

COURSE STRUCTURE 2016-17
SEMESTER-II

Y13 BATCH IV/IV BTECH - SEM -II

8th SEMESTER

SNO	Course code	COURSE TITLE	L	T	P	PREREQUISITE	CREDITS
1		OE-2	3	0	0	NIL	3
2		OE-3	3	0	0	NIL	3
3	13PW401 OR 13PS401	MAJOR PROJECT OR PRACTICE SCHOOL	0	0	18		12 18

7TH SEMESTER

SNO	CODE	COURSE	L	T	P	PREREQUISITE	CREDITS
1	11EE304	CONTROL SYSTEMS	3	0	2	13ES203	4
2	13EC206	CMOS VLSI Design	3	0	2	13EC201	4
3		PE-3	3	0	0		3
4		PE-4	3	0	0		3
5		PE-5	3	0	0		3
6	13AC201	Energy & Society	2	0	0	NIL	0
7	13MP401	MINOR PROJECT	0	0	6		3
8							

PROFESSIONAL ELECTIVES

EMBEDDED SYSTEMS STREAM

SNO	CODE	COURSE	L-T-P	CRE DITS	PREREQU ISITE	DEPT
PE1	11EM330	Real Time Operating Systems	3-0-0	3	13CS203	ECM, CS
PE2	13EM332	PCB Design	3-0-0	3	NIL	ECM, CS
PE3	11EM430	Advanced Embedded Processor Architecture	3-0-0	3	11EC311	ECM, CS
PE4	11EM432	Hardware Software Co Design	3-0-0	3	11EC311	ECM, CS
PE5	13EM336	Embedded Networking	3-0-0	3	11EC311	ECM, CS

WEB TECHNOLOGIES STREAM

PE1	13EM331	Web Programming	3-0-0	3	11EM301	ECM, CS
PE2	13EM333	Visual Programming	3-0-0	3	11EM301	ECM, CS
PE3	13EM335	Web Middleware And Web Services	3-0-0	3	11EM301	ECM, CS
PE4	13EM431	Enterprise Programming	3-0-0	3	11EM301	ECM, CS
PE5	13EM433	Semantic Web	3-0-0	3	11EM301	ECM, CS

SYLLABUS

IV/IV BTECH

CONTROL SYSTEMS

Course Code: 11EE304

L –T – P: 3-0-2

Prerequisite: 13ES203

Credits: 4

Control system terminology, examples of simple control systems, open loop and closed loop control systems, Types of control systems. **Mathematical models of physical systems:** Analogy with mechanical systems, Formulation of differential equations for electrical systems Transfer functions of open and closed loop systems, DC & AC servomotors, synchro pair as error detector, block diagram representation of control systems: block diagram algebra, signal flow graph, Mason's gain formula. **Time domain analysis:**

Standard test signals – step, ramp, parabolic and impulse; impulse response, characteristic equation of feed back systems, transient response of first order and second order systems to standard test signals, time domain specifications, steady state error and error constants, Introduction to P, PI, PID controllers. **Stability analysis:** Concept of stability and conditions for stability, Routh – Hurwitz criterion, dominant poles of transfer function **Root Locus Technique:** The root locus concept, basic properties, magnitude and angle conditions, properties and construction of the complex root loci, effects of adding poles and zeros to $G(s)$ $H(s)$ on the root loci.

Frequency response Analysis & Design: Introduction, frequency response specifications, correlation between time and frequency response, specifications, polar (Nyquist) plot, Bode plot, phase margin and gain margin; stability analysis from Nyquist plot effect of adding poles & zeros to $G(s)$ $H(s)$ on the shape of polar plots. Preliminary design considerations – Introduction to lead, lag, lead - lag compensation techniques in frequency domain. **State space analysis:** Concepts of state, state variables, state vector, input vector, output vector; development of state models for simple systems, solution of state equation, the state transition matrix and its properties; characteristic equation and transfer function from state models, eigen values and eigen vectors. Diagonalization; transformation to phase variable canonical form, diagonal canonical form, Jordan canonical form. Concepts of controllability and observability.

