Wireless MAC Issues – Fixed Assignment Schemes – Random Assignment Schemes – Reservation Based Schemes

WEEK-3

UNIT TEST-1

UNIT II MOBILE INTERNET PROTOCOL AND TRANSPORT LAYER

WEEK-4

Overview of Mobile IP – Features of Mobile IP – Key Mechanism in Mobile IP – route Optimization

WEEK 5

Overview of TCP/IP – Architecture of TCP/IP- Adaptation of tCP Window – Improvement in TCP Performance

WEEK-6

UNIT TEST-2

UNIT III MOBILE TELECOMMUNICATION SYSTEM

WEEK-7

Global System for Mobile Communication (GSM) – General Packet Radio Service (GPRS)

WEEK-8

Universal Mobile Telecommunication System (UMTS)

WEEK-9

UNIT TEST-3

UNIT IV MOBILE AD-HOC NETWORKS

WEEK-10

Ad-Hoc Basic Concepts – Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols

WEEK-11

–Popular Routing Protocols – Vehicular Ad Hoc networks (VANET) – MANET Vs VANET – Security

WEEK-12

UNIT TEST-4

UNIT V MOBILE PLATFORMS AND APPLICATIONS

WEEK-13

Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems

WEEK-14

Software Development Kit: iOS, Android, BlackBerry, Windows Phone – M-Commerce – Structure – Pros & Cons – Mobile Payment System – Security Issues

WEEK-15

UNIT TEST-5

WEEK-16

MODEL EXAMINATION-I (5 UNITS)

WEEK-17

MODEL PRACTICAL EXAMINATION

TEXT BOOKS

1. Prasant Kumar Pattnaik, Rajib Mall, “Fundamentals of Mobile Computing”, PHI Learning Pvt. Ltd, New Delhi – 2012

REFERENCE BOOKS

1. Jochen H. Schller, “Mobile Communications”, Second Edition, Pearson Education, New Delhi, 2007.
2. Dharma Prakash Agarval, Qing and An Zeng, "Introduction to Wireless and Mobile systems", Thomson Asia Pvt Ltd, 2005.
3. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, “Principles of Mobile Computing”, Springer, 2003.
4. William.C.Y.Lee,“Mobile Cellular Telecommunications-Analog and Digital Systems”, Second Edition,Tata Mc Graw Hill Edition ,2006.
5. C.K.Toh, “AdHoc Mobile Wireless Networks”, First Edition, Pearson Education, 2002.
6. Android Developers : http://developer.android.com/index.html
7. Apple Developer : https://developer.apple.com/

8. Windows Phone Dev Center : http://developer.windowsphone.com
9. BlackBerry Developer : http://developer.blackberry.com/

CS6659 ARTIFICIAL INTELLIGENCE

UNIT I INTRODUCTION TO Al AND PRODUCTION SYSTEMS

WEEK-1

Introduction to AI-Problem formulation, Problem Definition - Production systems, Control strategies, Search strategies Problem characteristics, Production system characteristics -Specialized production system- Problem solving methods

WEEK-2

Problem graphs, Matching, Indexing and Heuristic functions -Hill Climbing-Depth first and Breath first, Constraints satisfaction - Related algorithms, Measure of performance and analysis of search algorithms

WEEK-3

UNIT TEST-1

UNIT II REPRESENTATION OF KNOWLEDGE

WEEK-4

Game playing - Knowledge representation, Knowledge representation using Predicate logic **WEEK 5**

Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic-Structured representation of knowledge

WEEK-6

UNIT TEST-2

UNIT III KNOWLEDGE INFERENCE

WEEK-7

Knowledge representation -Production based system, Frame based system. Inference - Backward chaining

WEEK-8

Forward chaining, Rule value approach, Fuzzy reasoning - Certainty factors, Bayesian Theory-Bayesian Network-Dempster - Shafer theory

WEEK-9

UNIT TEST-3

UNIT IV PLANNING AND MACHINE LEARNING

WEEK-10

Basic plan generation systems - Strips -Advanced plan generation systems

WEEK-11

K strips -Strategic explanations -Why, Why not and how explanations. Learning- Machine learning, adaptive Learning

WEEK-12

UNIT TEST-4

UNIT V EXPERT SYSTEMS

WEEK-13

Expert systems - Architecture of expert systems, Roles of expert systems - Knowledge Acquisition

WEEK-14

Meta knowledge, Heuristics Typical expert systems - MYCIN, DART, XOON, Expert systems shells

