COURSE STRUCTURE

AND

DETAILED SYLLABUS

I - IV YEARS

COMPUTER SCIENCE AND ENGINEERING

ECH FOUR YEARS DEGREE COURSE

(Applicable for the batches admitted from 2018-2019)

VAAGDEVI COLLEGE OF ENGINEERING
(Autonomous)
Bollikunta, Warangal – 506 005
Telangana State, India

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

COMPUTER SCIENCE & ENGINEERING

COURSE STRUCTURE
(Applicable from the batch admitted from 2018 onwards)

I-SEMESTER

S.No.	Course Code	Title of the Course	L	T	P	Credits
1	B18MA01	Linear Algebra and Calculus	3	1	0	4
2	B18PH01	Applied Physics	4	0	0	4
3	B18EN01	English	2	0	0	2
4	B18ME01	Engineering Graphics	1	0	4	3
5	B18CS01	Programming for Problem Solving	4	0	0	4
6	B18PH02	Applied Physics Lab	0	0	3	1.5
7	B18CS02	Programming for Problem Solving Lab	0	0	2	1
8	B18MC01	Induction Program	-	-	-	0
		Total Credits	**14**	**1**	**09**	**19.5**

II SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18MA02	Differential Equations and Vector Calculus	3	1	0	4
2	B18EE02	Basic Electrical & Electronics Engineering	3	0	0	3
3	B18CH01	Engineering Chemistry	3	1	0	4
4	B18EN02	English Language Communication Skills Lab	0	0	2	1
5	B18EE03	Basic Electrical & Electronics Engineering Lab	0	0	3	1.5
6	B18ME02	Engineering Workshop & IT Workshop	0	0	3	1.5
7	B18MC03	NSS/NCC	-	-	-	0
		Total Credits	**09**	**2**	**8**	**15**

III-   **SEMESTER**

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18CS03	Mathematical Foundations of Computer Science	4	0	0	4
2	B18EC49	Digital Logic Design & Micro Processors	3	0	0	3
3	B18CS04	Database Management Systems	4	0	0	4
4	B18CS05	Data Structures through C++	4	0	0	4
5	B18CS06	Computer Organization & Architecture	4	0	0	4
6	B18EC50	Digital Logic Design & Micro Processors Lab	0	0	3	1.5
7	B18CS07	Database Management Systems Lab	0	0	3	1.5
8	B18CS08	Data Structures through C++ Lab	0	0	3	1.5
9	B18MC02	Environmental Science	2	0	0	0
		Total Credits	**21**	**0**	**9**	**23.5**

IV-   **SEMESTER**

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18MA04	Statistical Methods for Engineers	3	0	0	3
2	B18CS09	Design and Analysis of Algorithms	3	1	0	4
3	B18CS10	Formal Languages and Automata Theory	3	0	0	3
4	B18CS11	Operating Systems	4	0	0	4
5	B18MB01	Managerial Economics & Financial Accountancy	3	0	0	3
6	B18CS12	Operating Systems Lab	0	0	3	1.5
7	B18CS13	Web Technologies Lab	0	0	3	1.5
8	B18MC07	Gender Sensitization	2	0	0	0
		Total Credits	**18**	**1**	**06**	**20**

V-   **SEMESTER**

S.No	Course Code	Title of the Course	L	T	P	C
1.	B18CS14	Data Communications and Computer networks	3	0	0	3
2.	B18CS15	Compiler Design	3	1	0	4
3.	B18CS16	Software Engineering	3	0	0	3
4.	B18CS17	Machine Learning	3	0	0	3
5.	B18CS18 B18CS19 B18CS20	**Professional Elective - I** Principles of Programming Languages Computer Graphics Mobile Application Development	3	0	0	3
6.	B18MB06 B18CE53 B18MB02	**Open Elective – I** Intellectual Property Rights Disaster Management Management Science	3	0	0	3
7.	B18CS21	Computer Networks and Compiler Design Lab	0	0	3	1.5
8.	B18CS22	Machine Learning Lab	0	0	3	1.5
9.	B18MC04	Indian Constitution	2	0	0	0
		Total Credits	**20**	**1**	**6**	**22**

VI-   **SEMESTER**

S.No	Course Code	Course Title	L	T	P	C
1.	B18CS23	Network Programming	3	0	0	3
2.	B18CS24	Software Testing	3	0	0	3
3.	B18CS25	Data Warehousing and Data Mining	3	0	0	3
4.	B18CS26	Web Services	3	0	0	3
5.	B18CS27 B18CS28 B18CS29	**Professional Elective-II** Advanced DBMS Design Patterns Open Source Software	3	0	0	3
6.	B18CE52 B18EC23 B18EC24	**Open Elective – II** Air Pollution Control Biomedical Instrumentation Digital Image Processing	3	0	0	3
7.	B18EN03	Advanced English Communication Skills Lab	0	0	3	1.5
8.	B18CS30	Network Programming Lab	0	0	3	1.5
9.	B18CS31	Data Mining and SE Lab	0	0	3	1.5
10.	B18MC05	Logical Reasoning and Quantitative Aptitude	2	0	0	0
		Total Credits	**20**	**0**	**9**	**22.5**