Text Books:

1. J Nagrath & M Gopal, "Control System Engineering", 5th Edition New Age International Publication, New Delhi 2011.
2. B.C. Kuo, "Automatic control Systems", Prentice Hall India Publications, NewDelhi , Eighth Edition, 2010.

Reference Books

1. K Ogata, "Modern Control Engineering", Prentice Hall India Publication, New Delhi , Fifth Edition, 2010.
2. M.Gopal, " Control Systems Principles and Design" Tata Mc-Graw Hill Publications, Fourth Edition, 2012.
3. Dhanesh N. Manik, "Control Systems", Cengage Learning Pvt. Ltd., First edition, 2012

CMOS VLSI Design

Course Code: 13EC206

L –T – P: 3-0-2

Prerequisite: 13EC201

Credits: 4

Technology Introduction: Introduction to IC Technology – MOS, PMOS, NMOS, CMOS & BiCMOS Technologies. VLSI Fabrication, Oxidation, Lithography, Diffusion, Ion Implantation, Metallization, Integrated Resistors and Capacitors. **MOS Theory Analysis:** Basic Electrical Properties of MOS Circuits: I_{ds} - V_{ds} Relationships, MOS Transistor Threshold Voltage V_{th} , g_m , g_{ds} , Figure of Merit ω_o , Short Channel and Narrow Channel Width Effects. Pass Transistor, Transmission Gate, NMOS Inverter, Various Pull-ups, CMOS Inverter Analysis and Design, Bi-CMOS Inverters, Latch up in CMOS Circuits. **CMOS Circuits and Logic Design Rules:** MOS Layers, Stick Diagrams, Design Rules and Layout, 2 μ m, 1.2 μ m Design Rules, Rules for Vias and Contacts, Stick Diagrams and Simple Symbolic Encodings for NMOS, PMOS, CMOS and BiCMOS Logic Gates. Scaling of CMOS Circuits. **CMOS Circuit Characterisation and Performance Estimation:** Sheet Resistance R_S and its Concept to MOS, Area Capacitance Units, Calculations - Delays, Driving Large Capacitive Loads, Delay Estimation, Logical Effort and Transistor Sizing, Power Dissipation, Reliability. **CMOS Fault models:** need for testing, manufacturing test principles,

TEXT BOOKS

1. Kamran Ehraghian, Douglas A. Pucknell and Sholeh Eshraghian, “Essentials of VLSI Circuits and Systems” – PHI, EEE, 2005 Edition.
2. Neil H. E. Weste and David. Harris Ayan Banerjee,, “CMOS VLSI Design” - Pearson Education, 1999.

REFERENCES BOOKS:

1. Sung-Mo Kang, Yusuf Leblebici, ”CMOS Digital Integrated Circuits” TMH 2003
2. Jan M. Rabaey, “Digital Integrated Circuits” Pearson Education, 2003
3. Wayne Wolf, “Modern VLSI Design ”, 2nd Edition, Prentice Hall,1998.

SIMULATION TEXT BOOKS

1. Etienne Sicard, Sonia Delmas Bendhia, “Basics of CMOS Cell Design”, TMH, EEE, 2005.

PROFESSIONAL ELECTIVES

EMBEDDED SYSTEMS – STREAM

REAL TIME OPERATING SYSTEMS

Course Code: 11EM330

L –T – P: 3-0-0

Prerequisite: 13CS203

Credits: 3

Review of Operating Systems: Basic Principles, Operating System structures, System Calls, Files, Processes, Design and Implementation of processes, Communication between processes, Introduction to Distributed operating system, distributed scheduling. **Overview of RTOS:** RTOS Task and Task state, Process Synchronisation- Message queues, Mail boxes, pipes, Critical section, Semaphores, Classical synchronisation problem, Deadlocks **REAL TIME MODELS AND LANGUAGES:** Event Based – Process Based and Graph based Models, Real Time Languages, RTOS Tasks, RT scheduling, Interrupt processing, Synchronization, Control Blocks, Memory Requirements. **REAL TIME KERNEL:** Principles, Design issues, Polled Loop Systems, RTOS Porting to a Target, Comparison and study of various RTOS like QNX, VX works, PSOS, C Executive- Case studies. **RTOS APPLICATION DOMAINS:** RTOS for Image Processing, Embedded RTOS for voice over IP, RTOS for fault Tolerant Applications, RTOS for Control Systems.

