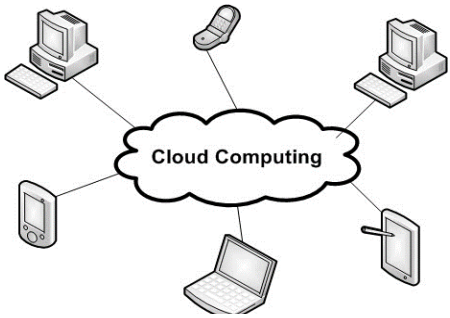
VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS)
Ibrahimbagh, Hyderabad-31

Approved by A.I.C.T.E., New Delhi and
Affiliated to Osmania University, Hyderabad-07

Sponsored by
VASAVI ACADEMY OF EDUCATION
Hyderabad

SCHEME OF INSTRUCTION AND SYLLABI (AUTONOMOUS)
B.E THIRD YEAR (IT) for 2017 – 2018



DEPARTMENT OFINFORMATION TECHNOLOGY
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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
IBRAHIMBAGH, HYDERABAD-31
DEPARTMENT OF INFORMATION TECHNOLOGY

Vision

To be a centre of excellence in core Information Technology and multidisciplinary learning and research, where students get trained in latest technologies for professional and societal growth.

Mission

To enable the students acquire skills related to latest technologies in IT through practice-oriented teaching and training.

ABOUT THE COLLEGE

VISION

Striving for a symbiosis of technological excellence and human values

Established in 1981 by Vasavi Academy of Education under the stewardship of Late Sri Pendekanti Venkata Subbaiah, a veteran statesman of independent India and by a few eminent people from different walks of life Vasavi College of Engineering represents a rich tradition of excellence in technology based education in a stimulating environment. From a modest beginning with just three undergraduate programs, viz., B.E. degree programs in Civil, Mechanical and Electronics & Communication Engineering, with dedicated efforts for over **33** years, it has now grown into a mighty center of learning with excellent and well-developed infrastructural facilities, offering 6 undergraduate programs, viz., B.E. in Civil, Mechanical, Electrical & Electronics, Electronics & Communication Engineering, Computer Science & Engineering, and Information Technology, in addition to a3-year postgraduate program in Computer Applications (MCA), and 2-Year Postgraduate Programmes in CSE, ECE, EEE and Mechanical Engineering.

MISSION

To arm the young brains with competitive technology and nurture the holistic development of the individuals for a better tomorrow.

All the undergraduate (B.E) programs were accredited by National Board of Accreditation (NBA) for the academic years 2013-2015. The college sought fresh approval for NBA accreditation for two eligible PG programs and MCA program. The college has been recognized under 12(B) and 2(f) sections of the University Grants Commission (UGC).

he college has been granted ***autonomy by the University Grants Commission***, New Delhi and Osmania University, Hyderabad for all the programs it offers for a period of six years with effect from 2014-15.

The College has 185 highly qualified and experienced faculty members consisting of Professors, Associate Professors and Assistant Professors and

around**158** technical and supporting staff. The college has very good infrastructural facilities which go beyond the curriculum requirements. The college offers value-added courses in GIS, CAD/CAM, DSP, VLSI, Networking, J2EE and communication skills to bridge the gap between the curriculum and the requirements of the Industry. Finishing school has been made part of curriculum from the second year onwards to improve the skills of the students.

A Research & Development (R&D) Cell is established by personnel from industry / research organization to encourage the faculty and the students in acquiring additional qualifications and knowledge.

QUALITY POLICY

Education without quality is like a flower without fragrance. It is our earnest resolve to strive towards high standards of teaching, training and developing human resources.

This Cell also facilitates the faculty for interaction with industry/research organizations in getting sponsored research projects. In addition, the college extends consultancy in various fields of engineering and technology. The Center for Counseling and Placement at Vasavi College of Engineering provides personal and career-related support to its students. The educational experience at the college is enlivened and enriched by an array of extra-curricular activities to fulfill the cultural and emotional needs of students.

A good number of ranks in university examinations are secured by our students every year. The all-round development of a student is achieved by exposing him/her to the outside world in a systematic and well planned manner. Just not marks and ranks, but also ethics and morals are incorporated into psyche of a student at Vasavi in a cautious way. This unification of tradition and technology makes Vasavi a place for paradise of learning.

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Programme Educational Objectives (PEOs) for IT Program

The Programme will produce graduates

PEO1. With theoretical and practical knowledge to obtain employment or pursue higher studies and solve problems in Information Technology

PEO2. With effective written and oral communication skills that will help them to work in diversified and dynamic working environments.

PEO3. With competence to succeed in their professional lives with ethical values.

Program Specific Outcomes (PSOs) for IT Program

The Students will demonstrate

PSO1. Competency in programming using different programming languages to implement algorithms.

PSO2. Competency in the analysis and design of a software solution using different modelling tools.

PSO3. Competency in Electronic Design and Embedded System Design using different simulation tools.

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF INFORMATION TECHNOLOGY

Program Outcomes (POs) for IT Program

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental

contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and committed professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

with effect from the academic year 2017-18

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF INFORMATION TECHNOLOGY

SCHEME OF INSTRUCTION AND EXAMINATION
for the students admitted in the academic year 2015-2016
(with effect from the academic year 2017-18)

III Year I-Semester

S No.	Course Code	Course Name	Scheme of Instruction				Scheme of Examination			
			Periods per week				Duration in Hrs	Maximum Marks		Credits
			L	T	D	P		SEE	CIE	
1	IT3010	Data Base Management Systems	3	1	-	-	3	70	30	3
2	IT3020	Digital Signal Processing	3	1	-	-	3	70	30	3
3	IT3030	Software Engineering	3	-	-	-	3	70	30	3
4	IT3040	Operating Systems	3	-	-	-	3	70	30	3
5	IT3050	Theory of Automata	3	1	-	-	3	70	30	3
6	IT3060	Computer Networks	3	-	-	-	3	70	30	3
7	IT3070	Finishing School-III : Technical skills	1	1	-	-	1 ½	35	15	1
8	HS3110	Finishing School III : Soft Skills	1	1	-	-	1 ½	35	15	1
9	HS3140	Human Values and Professional Ethics – II	1	-	-	-	3	50	30	1
PRACTICALS										
10	IT3081	Data Base Management Systems Lab	-	-	-	2	3	50	25	1
11	IT3091	Operating Systems Lab	-	-	-	2	3	50	25	1
12	IT3101	Network Programming Lab				2	3	50	25	1
		Total	**21**	**5**	**-**	**6**	**-**	**690**	**315**	**24**
		Grand Total	**32**				**-**	**1005**		

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY

DATABASE MANAGEMENT SYSTEMS

(B.E III Year, I Semester)

Instruction: 3 + 1 Periods/ week	**Sem End Exam Marks** : 70	**Subject Reference Code** :IT3010
Credits : 3	**Sessional Marks** : 30	**Duration of Semester End Exam** : 3 Hours

Course Objectives	**Course Outcomes**
The course will enable the students to :	**At the end of the course student will be able to:**
Explain the need of database for storing, accessing and updating the data; eliminate redundant data; allow multiple users to be active at one time and protect the data from unauthorized access.	1. Understand functional components of the DBMS 2. Develop ER model for a given problem and map ER it to Relational model 3. Devise queries using Relational Algebra and SQL 4. Design a normalized database schema using different normal forms. 5. Understand transaction processing, concurrency control and recovery techniques

UNIT – I

Introduction: Overview, File System vs DBMS, Advantages of DBMS, Database System Applications, Relational Databases, Object – Based and Semi-structured Databases, Data Storage and Querying, Database Architecture, Database Users and Administrators.

Database Design and the E-R Model: Overview of the Design Process, The E-R Model, Constraints, E-R Diagrams, E–R Design Issues, Weak Entity Sets, Extended E-R Features, Reduction to Relational Schemas, Other Aspects of Database Design.

UNIT – II

Relational Model: Structure of Relational Databases, Fundamental Relational-Algebra Operations, Additional Relational – Algebra Operations, Extended Relational - Algebra Operations, Null Values, Modification of the Databases.

Structured Query Language: Data Definition, Basic Structure of SQL Queries, Set Operations, Aggregate Functions, Null Values, Nested Sub queries, Complex Queries, Views, Modification of the Database, Joined Relations.