WEEK-15

UNIT TEST-5

WEEK-16

MODEL EXAMINATION-I (5 UNITS)

WEEK-17

MODEL PRACTICAL EXAMINATION

TEXT BOOKS

1. Kevin Night and Elaine Rich, Nair B., "Artificial Intelligence (SIE)", McGraw Hill- 2008. (Unit-1,2,4,5).
2. Dan W. Patterson, "Introduction to AI and ES", Pearson Education, 2007. (Unit-III)

REFERENCE BOOKS

1. Peter Jackson, “Introduction to Expert Systems”, 3rd Edition, Pearson Education, 2007.
2. Stuart Russel and Peter Norvig “AI – A Modern Approach”, 2nd Edition, Pearson Education 2007.
3. Deepak Khemani “Artificial Intelligence”, Tata Mc Graw Hill Education 2013.
4. http://nptel.ac.in/

CS6660 COMPILER DESIGN

UNIT I INTRODUCTION TO COMPILERS

WEEK-1

Translators-Compilation and Interpretation-Language processors -The Phases of Compiler-Errors **WEEK-2**

Encountered in Different Phases-The Grouping of Phases-Compiler Construction Tools - Programming Language basics

WEEK-3

UNIT TEST-1

UNIT II LEXICAL ANALYSIS

WEEK-4

Need and Role of Lexical Analyzer-Lexical Errors-Expressing Tokens by Regular Expressions

WEEK 5

Converting Regular Expression to DFA- Minimization of DFA-Language for Specifying Lexical Analyzers-LEX-Design of Lexical Analyzer for a sample Language

WEEK-6

UNIT TEST-2

UNIT III SYNTAX ANALYSIS

WEEK-7

Need and Role of the Parser-Context Free Grammars -Top Down Parsing -General Strategies-Recursive Descent Parser Predictive Parser-LL(1) Parser-Shift Reduce Parser-LR Parser-LR (0)Item-Construction of SLR Parsing Table -Introduction to LALR Parser

WEEK-8

Error Handling and Recovery in Syntax Analyzer-YACC-Design of a syntax Analyzer for a Sample Language

WEEK-9

UNIT TEST-3

UNIT IV SYNTAX DIRECTED TRANSLATION & RUN TIME ENVIRONMENT

WEEK-10

Syntax directed Definitions-Construction of Syntax Tree-Bottom-up Evaluation of S-Attribute Definitions- Design of predictive translator - Type Systems-Specification of a simple type checker-Equivalence of Type Expressions-Type Conversions

WEEK-11

RUN-TIME ENVIRONMENT: Source Language Issues-Storage Organization-Storage Allocation-Parameter Passing-Symbol Tables-Dynamic Storage Allocation-Storage Allocation in FORTAN

WEEK-12

UNIT TEST-4

UNIT V CODE OPTIMIZATION AND CODE GENERATION

WEEK-13

Principal Sources of Optimization-DAG- Optimization of Basic Blocks-Global Data Flow Analysis

WEEK-14

Efficient Data Flow Algorithms-Issues in Design of a Code Generator - A Simple Code Generator Algorithm

WEEK-15

UNIT TEST-5

WEEK-16

MODEL EXAMINATION-I (5 UNITS)

WEEK-17

MODEL PRACTICAL EXAMINATION

TEXT BOOKS

1. Alfred V Aho, Monica S. Lam, Ravi Sethi and Jeffrey D Ullman, “Compilers – Principles, Techniques and Tools”, 2nd Edition, Pearson Education, 2007

REFERENCE BOOKS

1. Randy Allen, Ken Kennedy, "Optimizing Compilers for Modern Architectures: A Dependence-based Approach", Morgan Kaufmann Publishers, 2002.
2. Steven S. Muchnick, "Advanced Compiler Design and Implementation", Morgan Kaufmann Publishers - Elsevier Science, India, Indian Reprint 2003.
3. Keith D Cooper and Linda Torczon, "Engineering a Compiler", Morgan Kaufmann Publishers Elsevier Science, 2004.
4. Charles N. Fischer, Richard. J. LeBlanc, "Crafting a Compiler with C", Pearson Education, 2008.

IT6602 SOFTWARE ARCHITECTURES

UNIT I INTRODUCTION AND ARCHITECTURAL DRIVERS

WEEK-1

Introduction – What is software architecture? – Standard Definitions – Architectural structures – Influence of software architecture on organization-both business and technical

WEEK-2

Architecture Business Cycle- Introduction – Functional requirements – Technical constraints – Quality Attributes.