REFERENCES:

1. Raj Kamal, “Embedded Systems- Architecture, Programming and Design” Tata McGraw Hill, 2006.
2. Herma K., “Real Time Systems – Design for distributed Embedded Applications”, Kluwer Academic, 1997.
3. Charles Crowley, “Operating Systems-A Design Oriented approach” McGraw Hill 1997.
4. Krishna.C.M, Kang, Shin.G, “Real Time Systems”, McGraw Hill, 1997.
5. Raymond J.A.Bhur, Donald L.Bailey, “An Introduction to Real Time Systems”, PHI 1999.
6. Mukesh Sigal and Shi.N.G “Advanced Concepts in Operating System”, McGraw Hill 2000.

PCB DESIGN

Course Code : 13EM 332

L – T – P: 3-0-0

Pre-requisite : NIL

Credits: 3

ELECTRONICS COMPONENTS & MOUNTING: Active and passive components – resistor, capacitor, inductor, semiconductor diode, LED, zener diode, Bipolar junction transistor, IC's, SMD, connectors use of multimedia & CRO. Preparation & mounting of components – lead cutting. **BASIC OF PCB & SOLDERING TECHNIQUES:** Introduction – Classification of PCB – single, double, multilayer and flexible boards – copper clad laminates materials of copper clad laminates – manufacturing process – properties of laminates (electrical & physical) - types of laminates. Hand soldering Tools Solder alloys – soldering flexes – soldering techniques – Iron soldering – mass soldering, DIP soldering – wave soldering – solder mask. **SCHEMATIC & LAYOUT DESIGN:** Schematic diagram – Net list – Design rule check – creating components for library – Imperial – metric Tracks – Pads – Vias – Clearances – Rats nest – silk screen – selection of board size – power plane – grounding. **DESIGN OF PCB'S:** Single sided PCB – Double sided PCB – Multilayer PCB – Auto routing – manual routing – Design rule check – creating of foot print for library creating Gerber file. **PCB FABRICATION:** Film master preparation - Image transfer - photo printing – Screen Printing – Plating techniques etching techniques – Mechanical Machining operations.

TEXT BOOKS

1. Printed Circuit Board – Design, Fabrication, Assembly & Testing by R.S.Khandpur, TATA McGraw Hill Publisher
2. Printed circuit Board – Design & Technology by Walter C.Bosshard
3. ISTE Hand book on Printed Circuit Board Fabrication.

ADVANCED EMBEDDED PROCESSOR ARCHITECTURES.

Course Code : 13EM430

L – T – P: 3-0-0

Pre-requisite : 13EC311

Credits: 3

ARM Processor as System-on-Chip: Acorn RISC Machine – Architecture inheritance – ARM programming model – ARM development tools – 3 and 5 stage pipeline ARM organization – ARM instruction execution and implementation – ARM Co-processor interface. **ARM Assembly Language Programming:** ARM instruction types – data transfer, data processing and control flow instructions – ARM instruction set – Co-processor instructions, Thumb Instruction set. **Architectural Support for System Development:** Advanced Microcontroller bus architecture – ARM memory interface – ARM reference peripheral specification – Hardware system prototyping tools – ARMulator – Debug architecture. **ARM Processor Cores:** ARM7TDMI, ARM8, ARM9TDMI, ARM10TDMI, The AMULET Asynchronous ARM Processors-AMULET1. **Embedded ARM Applications:** The VLSI Ruby II Advanced Communication Processor, The VLSI ISDN Subscriber Processor, The OneCTM VWS22100 GSM chip, The Ericsson-VLSI Bluetooth Baseband Controller, The ARM7500 and ARM7500FE

TEXT BOOKS (MAXIMUM 2)

1. ARM System on Chip Architecture – Steve Furber – 2nd ed., 2000, Addison Wesley Professional.
2. Design of System on a Chip: Devices and Components – Ricardo Reis, 1st ed., 2004, Springer

REFERENCE BOOKS (MAXIMUM 2)

1. Co-Verification of Hardware and Software for ARM System on Chip Design (Embedded Technology) – Jason Andrews – Newnes, BK and CDROM
2. System on Chip Verification – Methodologies and Techniques –Prakash Rashinkar, Peter Paterson and Leena Singh L, 2001, Kluwer Academic Publishers.