UNIT – III

Advanced SQL and PLSQL: SQL Data Types and Schemas, Integrity Constraints, Authorization, Embedded SQL, Dynamic SQL, ODBC and JDBC, Functions and Procedural Constructs, Recursive Queries, Cursors, Triggers and Active database.

Schema Refinement: Features of Good Relational Design, Functional-Dependency Theory, Decomposition Using Functional Dependencies, Normalization, First, Second, Third Normal Forms, Dependency Preservation – Boyce/Codd Normal Form Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form.

UNIT - IV

Indexing and Hashing: Basic Concepts, Ordered Indices, B+- Tree Index Files, B-Tree Index Files, Multiple-Key Access, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Bitmap Indices, Index Definition in SQL.

Transactions: Transaction Concepts, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for Serializability.

UNIT – V

Concurrency Control: Lock-Based Protocols, Timestamp-Based Protocols, Validation-Based Protocols, Multiple Granularity, Multiversion Schemes, Deadlock Handling, Insert and Delete Operations, Weak Levels of Consistency, Concurrency of Index Structures.

Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Aries, Log-Based Recovery, Recovery with Concurrent Transactions, Buffer Management, Failure with Loss of Non-volatile Storage. Introduction to NoSQL.

Learning Resources:

1. Abraham Silberschatz, Henry F Korth, S. Sudarshan, Database System Concepts, Sixth Edition, McGrah-Hill International Edition, 2010.
2. Ramakrishnan, Gehrke, Database Management Systems, Third Edition, McGrah-Hill International Edition, 2003.
3. Elmasri Navathe, Somayajulu, Fundamentals of Database System, Fourth Edition, Pearson Education, 2006.
4. Patric O'Neil, Elizabeth O'Neil, Database--principles, programming, and performance, Morgan Kaufmann Publishers, 2001.
5. Getting Started with NoSQL- Gaurav Vaish.
6. http://www.nptelvideos.in/2012/11/database-management-system.html

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DEPARTMENT OF INFORMATION TECHNOLOGY

DIGITAL SIGNAL PROCESSING

(B.E. III Year, I-Semester)

Instruction: 3 + 1 Periods / week	**Semester End Exam Marks** : 70	**Subject Reference Code** : IT3020
Credits : 3	**Sessional Marks** :30	**Duration of Semester End Exam** : 3 Hours

Course Objectives	Course Outcomes
The course will enable the students to:	**At the end of the course student will be able to:**
Understand various concepts of digital signal processing, design digital filters and analyse digital signal processor architectures.	1. Analyze the discrete time signals and systems using the concepts of Z transform and Fourier Transform. 2. Design and implement digital Finite Impulse Response (FIR) filters. 3. Design and implement digital Infinite Impulse Response (IIR) filters. 4. Analyze various architectural features of Digital Signal Processors. 5. Explain digital signal processors applications.

UNIT-I

Basic Elements and advantages of DSP, Discrete time signals and systems, Analysis of discrete time LTI systems, Discrete time system described by difference equation. Review of Z-transforms, Frequency domain sampling, Properties of DFT, Overlap-save method, overlap-add method, Efficient computation of DFT: FFT Algorithm, Direct computation of DFT, Radix-2 FFT Algorithm, MATLAB program for FFT Calculation.

UNIT-II

Design of FIR filters, characteristics of practical frequency selective filters, symmetric and anti symmetric FIR filters. Design of linear face FIR filters using windows. Design of optimum equi-ripple linear face FIR filters.

Structure for the realization of discrete time systems: structure for FIR systems, direct form and cascade form structures.

UNIT-III

Design of IIR filters from analog filters. IIR filter design by impulse invariance, bilinear transformation. Butterworth filters, Chebyshev filters. Frequency transformation in analog and digital domains.

Structures for IIR systems: direct form, cascade form, parallel form. Representation of numbers, Round off effect in digital filters.

UNIT-IV

Architectures for Programmable DSP devices: Introduction, basic architectural features, DSP computational Building Blocks (Multiplier, Shifter, MAC Unit & ALU). Bus Architecture & Memory: On-chip memory, organization of on-chip memory, Data Addressing capabilities: Immediate addressing mode, register addressing mode, direct addressing mode, indirect addressing mode and Special addressing modes. Address generation Unit, Programmability & Program execution: Program Control, Program Sequence. Speed issues: Hardware architecture, parallelism, pipelining. Introduction to TMS320C54xx DSP processor, Bus structure, CPU, Data Addressing modes, Memory space.

UNIT-V

Applications of Programmable DSP devices, DSP based Bio-telemetry receiver, A speech Processing System and its implementation of TMS320C54xx processor, An Image Processing System: JPEG Algorithm, Encoding & Decoding Using TMS320C54xx.

Learning Resources:

1. Proakis John G, Dimitris G. Manolakis, Digital Signal Processing, Third Edition, PHI 2005. (Units 1,2 &3).
2. Avtar Singh, S.Srinivasan, Digital Signal Processing Implementations Using DSP Microprocessors with Examples from TMS320C54xx, THOMSON BROOKS/COLE, 2004. (Units 4 & 5)
3. Jonathan (Y) Stein, Digital Signal Processing A Computer Science Perspective, WILEY-INDIA, 2000.
4. Vinay K. Ingle, John G. Proakis, Digital Signal Processing using MATLAB, THOMSON BROOKS/COLE, 2004.
5. Phil Lapsley, Jeff Bier, Amit Shoham, Edward Lee, DSP Processor Fundamentals: Architectures & Features, WILEY-INDIA, 1996.
6. http://www.nptelvideos.in/2012/11/digital-signal-processing.html

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DEPARTMENT OF INFORMATION TECHNOLOGY

SOFTWARE ENGINEERING
(B.E. III Year, I-Semester)

Instruction: 3Periods / week	**Semester End Exam Marks** : 70	**Subject Reference Code** : IT3030
Credits : 3	**Sessional Marks** :30	**Duration of Semester End Exam** : 3 Hours

Course Objectives	Course Outcomes
The course will enable the students to:	**At the end of the course student will be able to:**
Understand the various SDLC models and stages in Software design lifecycle.	1. Select the most suitable software process model out of several, for the development of a given software project. 2. Develop the ability to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project. 3. Understand the software design principles and learn how to apply them towards implementation. 4. Compare different ways and techniques of ensuring software quality and apply various test processes and techniques on conventional applications. 5. Develop an understanding of risks inherent to software development, and provide continuous quality improvement

UNIT I

Introduction to Software Engineering: Definition of Software Engineering, application areas of software engineering, Process

Framework, Process Patterns, Process Assessment, Personal and Team Process Models, Process Technology, Product and Process.
Process Models: Prescriptive Models, Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, and the Unified Process.
An Agile view of Process: What is Agility. What is an Agile Process, and Agile Process Models.

UNIT II
Understanding requirements: Requirement Analysis, Data Modeling Concepts, Scenario-Based Modeling, Flow-Oriented Modeling, Class-Oriented Modeling, Creating a Behavioral Modeling
Design Engineering: Design within the context of SE, Design Process, Design Concepts, and the Design Model.

UNIT III
Architectural Design: Software Architecture, Architecture Genres, Architecture Styles, Architectural Design.
Component level Design: What is a Component, Designing Class-Based Components, Conducting Component-Level Design, Component-Based development and Object Constraint Language.
Performing User Interface Design: The Golden rules, User Interface Analysis and Design, Interface Design Steps, and design Evaluation.

UNIT IV
Software Testing Strategies: A Strategic Approach to Software Testing, Strategic Issues, Validation Testing, System Testing, Black-box and White-box testing, Basis path testing, and Control Structure testing and the Art of Debugging.
Software Quality Assurance (SQA): Elements of Software Quality Assurance, SQA Tasks, Goals and Metrics, and SQA Plan, Software Configuration Management CMMI, ISO 9000 Quality Standards.

UNIT V

Product Metrics: A Framework for Product Metrics, Metrics for the Requirements Model, Metrics for the Design Model, Metrics for Testing, and Metrics for Maintenance.

Risk Management: Software Risks, Reactive Vs Proactive Risk Strategies, Risk Mitigation, Monitoring and management, and RMMM Plan.