WEEK-3

UNIT TEST-1

UNIT II QUALITY ATTRIBUTE WORKSHOP

WEEK-4

Quality Attribute Workshop – Documenting Quality Attributes

WEEK 5

Six part scenarios – Case studies

WEEK-6

UNIT TEST-2

UNIT III ARCHITECTURAL VIEWS

WEEK-7

Introduction – Standard Definitions for views – Structures and views

WEEK-8

Representing views-available notations – Standard views – 4+1 view of RUP, Siemens 4 views, SEI's perspectives and views – Case studies

WEEK-9

UNIT TEST-3

UNIT IV ARCHITECTURAL STYLES

WEEK-10

Introduction – Data flow styles – Call-return styles

WEEK-11

Shared Information styles - Event styles – Case studies for each style

WEEK-12

UNIT TEST-4

UNIT V DOCUMENTING THE ARCHITECTURE

WEEK-13

Good practices – Documenting the Views using UML – Merits and Demerits of using visual languages – Need for formal languages

WEEK-14

Architectural Description Languages – ACME – Case studies Special topics: SOA and Web services – Cloud Computing – Adaptive structures

WEEK-15

UNIT TEST-5

WEEK-16

MODEL EXAMINATION-I (5 UNITS)

WEEK-17

MODEL PRACTICAL EXAMINATION

TEXT BOOKS

1. Len Bass, Paul Clements, and Rick Kazman, “Software Architectures Principles and Practices”, 2nd Edition, Addison-Wesley, 2003.
2. Anthony J Lattanze, “Architecting Software Intensive System. A Practitioner's Guide”, Auerbach Publications, 2010

REFERENCE BOOKS

1. Paul Clements, Felix Bachmann, Len Bass, David Garlan, James Ivers, Reed Little, Paulo Merson, Robert Nord, and Judith Stafford, "Documenting Software Architectures. Views and Beyond", 2nd Edition, Addison-Wesley, 2010.
2. Paul Clements, Rick Kazman, and Mark Klein, "Evaluating software architectures: Methods and case studies. Addison-Wesley, 2001.
3. Rajkumar Buyya, James Broberg, and Andrzej Goscinski, "Cloud Computing. Principles and Paradigms", John Wiley & Sons, 2011
4. Mark Hansen, "SOA Using Java Web Services", Prentice Hall, 2007
5. David Garlan, Bradley Schmerl, and Shang-Wen Cheng, "Software Architecture-Based Self-Adaptation," 31-56. Mieso K Denko, Laurence Tianruo Yang, and Yan Zang (eds.), "Autonomic Computing and Networking". Springer Verlag, 2009

IT6002 INFORMATION THEORY AND CODING TECHNIQUES

UNIT I INFORMATION ENTROPY FUNDAMENTALS

WEEK-1

Uncertainty, Information and Entropy – Source coding Theorem – Huffman coding –Shannon Fano coding

WEEK-2

Discrete Memory less channels – channel capacity – channel coding Theorem – Channel capacity Theorem.

WEEK-3

UNIT TEST-1

UNIT II DATA AND VOICE CODING

WEEK-4

Differential Pulse code Modulation – Adaptive Differential Pulse Code Modulation – Adaptive subband coding

WEEK 5

Delta Modulation – Adaptive Delta Modulation – Coding of speech signal at low bit rates (Vocoders, LPC).

WEEK-6

UNIT TEST-2

UNIT III ERROR CONTROL CODING

WEEK-7

Linear Block codes – Syndrome Decoding – Minimum distance consideration – cyclic codes – Generator Polynomial

WEEK-8

Parity check polynomial – Encoder for cyclic codes – calculation of syndrome – Convolutional codes

WEEK-9

UNIT TEST-3

UNIT IV COMPRESSION TECHNIQUES

WEEK-10

Principles – Text compression – Static Huffman Coding – Dynamic Huffman coding – Arithmetic coding –

WEEK-11

Image Compression – Graphics Interchange format – Tagged Image File Format – Digitized documents – Introduction to JPEG standards

WEEK-12

UNIT TEST-4

UNIT V AUDIO AND VIDEO CODING

WEEK-13

Linear Predictive coding – code excited LPC – Perceptual coding, MPEG audio coders – Dolby audio coders

WEEK-14

Video compression – Principles – Introduction to H.261 & MPEG Video standards

WEEK-15

UNIT TEST-5

WEEK-16

MODEL EXAMINATION-I (5 UNITS)

WEEK-17

MODEL PRACTICAL EXAMINATION

TEXT BOOKS

1. Simon Haykin, "Communication Systems", 4th Edition, John Wiley and Sons, 2001.
2. Fred Halsall, "Multimedia Communications, Applications Networks Protocols and Standards", Pearson Education, Asia 2002; Chapters: 3,4,5..