HARDWARE SOFTWARE CO –DESIGN

Course Code : 11 EM 432

L – T – P: 3-0-0

Pre-requisite : 11 EC 311

Credits: 3

Co- Design Issues: Co- Design Models, Architectures, Languages, A Generic Co-design Methodology. **Co-Synthesis Algorithms:** Hardware software synthesis algorithms: hardware – software partitioning distributed system co-synthesis. **Prototyping and Emulation:** Prototyping and emulation techniques, prototyping and emulation environments, future developments in emulation and prototyping. **Target Architectures:** Architecture Specialization techniques, System Communication infrastructure, Target Architecture and Application System classes, Architecture for control dominated systems (8051-Architectures for High performance control), Architecture for Data dominated systems (ADSP21060, TMS320C60), Mixed Systems. **Compilation Techniques and Tools for Embedded Processor**

Architectures:

Modern embedded architectures, embedded software development needs, compilation technologies practical consideration in a compiler development environment. **Design Specification and Verification:** Design, co-design, the co-design computational model, concurrency coordinating concurrent computations, interfacing components, design verification, implementation verification, verification tools, interface verification

Languages for System – Level Specification and Design-I System – level specification, design representation for system level synthesis, system level specification languages. **Languages for System – Level Specification and Design-II** Heterogeneous specifications and multi-language co-simulation the cosyma system and lycos system.

TEXT BOOKS:

1. Hardware / software co- design Principles and Practice – Jorgen Staunstrup, Wayne Wolf – 2009, Springer.
2. Hardware / software co- design Principles and Practice, 2002, kluwer academic publishers

EMBEDDED NETWORKING

Course Code : 13EM 336
Pre-requisite : 11EC311

L – T – P: 3-0-0
Credits: 3

EMBEDDED COMMUNICATION PROTOCOLS: Embedded Networking: Introduction – Serial/Parallel Communication – Serial communication protocols -RS232 standard – RS485 – Synchronous Serial Protocols -Serial Peripheral Interface (SPI) – Inter Integrated Circuits (I2C) – PC Parallel port programming -ISA/PCI Bus protocols – Firewire. **USB AND CAN BUS:** USB bus – Introduction – Speed Identification on the bus – USB States – USB bus communication: Packets –Data flow types –Enumeration –Descriptors –PIC 18 Microcontroller USB Interface – C Programs –CAN Bus – Introduction - Frames –Bit stuffing –Types of errors –Nominal Bit Timing – PIC microcontroller CAN Interface –A simple application with CAN. **ETHERNET BASICS:** Elements of a network – Inside Ethernet – Building a Network: Hardware options – Cables, Connections and network speed – Design choices: Selecting components – Ethernet Controllers – Using the internet in local and internet communications – Inside the Internet protocol. **EMBEDDED ETHERNET:** Exchanging messages using UDP and TCP – Serving web pages with Dynamic Data – Serving web pages that respond to user Input – Email for Embedded Systems – Using FTP – Keeping Devices and Network secure. **WIRELESS EMBEDDED NETWORKING:** Wireless sensor networks – Introduction – Applications – Network Topology – Localization –Time Synchronization - Energy efficient MAC protocols –SMAC – Energy efficient and robust routing – Data Centric routing

TEXT BOOKS

1. Frank Vahid, Givargis ‘Embedded Systems Design: A Unified Hardware/Software Introduction’, Wiley Publications
2. Jan Axelson, ‘Parallel Port Complete’, Penram publications
3. Dogan Ibrahim, ‘Advanced PIC microcontroller projects in C’, Elsevier 2008
4. Jan Axelson ‘Embedded Ethernet and Internet Complete’, Penram publications
5. Bhaskar Krishnamachari, ‘Networking wireless sensors’, Cambridge press 2005