Learning Resources :

1. Roger S.Pressman, Software Engineering: A Practitioners Approach, Seventh Edition, McGraHill, 2009.
2. Pankaj Jalote "An Integrated Approach to Software Engineering, Third Edition,
   Narosa Publishing house, 2008.
3. James F.Peters, Witold Pedrycz, Software Engineering-An engineering Approach, John
   Wiley Inc., 2000.
4. Ali Behforoz and Frederic J.Hadson, Software Engineering Fundamentals, Oxford University Press, 1997.
5. http://www.nptelvideos.in/2012/11/software-engineering.html

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DEPARTMENT OF INFORMATION TECHNOLOGY

OPERATING SYSTEMS

(B.E. III Year, I-Semester)

Instruction: 3 Periods / week	**Semester End Exam Marks** : 70	**Subject Reference Code** : IT3040
Credits : 3	**Sessional Marks** : 30	**Duration of Semester End Exam** : 3 Hours

Course Objectives	Course Outcomes
The course will enable the students to:	**At the end of the course student will be able to:**
Learn the principles of modern operating systems i.e various functionalities provided by an operating system such as process management, memory management, Storage and I/O management.	1. Discuss the functionalities of an operating system and elaborate the means through which an operating system interacts with the user. 2. Analyze and compare the algorithms related to the core functionalities of an operating system. 3. Explain major performance issues related to the core functionalities of an operating systems. 4. Compare and contrast two modern operating systems with respect to their functionalities.

UNIT-I

Introduction: Operating System Functionalities, Types of Operating Systems, User Operating System Interface, System calls, System Boot. **Process Concept:** Overview, Threads. **Process Scheduling** - Uniprocessor scheduling algorithms, Multiprocessor and Real-time scheduling algorithms.

UNIT-II

Memory Management: Background, Swapping, Contiguous Memory Allocation, Paging, Segmentation. Virtual Memory Management: Demand Paging, Page replacement algorithms,Thrashing, Allocating Kernel Memory.

UNIT-III

Inter Process Communication**, Process Synchronization** - Peterson's Solution, Bakery Algorithm, Semaphores, Critical Section, Monitors. Classical problems of synchronization. **Deadlocks:** Deadlock prevention, deadlock avoidance and Deadlock Detection and Recovery - Bankers Algorithm.

UNIT-IV

Storage and I/O Management:File System-Basic Concepts, File System Structure, File System Mounting, Directory Structure, Allocation Methods, Free Space Management. **I/O Management:** Disk Structure, RAID Structure, Disk Scheduling, **Protection :** Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix.

UNIT-V

Case Study : Windows 7 : Design Principles, System Components, Terminal Services & Fast User Switching, File System, Networking, Programmer Interface.

Case Study : The Linux System : Design Principles, Kernel Modules, Process Management, Scheduling, Memory Management, File System, Input Output, Inter Process Communication, Network Structure, Security.

Learning Resources :

1. Operating System Concepts - Operating System Concepts, Sixth Edition, Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, John Wiley & Sons Inc.

2. Modern Operating Systems- Andrew S Tanenbaum, Prentice Hall
3. Operating Systems - Operating System: Internals and Design Principles , William Stallings
4. Operating Systems - System Programming and Operating Systmes D M Dhamdhere, Tata Mc Graw Hill
5. Operating Systems - Operating Systems: A Modern Perspective, Gary Nutt, Addison Wesley
6. Operating Systems - Operating Systems, Achyut S Godbole, Tata Mc Graw Hill
7. Design of the Unix Operating System - Maurice Bach, Prentice Hall.
8. http://nptel.ac.in/courses/106108101/20
9. http://nptel.ac.in/courses/106106144/

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DEPARTMENT OF INFORMATION TECHNOLOGY

THEORY OF AUTOMATA

(B.E. III Year, I-Semester)

Instruction: 3+1 Periods / week	**Sem. End Exam Marks :** 70	**Subject Ref. Code :** IT3050
Credits : 3	**Sessional Marks :** 30	**Duration of Sem. Exam :** 3 Hrs

Course Objective:	Course Outcomes:
The course will enable the students to:	**At the end of the course student will be able to:**
Introduce central concepts in theory of computation and to design grammars and recognizers for different formal languages, and also to determine the decidability and intractability of computational problems.	1. Design finite automata, RE's for a given language. 2. Define properties of RL's, Design grammars, minimize FA and also apply the concept of pumping lemma to prove that certain languages are not regular. 3. Design PDA's for various CFG's and CFL's, simplify the CFG's, define properties of CFL's. 4. Define programming techniques of Turing machines and design Turing machines for decidable problems 5. Apply mathematical and formal techniques for solving problems in computer science and also define concepts of computability theory, and complexity theory.

UNIT I

Finite Automata: Introduction, Central Concepts of Automata Theory, Deterministic Finite Automata, Nondeterministic Finite Automata, NFA to

DFA Conversion, Finite Automata with Epsilon Transitions, Equivalence between NFA with and without Epsilon Transitions.
Regular Expressions: Regular Expressions, Identity Rules for Regular Expressions, Algebraic Laws for Regular Expressions, Equivalence between Finite Automata and Regular Expressions, Applications of Finite Automata and Regular Expressions.

UNIT II
Properties of Regular Languages: Pumping Lemma for Regular Languages, Closure Properties of Regular Languages, Decision Properties of Regular Languages, Equivalence between two FSM's, Minimization of Finite Automata.
Grammars and Languages: Chomsky Hierarchy of Languages, Grammars and Languages Generated, Context-Free Grammars, Derivations, Parse Trees, Ambiguity in Grammars and Languages.

UNIT III
Pushdown Automata: Introduction, Formal Definition and Behavior of PDA, Language of PDA, Design of PDA, Equivalence of PDA and CFG's, Introduction to DCFL and DPDA.
Properties of Context Free Languages: Simplification of CFG's, Normal Forms for CFG's: CNF and GNF, Pumping Lemma for Context Free Languages, Closure Properties of Context Free Languages, Decision Properties of Context Free Languages

UNIT IV
Turing Machines: Introduction, Formal Definition and Behavior of TM, Language of a TM, Design of TM's, Programming Techniques for TM's, Extensions to the TM's, Restricted TM's.

UNIT V
Undecidability: Recursive and Recursively Enumerable Languages, Properties of Recursive and Recursively Enumerable Languages, The Church-Turing Thesis, A Language that is not Recursively Enumerable, An Undecidable Problem that is RE, PCP and MPCP.
Intractable Problems: The classes P and NP, An NP complete Problem, A Restricted Satisfiability Problem.

Learning Resources:

1. John E.Hopcroft, Rajeev Motwani, Jeffery D Ulman, Introduction to Automata Theory Languages And Computation, Third edition, Pearson Education.
2. Theory of Computer Science- Automata languages and computation –Mishra and Chandrashekaran, Third edition, PHI
3. K.Krithivasan and R.Rama; Introduction to Formal Languages, Automata Theory and Computation; Pearson Education, 2009.
4. John C. Martin, Introduction to Languages and The Theory of computation, Third edition, Tata McGraw Hill, 2003.
5. http://nptel.ac.in/courses/106103070/4
6. http://nptel.ac.in/courses/106106049/

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DEPARTMENT OF INFORMATION TECHNOLOGY

COMPUTER NETWORKS

(B.E. III Year, I-Semester)

Instruction: 3Periods / week	**Sem End Exam Marks** : 70	**Subject Reference Code** : IT3060
Credits : 3	**Sessional Marks** : 30	**Duration of Sem End Exam** : 3 Hours

Course Objectives	Course Outcomes
The course will enable the students to:	**At the end of the course student will be able to:**
Understand the fundamental concepts of computer networks and Socket programming, know the role of various layers and protocols and security policies.	1. Identify the different types of network topologies and protocols, networking devices, reference models and network programming concepts. 2. Demonstrate the network layer concepts, the routing algorithms,& congestion control algorithm. 3. Describe the Transport layer protocols. 4. Develop solutions for Application layer protocols. 5. Understand the cryptographic methods and algorithms.

UNI T-I

Introduction: Uses of Computer Networks, Network Hardware, Network Software: Reference Models (ISO -OSI, TCP/IP).

Network Programming: Socket Interface: Sockets, Socket Address structures, Elementary Sockets, Advanced Sockets: Socket Options, Out of Band data,Daemon process and Internet Super Server.

Remote Procedure Calls: Introduction, Transparency Issues and Sun RPC.