REFERENCE BOOKS

1. Mark Nelson, "Data Compression Book", BPB Publication 1992.
2. Watkinson J, "Compression in Video and Audio", Focal Press, London, 1995.

IT6611 MOBILE APPLICATION DEVELOPMENT LABORATORY

LIST OF EXPERIMENTS

1. Develop an application that uses GUI components, Font and Colours
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that makes use of database.
6. Develop an application that makes use of RSS Feed.
7. Implement an application that implements Multi threading
8. Develop a native application that uses GPS location information.
9. Implement an application that writes data to the SD card.
10. Implement an application that creates an alert upon receiving a message.
11. Write a mobile application that creates alarm clock

IT6612 COMPILER LABORATORY

LIST OF EXPERIMENTS:

1. Implementation of Symbol Table

2. Develop a lexical analyzer to recognize a few patterns in C. (Ex. identifiers, constants, comments, operators etc.)
3. Implementation of Lexical Analyzer using Lex Tool
4. Generate YACC specification for a few syntactic categories. a) Program to recognize a valid arithmetic expression that uses operator +, - , * and /. b) Program to recognize a valid variable which starts with a letter followed by any number of letters or digits.
d)Implementation of Calculator using LEX and YACC
5. Convert the BNF rules into Yacc form and write code to generate Abstract Syntax Tree.
6. Implement type checking
7. Implement control flow analysis and Data flow Analysis
8. Implement any one storage allocation strategies (Heap,Stack,Static)
9. Construction of DAG
10. Implement the back end of the compiler which takes the three address code and produces the 8086 assembly language instructions that can be assembled and run using a 8086 assembler. The target assembly instructions can be simple move, add, sub, jump. Also simple addressing modes are used.
11. Implementation of Simple Code Optimization Techniques (Constant Folding. etc.)

GE6674 COMMUNICATION SKILLS – LABORATORY BASED

UNIT I LISTENING AND SPEAKING SKILLS 12

Conversational skills (formal and informal) – group discussion and interview skills – making presentations. Listening to lectures, discussions, talk shows, news programmes, dialogues from TV/radio/Ted talk/Podcast – watching videos on interesting events on Youtube

UNIT II READING AND WRITING SKILLS 12

Reading different genres of tests ranging from newspapers to philosophical treatises – reading strategies such as graphic organizers, summarizing and interpretation Writing job applications – cover letter – resume – emails – letters – memos – reports – blogs – writing for publications.

UNIT III ENGLISH FOR NATIONAL AND INTERNATIONAL EXAMINATIONS AND PLACEMENTS 12

International English Language Testing System (IELTS) – Test of English as a Foreign Language (TOEFL) – Graduate Record Examination (GRE) – Civil Service (Language related) – Verbal ability.

UNIT IV SOFT SKILLS (1) 12

Motivation – self image – goal setting – managing changes – time management – stress management – leadership traits – team work – career and life planning.

UNIT V SOFT SKILLS (2) 12

Multiple intelligences – emotional intelligence – spiritual quotient (ethics) – intercultural communication – creative and critical thinking – learning styles and strategies

REFERENCES:

1. Business English Certificate Materials, Cambridge University Press.
2. Graded Examinations in Spoken English and Spoken English for Work downloadable materials from Trinity College, London.
3. International English Language Testing System Practice Tests, Cambridge University Press.
4. Interactive Multimedia Programs on Managing Time and Stress.
5. Personality Development (CD-ROM), Times Multimedia, Mumbai.
6. Robert M Sherfield and et al. "Developing Soft Skills" 4th edition, New Delhi: Pearson Education, 2009.

WEB SOURCES:

http://www.slideshare.net/rohitjsh/presentation-on-group-discussion
http://www.washington.edu/doit/TeamN/present_tips.html
http://www.oxforddictionaries.com/words/writing-job-applications
http://www.kent.ac.uk/careers/cv/coveringletters.htm
http://www.mindtools.com/pages/article/newCDV_34.htm

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