WEB TECHNOLOGIES - STREAM

WEB PROGRAMMING

Course Code : 13EM 331

L – T – P: 3-0-0

Pre-requisite : 11EM301

Credits: 3

Introduction to HTML, Working with Text, Creating Tables and Working with Frames, **Cascading Style Sheets**: Working with Style Sheets. **Java Script**: Introduction, Simple program, obtaining user input with prompt dialogs, memory concepts, arithmetic, decision making, assignment operators, control structures – IF, IF...ELSE, WHILE, , FOR repetition statement, SWITCH multiple-selection statement, DO...WHILE repetition statement, logical operators. **Java Script**: Program modules in javascript, function definitions, scope rules, global functions, recursion, arrays, references and reference parameters, passing arrays to functions, sorting arrays, searching arrays, multi-dimensional arrays, math object, string object, date object, Boolean and number object, document object, window object, using cookies, using JSON to represent objects. **Document Object Model**: Introduction, Modeling a document, DOM Nodes and Trees, Traversing and modifying a DOM tree, DOM Collections, dynamic styles, summary of DOM objects and Collections, registering event handlers, onload, onmousemove, the event object, this, onmouseover, onmouseout, onfocus, onblur, onsubmit, onreset, event bubbling, more events. **PHP**: Introduction, PHP basics, string processing and regular expressions, form processing and business logic, connecting to database, using cookies, dynamic content, operator precedence. **Web Servers**: Microsoft Internet Information Services, Apache Web Server, Active Server Pages.

Textbooks

1. Internet and World Wide Web: How to Program, Deitel and Deitel, 4th Edition, Prentice Hall, 2009.
2. HTML Black Book ,Steven Holzner ,Dream tech publications (2000).

Reference Books

1. N.P Gopalan, J.Akilandeswari Web Technology – A Developer's Perspective PHI (2008).
2. Web Technologies –Uttam K Roy ,Oxford Higher Education .
3. Chris Bates Web Programming – Building Internet Applications Addison Wesley (2006).

VISUAL PROGRAMMING

Course Code : 13EM 333
Pre-requisite : 11EM301

L – T – P: 3-0-0
Credits: 3

The Philosophy of .NET Understanding the previous states affair, The .NET Solution, The building Block of the .NET platform (CLR,CTS,CLS), the role of the .NET base class libraries, what C# brings to the table, additional .NET – Aware programming Languages, An overview of .NET binaries (aka assemblies), The role of the common intermediate language, Compiling CIL to platform specific instruction, Understanding the common type system, Intrinsic CTS data types, Understanding the common languages specification, Understanding the common languages runtime, A tour of the .NET namespace, increasing your namespace nomenclature, Deploying the .NET runtime. **Building C# Applications** The role of the command line compiler (CSC.exe), Building C# application using csc.exe, Working with csc.exe response file, generating bug reports, Remaining C# compiler option, The command line debugger, using the visual studio. Net IDE, Other key aspects of the VS.Net IDE, Documenting your source code via XML, C# preprocessor directives, An interesting Aside: The System. Environment class, Building .Net application with other IDEs. **C# Language Fundamentals** : An Anatomy of a basic C# class, Creating objects: Constructor basic, the composition of a C# application, Default Assignment and variable scope, The C# member initialization syntax, Basic input and output with the console class, Understanding value types and reference types, The master node: System. Objects, The system Data type (And C# aliases), Converting between value type and reference type: Boxing and Unboxing, Defining program constraints, C# Iterations constructs, C# control flow constructs, The complete set C# operator, Defining Custom class methods, Understanding static methods, Method parameter modifiers, Array manipulation in C#, String manipulation in C#, C# Enumerations, Defining structures in C#, Defining custom namespaces. **Object Oriented Programming** with C# Formal definition of the C# class, Definition the "Default public interface" of a type, Recapping the pillars of OOP, The first pillar: C# Encapsulation services, Pseudo Encapsulation: Creating read only field, The second pillar: C#'s Inheritance supports keepingfamily secrets: The "Protected" keyword, The Nested type definitions, The third pillar: C#'s Polymorphic support casting between types, Generating class definitions using Visual Studio. Net. Exceptions and Objects Life Time Ode to errors, Bugs and exceptions, The role of .NET exceptions handling, The system. Exception base class throwing a generic exception catching exception, CLR system level exception (System. system exception),Custom application level exception (System. application exception), Handling multiple exception, The finally block, The last chance exception, dynamically identify application and system level exception, Debugging system exception using VS.Net, Understanding Object life time, The CIT of new, The basic of garbage collection, Finalizing a type, Finalization process, building and Ad hoc destruction method, garbage collection optimization, The system