UNI T-II

Network Layer: Introduction: Forwarding and routing, Routing Algorithms, Congestion Control Algorithms, Quality of Service.

Internetworking: Concatenated virtual circuits, Connectionless Internetworking, Tunneling, Internetwork routing, Fragmentation.

UNIT-III

Network layer in the Internet: Internet Protocol, IP addresses, IPv4, IPv6, Interoperability of IPv4 and IPv6, Internet Control protocols, OSPF, BGP, Internet Multicasting.

Transport Layer: Overview of the transport layer in the internet, Connection-Oriented Transport: TCP, Connectionless Transport: UDP.

UNIT-IV

Application Layer:

World Wide Web: Architectural Overview, Static Web Documents, Dynamic Web Documents, HTTP, FTP.

Electronic Mail: SMTP, Comparison with HTTP, Mail Message Formats and MIME, Mail Access Protocols.

DNS:The Internet's Directory service: Services provided by DNS, Overview of How DNS works, DNS Records and Messages.

UNIT-V

Network Security: Cryptography, Symmetric Key Algorithms, Public Key Algorithms, Digital Signatures, Management of Public Keys, Authentication Protocols.

Learning Resources :

1. James F. Kurose, Keith W. Ross, "Computer Networking, A Top-Down Approach Featuring the Internet", Sixth Edition, Pearson Education, 2012.

2. W. Richard Stevens, “Unix Network Programming” Prentice Hall/Pearson Education, 2009.
3. Larry L. Peterson, Bruce S. Davie,”Computer Networks: A Systems Approach”, Fifth Edition, Morgan Kaufmann Publishers Inc., 2011.
4. William Stallings, “Data and Computer Communications”, Tenth Edition, Pearson Education, 2013.
5. Douglas E. Comer,”Internetworking with TCP/IP (Volume I) Principles, Protocols and Architecture”, Sixth Edition, Pearson Education, 2013.
6. Behrouz A. Forouzan and Firouz Mosharraf, “Computer Networks:A Top Down Approach”, Tata McGraw-Hill, 2011.
7. http://www.nptelvideos.in/2012/11/computer-networks.html

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9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY

FINISHINF SCHOOL-III: TECHNICAL SKILLS(C,C++,JAVA,DS) (B.E. III Year, I-Semester)

Instruction: 1+1Periods / week	**Sem. Exam Marks** : 35	**Subject Ref. Code** : IT3070
Credits : 1	**Sessional Marks** : 15	**Duration of Sem. Exam** : 1 ½ Hrs

Course Objectives	Course Outcomes
The course will enable the students to:	**At the end of the course student will be able to:**
The objective of the course is to Possess necessary skills to implement solution in C and Object Oriented Concepts for a given problem and efficient storage mechanisms for an easy access and design and implement various data structures and improve logical ability.	1. To select appropriate concept in C programming language to develop programs(knowledge & analysis) 2. Demonstrate the principles of the object oriented programming. 3. Create packages. Handle errors using Exception Handling, and create threads using Multithreaded Programming concepts. 4. Apply the concepts of classes present in lang,IO package 5. Demonstrate the applications of Data Structures.

UNIT – I

Review of C Programming Language: Identifiers, Types, Variables, Evaluating Expressions, Type Conversion, Statements, Selection, Repetition, Functions, Arrays, Pointers:, Strings, Structure.

UNIT-II

Introduction to C++: Programming paradigms, Object oriented programming concepts, Advantages and Applications of OOPs. Functions, Inheritance, Exception handling. Object Oriented System Development: Understanding Object Oriented Development, Understanding Object

Concepts, Benefits of Object Oriented Development. Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables and Arrays, Operators, Control statements, Classes, Methods, Inheritance

UNIT- III

Packages and Interfaces, Exception Handling, Multithreaded Programming,
I/O basics, Reading console input and output, Reading and Writing Files, String Handling.

UNIT - IV

Exploring Java Language, Util,I/O,Awt,Applets,Swings

UNIT – V

Review of Data Structures:Stacks and Queues,Linked Lists,Trees,Graphs

Suggested Reading:

1. Test your C Skills Yashavant P. Kanetkar
2. Yashwant Kanetkar test your c++ skills
3. Yashwant Kanetkar test your java skills
4. Herbert Schildt, The Complete Reference Java,7thEd, Tata McGraw Hill, 2006.
5. Data structure through C++ yashwant kanetkar
6. Effective C++ and More Effective C++ by Scott Meyers

with effect from the academic year 2017-18

With effect from the A.Y 2017-18

DEPARTMENT OF INFORMATION TECHNOLOGY

SYLLABUS FOR 3/4 B.E I- SEMESTER

FINISHING SCHOOL-III: SOFT SKILLS

Instruction :1+1Periods/ week	Sem. Exam Marks: 35	Subject Ref. Code: H**S 3110**
Credits :1	Sessional Marks: 15	Duration of Sem. Exam : 1 ½ Hrs.

Course Objective:	Course Outcomes
This is a foundation course and aims at enhancing employability skills in students. Students will be introduced to higher order thinking skills and problem solving on the following areas - Arithmetic ability, Numerical ability and General reasoning. Students will be trained to work systematically with speed and accuracy while problem solving. The three major areas covered in this course include 1. Numerical Ability 2. Arithmetic Ability 3. General reasoning	**At the end of the course students will be able to:** • Solve questions on the above mentioned areas using short cuts and smart methods • Understand the fundamentals concepts of Aptitude skills • Perform calculations with speed and accuracy

UNIT – I : QUANTITATIVE APTITUDE - NUMERICAL ABILITY

- Numerical Ability
- Introduction to higher order thinking skills
- Speed Maths
- Number systems
- LCM & HCF

UNIT – II: QUANTITATIVE APTITUDE-ARITHMETIC ABILITY FOUNDATION

- Arithmetic Ability
- Percentage
- Profit loss and discounts

- Ratio proportions Allegations and mixtures
- Averages

UNIT – III: QUANTITATIVE APTITUDE- ARITHMETIC ABILITY ADVANCED

- Arithmetic Ability
- Time speed and distance
- Time and work
- Interest calculations

UNIT – IV: REASONING ABILITY – GENERAL REASONING PART 1

- General Reasoning
- Coding decoding
- Directions
- Series completions

UNIT – V: REASONING ABILITY- GENERAL REASONING PART 2

- General Reasoning
- Analogies
- Classification
- Alphabet test
- Mathematical operations

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DEPARTMENT OF INFORMATION TECHNOLOGY

SYLLABUS FOR B.E. 3/4 FIRST SEMESTER

HUMAN VALUES AND PROFESSIONAL ETHICS-II

Instruction : 1 Periods/ week	Sem Exam Marks - 50	Subject Reference Code : HS3140
Credits : 1	Sessional Marks -30	Duration of SemExam : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
Students should be able to	Students will be able to
• Get a holistic perspective of value-based education. • Grasp the meaning of basic human aspirations vis-a-vis the professional aspirations. • Understand professionalism in harmony with self and society. • Develop ethical human conduct and professional competence. • Enrich their interactions with the world around, both professional and personal.	• Gain a world view of the self, the society and the profession. • Make informed decisions. • Start exploring themselves in relation to others and their work –constantly evolving into better human beings and professionals • Inculcate Human values into their profession.

1. **Distinction between need and greed:**Exercising the wisdom to distinguish need from greed

2. **Rights and Responsibilities**-Educating an individual about rights and responsibilities –Safeguards-Stimulants-Social Justice-The three catalysts for deciding rights and responsibilities.

3. **Imbibing and inculcating Civic Sense and Civic-Virtues**, The true meaning of Integrity -Honesty, Humility, Openness, Transparency, Dedication, Reliability, Confidentiality, accountability, Collegiality, Sympathy, Trustworthiness, Co-operation, Courage.
   a. The moral dilemma of the Modern world, Respect for Self, Others and Work.
   b. Respect for women at all times especially at the workplace.

4. **Ideal self-Real self**- How to define the ideal-idealism at various levels-is it possible to reach idealism –Man as a pilgrim on a journey to idealism
5. **Managing Failure**-Identifying causes for failure and learning lessons-Using failure to score success-Role of self-confidence and personal ethics in coping with failure.

• Anger/ Depression • Fear • Agitation • Failure • Lethargy • Dishonesty	• Cruelty • Jealousy • Desire • Cheating • Pride • Greed • Lying

6. **Stress Management**- Identifying sources and levels of stress – Tackling stress and its associated negativity-Positive aspect of coping with stress- Some techniques to manage stress.

7**. Developing Emotional Intelligence**

Self-Awareness
Handling Emotions
Motivation
Empathy
Social skills

- Validate their aspirations through right understanding of human relationship and see the co-relation between the human values and prevailing problems.
- Strike a balance between physical, mental, emotional and spiritual parts their being.
- Obtain a holistic vision about value-based education and professional ethics.

Learning Resources

1. B.L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted 2008.
2. A.N Tripathy, 2003 Human values, New Age International Publishers.
3. EG Seebauer & Robert L. Berry,2000,Fundamentals of Ethics for Scientists and Engineers, Oxford University Press.

4. Mike Martin and Ronald Schinzinger "Ethics in Engineering "McGraw Hill
5. Charles E Haris, Micheal J Rabins, " Engineering Ethics "Cengage Learning
6. Caroline whitback Ethics in Engineering Practice and Research, Cambridge University Press
7. Georgs Reynolds, Ethics in Information Technology", Cengage Learning
8. Charles D.Fleddermann, " Engineering Ethics", Pearson Education /Prentice Hall, New Jersey,2004 (Indian Reprint)

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY

DATABASE MANAGEMENT SYSTEMS LAB

(B.E. III Year, I Semester)

Instruction: 2 Periods / week	**Sem. Exam Marks** : 50	**Subject Ref. Code** : IT3081
Credits : 1	**Sessional Marks** : 25	**Duration of Sem. Exam** : 3 Hrs

Course Objective:	Course Outcomes:
The objective of the course is to	**At the end of the course student will be able to:**
equip the students with various SQL and PL/SQL constructs and enable them to develop small size database applications.	1. Design and implement a database schema 2. Devise queries using SQL commands 3. Develop application programs using PLSQL 4. Create forms and generate reports for given requirements

1. SQL
    - Creating Database (Exercising Commands like DDL,DML,DCL)
    - Exercising all types of Joins.
    - Creating tables in 1st Normal Form, 2nd Normal Form, 3rd Normal Form and BCNF
    - Creating Tables using combination of constraints.
    - Exercising Simple to Complex Queries.
    - Usage of stored functions.
    - Usage of Table locking facilities in applications.

2. PL/SQL
    - Demonstration of Blocks, Cursors ,Procedures.
    - Demonstrating Exception Handling.

- Usage of Triggers to perform operation on single and multiple tables.
- PL/SQL procedures for data validation.

3. FORMS
    - Creation of forms for college information system, library information system and Recruitment cell

4. REPORTS
    - Creation of reports based on different queries.
    - Creation of small full pledged database application spreading over 3 sessions.

Suggested Reading:

1. Nilesh Shah , Database System Using Oracle, PHI, 2007.
2. Rick F Vander Lans, Introduction to SQL, Fourth edition, Pearson Education,2007.
3. Benjamin Rosenzweig, Elena Silvestrova, Oracle PL/SQL by Example, Third edition, Pearson Education, 2004.
4. Albert Lulushi, Oracle Forms Developer's Handbook, Pearson Education, 2006.

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY

OPERATING SYSTEMS LAB

(B.E. III Year, I-Semester)

Instruction: 2Periods / week	**Sem End Exam Marks** : 50	**Subject Reference Code** : IT3091
Credits : 1	**Sessional Marks** : 25	**Duration of Sem End Exam** : 3 Hours

Course Objective:	Course Outcomes:
The course will enable the students to:	**At the end of the course student will be able to:**
Learn the usage of system calls along with applying the concepts of inter process communication and process synchronization.	1. Write programs which interact with the operating system using system calls . 2. Write programs to demonstrate inter process communication. 3. Write programs to demonstrate process synchronization.

1. Familiarity and usage of system calls of Linux on
a) File management (open,close, read, write, open dir, readdir, stat etc)
b) Process management (fork, exec , getpid, wait exit etc)

2. Implement a program to get and set the environment variables using system calls.

3. Implementation of Echo server using pipes.

4. Implementation of Echo server using shared memory.

5. Implementation of Echo server using messages.

6. Implementation of Producer Consumer Problem using semaphores.

7 . Implementation of Producer Consumer Problem using message passing.

8. Implementation of Reader-writer problem using semaphores.

9. Implementation of Dining philosophers problem using semaphores.

10. Creating threads and manipulating under Linux platform.

Suggested Reading:

1. W. Richard Stevens, Unix Network Programming, Prentice Hall/Pearson Education,2009.

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF INFORMATION TECHNOLOGY

NETWORK PROGRAMMING LAB
(B.E. III Year, I-Semester)

Instruction: 2 Periods / week	**Sem. Exam Marks :** 50	**Subject Ref. Code :** IT3101
Credits : 1	**Sessional Marks :** 25	**Duration of Sem. Exam :** 3 Hrs

Course Objective:	Course Outcomes:
The course will enable students to:	**At the end of the course student will be able to:**
Understand the use of client/server architecture in application development, use socket system calls, and Java Socket API to implement network routing algorithms, application layer protocols and encryption algorithms.	1. Use network programming concepts to develop client-server applications. 2. Implementation of application layer protocols. 3. Implementation of Public Key Encryption Algorithm.

1. Understanding and using of commands like ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, whois etc.
2. Usage of elementary socket system calls [socket(), bind(), listen(), accept(),connect(),send(), recv(), sendto(), recvfrom()].
3. Implementation of Connection oriented iterative service (TCP).
4. Implementation of Connection oriented concurrent service (TCP).
5. Implementation of Connectionless Iterative service (UDP).
6. Implementation of Connectionless concurrent service (UDP).

7. Implementation of remote command execution using socket system calls.
8. Implementation of Distance Vector Routing Algorithm.
9. Implementation of HTTP.
10. Implementation of SMTP.
11. Implementation of RSA algorithm.

Note: Implement programs 3 to 7 in C and 8 to 10 in Java.

Suggested Reading:

1. W. Richard Stevens, "Unix Network Programming", Prentice Hall, Pearson Education, 2009.
2. Douglas E.Comer, "Hands-on Networking with Internet Technologies", Pearson Education.

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF INFORMATION TECHNOLOGY

SCHEME OF INSTRUCTION AND EXAMINATION
for the students admitted in the academic year 2015-2016
(with effect from the academic year 2017-18)

III Year II-Semester

S No.	Course Code	Course Name	Scheme of Instruction				Scheme of Examination			
			Periods per week				Duration in Hrs	Maximum Marks		Credits
			L	T	D	P		SEE	CIE	
1	HS3010	Managerial Economics & Accounting	3	1	-	-	3	70	30	3
2	IT3110	Compiler Construction	3	1	-	-	3	70	30	3
3	IT3120	Web Technologies	3	1	-	-	3	70	30	3
4	IT3130	Data Warehousing & Data Mining	3	1	-	-	3	70	30	3
5	IT3140	Object Oriented System Development	3	1	-	-	3	70	30	3
6	HS3210	Finishing School-IV : Soft Skills	1	1	-	-	1 1/2	35	15	1
7	IT3150	Finishing School–IV : Technical Skills	1	1			1 1/2	35	15	1
PRACTICALS										
8	IT3161	Web Technologies Lab	-	-	-	2	3	50	25	1
9	IT3171	Object Oriented System Development Lab	-	-	-	2	3	50	25	1
10	IT3181	Compiler Construction Lab		-		2	3	50	25	1
11	IT3195	Mini Project – III	-	-	-	2	-	-	25	1
		Total	**17**	**7**	**-**	**8**	**-**	**570**	**280**	**21**
		Grand Total	**32**				**-**	**850**		

SYLLABUS FOR 3/4 B.E II- SEMESTER
MANAGERIAL ECONOMICS & ACCOUNTANCY

Instruction:3+1 Periods / week	Sem. Exam Marks : 70	Subject Ref. Code : HS3010
Credits : 3	Sessional Marks : 30	Duration of Sem. Exam : 3 Hrs

Course Objectives	**Course Outcomes**
The Course will enable the students to:	**At the end of the course the students should be able to:**
1. Create an awareness about the significance of economics in day to day life and its impact of policies of organizations'. 2. Helps in engineering the products according to the societal needs 3. Helps in leaning the investment decision making 4. Understand the economical ways of production and pricing the products based on the market structures 5. Analyse the performance of companies	1. Make decisions in solving the economic problems of the organization 2. Make better sale of the product with customer centered products and services 3. Make economical production by identifying the optimum combination of inputs and price them appropriately for better profits 4. Understand the process of making long term investment decisions involving huge outlay 5. Analyse the past performance of the company and make decisions for future 6. Competent to set up own enterprise.