.GC type. **Interfaces and Collections** Defining interfaces using C#, Invoking interface member at the object level, Exercising the shape hierarchy, Understanding explicit interface implementation, Interfaces as Polymorphic agents, Building interface hierarchies, Implementing interface using VS.Net, Understanding the Iconvertible interface, Building a custom enumerator (I Enumerable and Ienumerator), Building cloneable objects (Icloneable), Building comparable objects (I Comparable), Exploring the system the collection namespace, Building a custom container (Retrofitting the carstype). **Understanding .Net Assembles Problems with classic COM Binaries**, An overview of .Net assembly, Building a simple file test assembly, A C# Client Application, A Visual Basic .Net Client application, Cross Language Inheritance, Exploring the Carlibrary's manifest, Exploring the Carlibrary's Types, Building the multi file assembly, Using the multi file assembly, Understanding private assemblies, Probing for private assemblies (The Basics), Private assemblies and XML Configuration files, Probing for private assemblies (The Details),Understanding Shared assembly, Understanding Shared Names, Building a Shared assembly, Understanding delay Signing, Installing/Removing shared assemblies, Using a Shared assembly.

Text Book:

1. Andrew Troelsen C# and The .Net platform, , Second edition,2003, Dream TECH Press,India.
2. Tom Archer Inside C#, , 2001,WP Publishers.

Reference Books

1. Joe duffy, Professional .NET Framework 2.0, Worx Publications, Willey India Edition, 2006 Edition
2. David S Platt, Introducing Microsoft .NET, Prentice Hall of India, Eastern Economy edition, 2nd Edition
3. Matthew Reynolds, Karli Watson, Bill Forgey, Brian Patterson, .NET

WEB MIDDLEWARE AND WEB SERVICES

Course Code : 13EM 335

L – T – P: 3-0-0

Pre-requisite : 11EM301

Credits: 3

Distributed Information systems – design, architecture and communication, Middleware – understanding middleware, RPC and related middleware, TP monitors, object brokers, message-oriented middleware. Enterprise Application Integration (EAI) – from middleware to application integration, EAI middleware **Workflow management systems**, Web technologies – exchanging information over the internet, web technologies for supporting remote clients, application servers and application integration. Web services and their approach to distributed computing, Web services technologies and web services architecture **Basic web services technology**, minimalistic infrastructure. SOAP, WSDL, UDDI, web services at work, interactions between specifications, related standards. Service coordination protocols, introduction, infrastructure for coordination protocols. **WS-coordination**, WS-transaction, RosettaNet, other standards, Service composition – basics, a new chance of success, service composition models, dependencies between coordination and composition. **BPEL, Outlook** – state of the art in web services, applicability of web services, web services as a problem and solution. Case studies - Web services: industry adoption, case studies: context setting, a proposed solution.

Textbooks

1. Web Services: Concepts, Architectures and Applications (Data-Centric Systems and Applications) – Gustavo Alonso, Fabio Casati, Harumi kuno and Vijay Machiraju, Springer pub, 2003
2. Web Services, An introduction, B.V. Kumar and S.V Subrahmanya, Tata Mcgraw Hill, 2004

References

1. Web Services Essentials Distributed Applications with XML-RPC, SOAP, UDDI & WSDL by Ethan Cerami, O'Reilly , First Edition, February 2002.
2. Programming Web Services with SOAP by James Snell, O'Reilly First Edition Dec 2001.
3. Web Services Theory & Practice by Anura Guruge, Digital Press, 2004.
4. Executive's Guide to Web Services by Eric A. Marks & Mark. J. Werrell, John Wiley & Sons, 2003.