UNIT - I

Meaning and Nature of Managerial Economics: Branches of economics – micro and macro, Managerial Economics – nature, scope, importance, relation with other sciences and its usefulness to Engineers, Fundamental Concepts of Managerial Economics - Scarcity, Marginalism, Equi-marginalism, opportunity costs, Discounting, Time Perspective, Risk and Uncertainty, Profits, Case study method.

UNIT - II

Consumer Behaviour: Demand – concept, Determinants, Law of demand, relationship between total revenue, marginal revenue and demand, Elasticity of Demand (Price, Income Cross-Elasticity and advertising elasticity); Demand forecasting, Law of Supply, concept of Equilibrium. (Theory questions and small numerical problems on measurement of arc and point elasticity can be asked).

UNIT - III

Theory of Production and Markets: Production Function, Law of Variable Proportion, Isoquants, Economies of Scale, Cost analysis - cost concepts, Cost-Output relationship,

Optimization of employment of inputs, Break-Even Analysis, market structures – types, Price-Output determination under Perfect Competition and Monopoly (theory and problems can be asked on breakeven point).

UNIT - IV

Capital Management: Significance, Introduction to capital budgeting, traditional methods and discounted cash flow methods, determination and estimation of working capital requirements, sources of capital, (Theory questions and numerical problems on estimating working capital requirements and evaluation of capital budgeting opportunities can be asked).

UNIT - V

Book-Keeping: Principles of Double entry system of Book keeping, Journal, Three column cash book and petty cash book, Bank reconciliation statement, Trial Balance, Preparation of Final Accounts with simple adjustments, Analysis and interpretation of Financial Statements through Ratios (liquidity, solvency and profitability ratios).

(theory questions and numerical problems on preparation of final accounts, cash book, petty cash book, bank reconciliation statement, calculation of some ratios and analysis).

LEARNING RESOURCES:

Text Books:

1. Mehta P.L., "Managerial Economics – Analysis, Problems and Cases", Sulthan Chand & Son's Educational publishers, 2011.
2. Maheswari S. N. "Introduction to Accountancy", Vikas Publishing House, 2005.

3. Financial Management by Khan & Jain. Mc. Graw Hill Education
4. W. Chris lewis & Craig H Petersen “Managerial economics”.
5. Modern Accounting by A. Mukherjee & M.Hanif

Reference Books:

1. Micro Economics by M. L.Seth.
2. Financial Accounting by Jain & Narang.
3. Panday I.M. “Financial Management” Vikas Publishing House, 2009.

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF INFORMATION TECHNOLOGY

COMPILER CONSTRUCTION
(B.E. III Year, II-Semester)

Instruction: 3+1 Periods/ week	**Sem. Exam Marks** : 70	**Subject Ref. Code** : IT3110
Credits : 3	**Sessional Marks** : 30	**Duration of Sem. Exam** : 3 Hrs

Course Objective:	Course Outcomes:
The course will enable the students to:	**At the end of the course student will be able to:**
Introduce the major concept areas of language translation, and to enrich the knowledge in various phases of compiler and its use.	1. Define the purpose and implementation approach of each phase of compilation, and also apply the knowledge of LEX tool to develop a Scanner. 2. Design top-down and bottom-up parsers. 3. Implement semantic rules for specifying the syntax and semantics of programming languages, and also transform an AST into intermediate representation. 4. Apply various optimization techniques on the Intermediate Representation. 5. Generate target code from the Intermediate Representation.

UNIT-I

Introduction to Compilers: Introduction, Language Processors, The Structure of a Compiler.

Lexical Analysis – The Role of Lexical Analyzer, Input Buffering, Specification of Tokens, Recognition of Tokens, The Lexical-Analyzer Generator-LEX.

UNIT-II

Syntax Analysis: Introduction, Context-Free Grammars.

Top-Down Parsing: Recursive Descent Parsing, Predictive Parsing, LL(1) Grammars. **Bottom-Up Parsing:** Shift-Reduce Parsing, Operator Precedence Parsing, Introduction to LR Parsing- SLR, More Powerful LR Parsers- CLR and LALR, Using Ambiguous Grammars, The Parser Generator- YACC.

UNIT-III

Syntax Directed Translation: Introduction, Syntax Directed Definitions, Evaluation Orders for SDD's, Applications of Syntax Directed Translation.

Intermediate Code Generation: Variants of Syntax Trees, Three-Address Code, Types and Declarations, Translation of Expressions, Type Checking.

UNIT-IV

Run-Time Environments: Storage Organization, Stack Allocation of Space, Access to Non-local Data on the Stack, Heap Management, Introduction to Garbage Collection.

Code Optimization: Introduction, Basic Blocks and Flow Graphs, Optimization of Basic Blocks, Machine Independent Optimizations – The Principal Sources of Optimizations.

UNIT-V

Code Generation: Introduction, Issues in the Design of a Code Generator, The Target Machine, A Simple Code Generator, Peephole Optimization, Register Allocation and Assignment, DAG for register allocation.

Learning Resources :

1) Alfred V Aho, Monica S Lam, Ravi Sethi, Jeffrey D Ullman – *Compilers: Principles, Techniques &Tools* – Pearson Education, Second Edition, 2007
2) Leland L Bech, *System Software: An Introduction to Systems Programming*, Pearson Education Asia, 1997.
3) Kenneth C. Louden, *Compiler Construction: Principles and Practice*, Thompson Learning, 2003.
4) J.P. Bennet, *Introduction to Compiler Techniques*, Second Edition, Tata McGraw-Hill, 2003.
5) http://www.nptelvideos.in/2012/11/compiler-design.html

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DEPARTMENT OF INFORMATION TECHNOLOGY

WEB TECHNOLOGIES
(B.E. III Year, II-Semester)

Instruction: 3+1 Periods/ week	**Sem. Exam Marks** : 70	**Subject Ref. Code** : IT3120
Credits : 3	**Sessional Marks** : 30	**Duration of Sem. Exam** : 3 Hrs

Course Objectives	Course Outcomes
The course will enable the students to:	**At the end of the course student will be able to:**
Understand the different ways of developing static, dynamic and responsive web pages using different technologies.	2. Design web pages using HTML, CSS and javascript. 3. Design Responsive web pages using zurb foundation and Twitter Bootstrap. 4. Develop the programs using Python programming concepts. 5. Develop the server side applications using Servlets and JSP. 6. Understand the concepts in PHP, accessing the database.

UNIT-I:
Introduction to Internet, World Wide Web, Web Browsers, Web Servers, Uniform Resource Locators, HTTP, Introduction to XHTML: Origins and Evolution of HTML and XHTML, Standard XHTML document structure, Basic Text Markup, Images, Hypertext Links, Lists, Tables, Frames. Cascading Style Sheets: Text Styles, Types of Style Classes, Block Styles, page layout with CSS. Basics of

JavaScript: HTML forms - Overview of Java Script-Primitives, Operations and Expressions-Control Statements, Arrays, Functions, DOM, Element access in JavaScript, Events and event handling.

UNIT-II:

Twitter Bootstrap: The Grid system, Layout components. Zurb Foundation: The Grid system, Global styles, basic controls. Backbone js: Model, View, Collection. express js, Application development.

UNIT-III:

Python: Basics of python, Variables and types, Lists, Operators, Strings formatting, String operations, conditions, loops, functions, objects and classes, dictionaries, modules and packages.

Advanced python: generators, list comprehensions, multiple function arguments, regular expressions, exception handling, sets, serialization using JSON and pickle, partial functions, code introspection, compression, encoding and decoding ,decorators, frameworks.

UNIT-IV:

Java Servlets: Java Servlets and CGI Programming, Benefits of Java Servlet, Life cycle of Java Servlet, Reading data from client, HTTP Request header, HTTP Response header, working with cookies, Tracking Sessions. Java Server Pages: Introduction to JSP, JSP Tags, Variables and Objects, Methods, Control Statements, Loops, Request String, User Sessions, Session Object, Cookies.