ENTERPRISE PROGRAMMING

Course Code : 13EM431
Pre-requisite : 11EM301

L – T – P: 3-0-0
Credits: 3

Java EE Essentials, J2EE Multi-Tier Architecture, Advanced JSP topics, Java Server Faces, Working with Databases, Advanced topics in JDBC. EJB Fundamentals and Session Beans, EJB Entity Beans, Message Driven Beans, EJB Relationships, EJB QL, and JDBC. Design Patterns and EJB. J2EE Design patterns and Frameworks: Pattern Catalog- Handle-Forward pattern, Translator pattern, Distributor pattern, Broadcaster pattern, Zero sum pattern, Status Flag Pattern, Sequencer pattern, Behavior Separation pattern, Consolidator pattern, Simplicity pattern, Stealth Pattern. Web Services and JAX-WS. Java Mail API, Java Interface Definition Language and CORBA, Java Remote Method Invocation, Java Messaging Service, Java Naming and Directory Interface API.

TEXTBOOKS:

1. Kevin Mukhar, James L. Weaver, Jim Crume, Chris Zelenak, “Beginning Java EE 5 from Novice to Professional”, Apress, 2005 Edition.
2. James Keogh, “J2EE: The Complete Reference”, McGraw-hill Osborne Media: 1st Edition, 2002.

REFERENCES:

1. Jan Graba, “An Introduction to Network Programming with Java”, Springer, 2nd edition, 2006.
2. Antonio Goncalves, “Beginning Java EE 6 Platform with GlassFish 3”, Apress, 2009.
3. Mark D Hansen, “SOA Using Java web services”, Pearson, 2007.
4. Dreamtech Software Team, “Java Server Programming J2EE: Black Book”, Wiley, 2007.

SEMANTIC WEB

Course Code : 13EM 433

L – T – P: 3-0-0

Pre-requisite : 11EM301

Credits: 3

INTRODUCTION Components – Types – Ontological Commitments – Ontological Categories – Philosophical Background -Sample - Knowledge Representation Ontologies – Top Level Ontologies – Linguistic Ontologies – Domain Ontologies – Semantic Web – Need – Foundation – Layers – Architecture.

LANGUAGES FOR SEMANTIC WEB AND ONTOLOGIES Web Documents in XML – RDF - Schema – Web Resource Description using RDF- RDF Properties – Topic Maps and RDF – Overview – Syntax Structure – Semantics – Pragmatics - Traditional Ontology Languages – LOOM- OKBC – OCML - Flogic Ontology Markup Languages – SHOE – OIL - DAML + OIL- OWL **ONTOLOGY LEARNING FOR SEMANTIC WEB** Taxonomy for Ontology Learning – Layered Approach – Phases of Ontology Learning – Importing and Processing Ontologies and Documents – Ontology Learning Algorithms - Evaluation **ONTOLOGY MANAGEMENT AND TOOLS**

Overview – need for management – development process – target ontology – ontology mapping – skills management system – ontological class – constraints – issues. Evolution – Development of Tools and Tool Suites – Ontology Merge Tools – Ontology based Annotation Tools. **APPLICATIONS** Web Services – Semantic Web Services - Case Study for specific domain – Security issues – current trends.

TEXT BOOKS

1. Asuncion Gomez-Perez, Oscar Corcho, Mariano Fernandez-Lopez “Ontological Engineering: with examples from the areas of Knowledge Management, eCommerce and the Semantic Web” Springer, 2004
2. Grigoris Antoniou, Frank van Harmelen, “A Semantic Web Primer (Cooperative Information Systems)”, The MIT Press, 2004
3. Alexander Maedche, “Ontology Learning for the Semantic Web”, Springer; 1 edition, 2002

REFERENCES

1. John Davies, Dieter Fensel, Frank Van Harmelen, “Towards the Semantic Web: Ontology – Driven Knowledge Management”, John Wiley & Sons Ltd., 2003.
2. John Davies (Editor), Rudi Studer (Co-Editor), Paul Warren (Co-Editor) “Semantic Web Technologies: Trends and Research in Ontology-based Systems”Wiley Publications, Jul 2006
3. Dieter Fensel (Editor), Wolfgang Wahlster, Henry Lieberman, James Hendler, “Spinning the Semantic Web: Bringing the World Wide Web to Its Full Potential”, The MIT Press, 2002
4. Michael C. Daconta, Leo J. Obrst, Kevin T. Smith, “The Semantic Web: A Guide to the Future of XML, Web Services, and Knowledge Management”, Wiley, 2003