UNIT-V:

Introduction to PHP: Overview of PHP, General Syntactic Characteristics, Primitives, Operations, Expressions, Control Statements, Arrays, Functions, Pattern matching, Form handling, Files, Cookies, Session Tracking. Database access Through Web: Architectures for Database Access- Database access with PHP.

Learning Resources:

4. "Internet & World Wide Web How to Program", 5/e, Paul J. Deitel, Harvey M. Deitel, Abbey Deitel,2012.
5. Robert W.Sebesta, "Programming the world wide web", Fourth Edition, Pearson Education,2008.
6. "Learning Python", 5th Edition, O'reilly
7. Jim Keogh, "The Complete Reference J2EE",Tata-McGraw-Hill,2002.
8. http://www.nptelvideos.in/2012/11/internet-technologies.html
9. http://www.nptelvideos.com/php/php_video_tutorials.php

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY

DATA WAREHOUSING & DATA MINING

(B.E. III Year, II-Semester)

Instruction: 3+1 Periods/ week	**Sem. Exam Marks** : 70	**Subject Ref. Code** : IT3130
Credits : 3	**Sessional Marks** : 30	**Duration of Sem. Exam** : 3 Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	**At the end of the course student will be able to:**
Highlighting the importance of Data Mining concepts and techniques for uncovering interesting data patterns hidden in large data sets.	1. Preform data cleaning, summarization, integration, transformation on the data using various data preprocessing techniques. 2. Apply various kinds of frequent mining methods to generate strong association rules. 3. Compare and classify the data and evaluate the accuracy of classifier and predictor. 4. Do the cluster analysis using various clustering techniques and identify and eliminate the outliers from large data bases. 5. Perform mining on spatial data, multimedia data, text data, and World Wide Web data.

UNIT – I

Introduction: What is Data Mining, Data Mining Functionalities, Classification of Data Mining Systems, and Major Issues in Data Mining.

Data Preprocessing: Preprocessing, Descriptive Data Summarization, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation.

UNIT – II

Data Warehouse and OLAP Technology: What is Data Warehouse, A Multidimensional Data Model, Data Warehouse Architecture and Implementation, from Data Warehousing to Data Mining.

Mining Frequent Patterns, Associations Rules: Basic Concepts, Efficient and Scalable Frequent Item Set Mining Methods, Mining various kinds of Association Rules.

UNIT – III

Classification and Prediction: Introduction, Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, and Rule based Classification, Classification by Back Propagation, Associative classification, Prediction, and Evaluate the Accuracy of a Classifier and Predictor.

UNIT – IV

Cluster Analysis: Introduction, Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid Based Methods, Model Based Clustering Methods, and Outlier Analysis.

UNIT – V

Mining Object, Spatial, Multimedia, Text, and Web Data: Spatial Data Mining, Multimedia Data Mining, Text Mining, and Mining the World Wide Web.

Learning Resources :

1. Han J & Kamber M, Data Mining: Concepts and Techniques, Third Edition, Elsiver, 2011.
2. Pang-Ning Tan, Michael Steinback, Vipin Kumar, Introduction to Data Mining, Pearson Education, 2008.
3. Arun K Pujari, Data mining Techniques, Second Edition, University Press,2001.
4. Margaret H Dunham, S.Sridhar, Data mining: Introductory and Advanced Topics, Pearson Education, 2008.
5. Humphires, Hawkins, Dy, Data Warehousing: Architecture and Implementation, Pearson Education, 2009.
6. Anahory, Murray, Data Warehousing in the Real World, Pearson Education, 2008.
7. Kargupta, Joshi,etc., Data Mining: Next Generation Challenges and Future Directions, Prentice Hall of India Pvt Ltd, 2007.
8. http://freevideolectures.com/Course/2280/Database-Design/35
9. http://freevideolectures.com/Course/2668/Database-Management-System/31
10. http://nptel.ac.in/syllabus/syllabus_pdf/106106105.pdf

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF INFORMATION TECHNOLOGY

OBJECT ORIENTED SYSTEM DEVELOPMENT

(B.E. III Year, II-Semester)

Instruction: 3+1 Periods/ week	**Sem. Exam Marks** : 70	**Subject Ref. Code** : IT3140
Credits : 3	**Sessional Marks** : 30	**Duration of Sem. Exam** : 3 Hrs

Course Objective:	Course Outcomes:
The course will enable the students to	**At the end of the course student will be able to:**
Highlighting the importance of object-oriented system and development, showing how we apply the process of object-oriented analysis and design to software development, gain necessary knowledge and skills in using object-oriented CASE tools	1. List the features of Unified process and formal design processes. 2. Take part in different phases of Object-Oriented Analysis and Design 3. Apply unified modeling language constructs for developing structural design of a given project. 4. Explain the object behavior modeling principles and apply them towards implementation 5. Develop architecture models using various mechanisms of unified modeling language.

UNIT-I

UML Introduction: Why we Model, Introducing the UML, Elements of UML.

Basic Structural Modeling: Classes, Relationships, Common Mechanisms, Diagrams, Class Diagrams.

Advanced Structural Modeling: Advanced Classes, Advanced Relationships, Interfaces, Types and Roles, Packages, Instances, Object Diagrams, Components.

UNIT-II

Basic Behavioral Modeling: Interactions, Use Cases, Use Case Diagrams, Interaction diagrams, Activity diagrams.

Advanced Behavioral Modeling: Events and Signals, State Machines, Processes and Threads, Time and space, State Chart Diagrams.

UNIT-III

Architectural Modeling: Artifacts, Deployment Collaborations, Patterns and Frame-works, Artifact Diagrams, Deployment Diagrams, Systems and Models.

UNIT-IV

Unified Software Development Process: The Unified Process, The Four Ps, A Use-Case-Driven Process, An Architecture-Centric Processes, An Iterative and Incremental Process.

UNIT-V

Core Workflows: Requirements Capture, Capturing Requirements as Use Cases, Analysis, Design, Implementation, Test.

Learning Resources:

1. Grady Booch, James Rumbaugh, Ivor Jacobson, The Unified Modeling Language-User Guide(Covering UML 2.0), Second Edition, Pearson Education, India,2007.
2. Ivor Jacobson, Grady Booch, James Rumbaugh, The Unified Software Development Process, Pearson Education, India, 2008.
3. http://nptel.iitg.ernet.in/Comp_Sci_Engg/IIT%20Madras/Object%20Oriented%20System%20Design.htm
4. http://nptel.ac.in/courses/106105153/

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DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR 3/4 B.E II- SEMESTER
FINISHING SCHOOL – IV : SOFT SKILLS

Instruction: 1+1Periods per week	Sessionals:15Marks	SEM Exam Marks:35 Marks
Credits:01	SEM Exam Duration:1 ½ Hrs	Subject Ref Code: HS3210

Course Objective:	Course Outcomes
This course aims at enhancing the employability skills. Students will be trained in higher order thinking skills including analytical skills, problem solving skills and critical & logical reasoning skills. Students will be trained to work systematically and develop logical and analytical thinking. Students will be trained in the following areas 1. Critical and Non verbal reasoning 2. Pure Maths 3. Verbal ability 4. Logical reasoning 5. Data Interpretation and Analysis	**At the end of the course students will be able to:** • Understand the fundamentals concepts of Aptitude and verbal skills • Solve questions using short cuts and smart methods • Perform calculations with speed and accuracy • Develop Analytical thinking and problem solving skills

UNIT 1 VERBAL ABILITY

- Finding errors
- Vocabulary
- Synonyms
- Antonyms
- Idioms and Phrases
- Fill in the blanks and sentence Jumbles
- Reading comprehension

UNIT 2 LOGICAL REASONING

- Logical Reasoning

- Assignments
- Puzzles
- Blood relations
- Syllogisms

UNIT 3 CRITICAL AND NON VERBAL REASONING

- Critical Reasoning
- Non verbal reasoning
- Figure series and completions

UNIT 4 QUANTITATIVE APTITUDE - PURE MATHS

- Pure maths
- Algebra
- Probability
- Permutations and combinations

UNIT 5 DATA INTERPRETATION AND ANALYSIS

- Data Interpretation
- Line graph
- Pie chart
- Bar Graph
- Tabulation

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DEPARTMENT OF INFORMATION TECHNOLOGY

FINISHING SCHOOL-IV: TECHNICAL SKILLS

(B.E. III Year, II-Semester)

Instruction: 1+1 Periods / week	**Sem. Exam Marks** : 35	**Subject Ref. Code** : IT3150
Credits : 1	**Sessional Marks** : 15	**Duration of Sem. Exam** : 1 ½ Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	**At the end of the course student will be able to:**
This Course is intended for System Architect candidates who want to create Pega 7 Case-Management solutions.	1. Use PRPC tools and technology to rapidly prototype a simple case-management application. 2. Create case stages and steps, implement processes, define properties, create a user interface, and create business rules and processes. 3. Use and create Declare Expression Rules and use Declarative Rules Inspector. 4. Implement business policies with decision rules. 5. Define best practices and design patterns for implementing case-based business applications.

UNIT I

The PEGA platform; principles of app development; Best Practices and Guardrails, designing a case life cycle; assigning work; enforcing service levels, creating user views; reqsmgmt; managing case life cycle exceptions; adding optional business process events, sending correspondence; guiding users through a business process; The role of the system architect

UNIT II

The Building Blocks of a Pega application; Accessing Applications; Assessing Guardrail Compliance, Creating cases and child cases; Data elements in Pega applications; Setting property values automatically, Setting property values declaratively; Passing data to another case; Reviewing application data; Data Management - Caching data with data pages - only introduction; Modeling processes with flow rules

UNIT III

Activities; Configuring a work party, Configuring a service level agreement; Routing assignments; Configuring correspondence; Circumstancing rules

UNIT IV

Automated decisions in Pega applications; Configuring when rules; Configuring decision tables and decision trees

UNIT V

Designing a UI form; Reusing text with paragraph rules; Configuring responsive UI behavior, Designing a dynamic UI; Validating user data, Creating reports; Optimizing report data; Caching data with data pages - quick recap, Managing reference data; Integration in Pega applications; Creating a connector; Debugging applications with the Tracer

Reference:

1. https://pdn.pega.com/

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DEPARTMENT OF INFORMATION TECHNOLOGY

WEB TECHNOLOGIES LAB

(B.E. III Year, II-Semester)

Instruction: 2 Periods / week	**Sem. Exam Marks :** 50	**Subject Ref. Code** :IT3161
Credits : 1	**Sessional Marks :** 25	**Duration of Sem. Exam** : 3 Hrs

Course Objective:	Course Outcomes:
The course will enable students to:	**At the end of the course student will be able to:**
Be familiar with static Web page design using HTML and style sheets, dynamic web page design using java script and server side scripting languages, and also Responsive web pages.	1. Design Web pages using HTML,CSS,javascript. 2. Design Responsive web pages. 3. Write basic programs using Python programming. 4. Develop simple applications using servlet and JSP. 5. Develop an application to access database using PHP.

HTML:

- Creation of HTML Document using basic tags.
- Creation of Menu using ordered and unordered list and other options.
- Creation of web page using table tags and their attributes
- Creation of web page using frames.
- Creation of document using CSS.

JAVASCRIPT:

- Basic javascript programs using control statements, arrays and functions.
- Write a java script to validate the following fields in a registration page
  1. Name (should contains alphabets and the length should not be less than 6 characters)
  2. Password(should not be less than 6 characters)
  3. E-mail(should not contain invalid addresses)

ZURB FOUNDATION and TWITTER BOOTSTRAP (1 week).

- Design Responsive web pages.

PYTHON:

- Python Program to Make a Simple Calculator
- Python Program to Display Calendar
- Python Program to Sort Words in Alphabetic Order
- Python Program to Merge Mails
- Python Program to Find the Size (Resolution) of a Image

SERVLET &JSP:

- Develop a simple java Servlet application .
- Develop a simple JSP application.

PHP:

- Basic programs using PHP.
- Create tables in the database which contain the details of items (books in our case like Book name, Price, Quantity, Amount) of each category. Modify your catalogue page in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using PHP.

Suggested Reading:

1. "Internet & World Wide Web How to Program", 5/e, Paul J. Deitel, Harvey M. Deitel, Abbey Deitel,2012.

References:

- http://getbootstrap.com/
- http://foundation.zurb.com/

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DEPARTMENT OF INFORMATION TECHNOLOGY

OBJECT ORIENTED SYSTEM DEVELOPMENT LAB

(B.E. III Year, II-Semester)

Instruction: 2 Periods / week	**Sem. Exam Marks** : 50	**Subject Ref. Code** : IT3171
Credits : 1	**Sessional Marks** : 25	**Duration of Sem. Exam** : 3 Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	**At the end of the course student will be able to:**
Cover object-oriented systems analysis and design techniques as well as managerial aspects of analysis and design such as project management and information gathering techniques	1. Understand fundamental concepts and object-oriented techniques of systems analysis and design. 2. Be able to gather and document system requirements. 3. Generate and run test cases for various levels of testing by applying different testing methods. 4. Demonstrate the ability to use project management tools 5. Use of computer based tools to aid in system analysis and design.

1. System Definition
    a) Requirements Management
    b) Data Modeling
2. Design Modeling
    a) Use case Diagram
    b) Class Diagram
    c) Sequence Diagram
    d) Collaboration Diagram
    e) State Chart Diagram
    f) Activity Diagram

   g) Component Diagram
   h) Deployment Diagram
3. Software Development
   a) Application & Web modeling
   b) Configuration Management
   c) Unit Testing
4. Content Management
5. System Testing
   a) Functional Testing
   b) Reliability Testing
   c) Performance Testing
   d) Defect & Change Tracking
6. Change Management
   a) Configuration Management
   b) Requirement Management
   c) System Documentation
7. Project Management

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DEPARTMENT OF INFORMATION TECHNOLOGY

COMPILER CONSTRUCTION LAB

(B.E. III Year, II-Semester)

Instruction: 2 Periods/ week	**Sem. Exam Marks** : 50	**Subject Ref. Code** : IT3181
Credits : 1	**Sessional Marks** : 25	**Duration of Sem. Exam** : 3 Hrs

Course Objectives	**Course Outcomes**
The course will enable the students to:	**At the end of the course student will be able to:**
Learn to implement the different Phases of compiler	1. Implement simple lexical analyzer 2. Generate predictive parsing table for a CFG 3. Apply Lex and Yacc tools to develop a scanner & parser 4. Implement LR parser 5. Implement Intermediate code generation for subset C language

LIST OF EXPERIMENTS

1. Implement lexical analyzer to recognize a few patterns in C. (Ex. identifiers, constants, comments, operators etc.)
2. Implementation of Lexical Analyzer using LEX tool
3. Implement “first” of a given context free grammar
4. Implement “follow” of a given context free grammar
5. Implement elimination of left recursion and left factoring algorithms for any given grammar and generate predictive parsing table.
6. Write a program for generating derivation sequence for a given terminal string using SLR parsing table.

7. Use LEX and YACC tool to implement Desktop Calculator.
8. Implementation of code generation
9. Implementation of code optimization techniques
10. Major assignment: Intermediate code generation for subset C language.

Suggested Reading:

1. Aho,Ravi Sethi,Monica S Lam,Ullman, Compilers-Principle, Techniques and Tools 2nd Edition ,Pearson,2002
2. John R Levine, Tony Mason, Dougn Broun, Lex and Yacc, Orielly, 2nd Edition,2009

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DEPARTMENT OF INFORMATION TECHNOLOGY

MINI PROJECT-III

(B.E. III Year, II-Semester)

Instruction: 2 Periods/ week	**Sem. Exam Marks** : --	**Subject Ref. Code** : IT3195
Credits : 1	**Sessional Marks** : 25	**Duration of Sem. Exam** : --

Course Objective:	Course Outcomes:
The course will enable students to:	**At the end of the course student will be able to:**
Develop and implement a project using any of the programming languages/simulation tools / electronic components.	1. Develop solutions to various computing problems by applying the theoretical knowledge gained. 2. Implement projects and demonstrate them using presentations and technical reports

- During the implementation of the projects, Personnel Software Process (PSP) has to be followed.
- Review(s) will be conducted.
- Report of the project work has to be submitted for evaluation.