VII-   **SEMESTER**

S.No	Course Code	Title of the Course	L	T	P	C
1.	B18CS32	Network Security & Cryptography	3	0	0	3
2.	B18MB04	Management And Organizational Behavior	3	0	0	3
3.	B18CS33 B18CS34 B18CS35	**Professional Elective – III** Cloud Computing Information Systems and Auditing Artificial Intelligence	3	0	0	3
4.	B18CS36 B18CS37 B18CS38	**Professional Elective – IV** Soft Computing Business Intelligence and Big Data Software Project Management	3	0	0	3
5.	B18ME25 B18MB03 B18EC31	**Open Elective – III** Nano Technology Entrepreneurship Development Embedded Systems	3	0	0	3
6.	B18CS46	Mini project & Internship	0	0	0	2
7.	B18CS39	Network Security & Cryptography Lab	0	0	3	1.5
8.	B18CS47	Major Project Phase – 1	0	0	8	4
9.	B18MC09	Human Values & Professional Ethics	2	0	0	0
		Total Credits	**17**	**0**	**11**	**22.5**

VIII-   **SEMESTER**

S.No	Course Code	Course Title	L	T	P	C
1	B18CS40 B18CS41 B18CS42	**Professional Elective – V** Internet of Things Advanced Operating Systems Python Programming	3	0	0	3
2	B18CS43 B18CS44 B18CS45	**Professional Elective – VI** Cyber Security & Hacking Service Oriented Architecture Information Retrieval Systems	3	0	0	3
3	B18CS48	Technical Seminar	0	0	2	1
4	B18CS49	Major Project Phase –II	0	0	16	8
		Total Credits	**6**	**0**	**14**	**15**

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18MA01) LINEAR ALGEBRA AND CALCULUS

(Common to All Branches)

B.Tech : I- Semester   **L T P C**

3 1 0 4

Pre-requisites: Mathematical Knowledge of 12th / intermediate level

Course Objectives: To learn

- Types of matrices and their properties.
- Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of Eigen values and Eigen vectors and to reduce the quadratic form to canonical form
- Concept of Sequence.
- Concept of nature of the series.
- Geometrical approach to the mean value theorems and their application to the mathematical problems
- Evaluation of surface areas and volumes of revolutions of curves.
- Evaluation of improper integrals using Beta and Gamma functions.
- Partial differentiation, concept of total derivative
- Finding maxima and minima of function of two and three variables.

UNIT-I: Matrices
Matrices: Types of Matrices, Symmetric; Hermitian; Skew-symmetric; Skew-Hermitian; orthogonal matrices; Unitary Matrices; Rank of a matrix by Echelon form and Normal form, Inverse of Non- singular matrices by Gauss-Jordan method; System of linear equations; solving system of Homogeneous and Non-Homogeneous equations, Gauss elimination method; Gauss Seidel Iteration Method.

UNIT-II: Eigen Values and Eigen vectors
Linear Transformation and Orthogonal Transformation: Eigen values and Eigen vectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal transformation.

UNIT-III: Sequences & Series
Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences. Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparison test, p-test, D- Alembert's ratio test; Raabe's test; Cauchy's Integral test; Cauchy's root test; logarithmic test. Alternating series: Leibnitz test; Alternating Convergent series: Absolute and Conditionally Convergence.

UNIT-IV: Calculus

Mean value theorems: Rolle's theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem. Taylor's Series. Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (Only in Cartesian coordinates), Definition of Improper Integral: Beta and Gamma functions and their applications.

UNIT-V: Multivariable calculus (Partial Differentiation and applications)

Definitions of Limit and continuity. Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence & independence, Maxima and Minima of functions of two variables and three variables using method of Lagrange multipliers.

Course Outcomes:

On successful completion of this course, students will be able to:

- ☐ Understand the principles of matrix to calculate the characteristics of system of linear algebraic equations using multiple methods.
- ☐ Determine eigen values, eigen vectors and orthogonally diagonalize symmetric matrices.
- ☐ Analyze the nature of sequence and series to identify the convergence.
- ☐ Evaluate limits of single-variable functions graphically and computationally. Analyze improper integrals using Beta and Gamma functions.
- ☐ Calculate Partial derivatives, Jacobian and extrema of functions of multiple variables with or without constraints.

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John wiley & Sons, 2006.

REFERENCE BOOKS:

1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
2. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18PH01) APPLIED PHYSICS

B.Tech : I-Sem: CSE, ECE, EEE   **L T P C**

II-Sem: CIVIL, MECH   **4 0 0 4**

Pre-requisites: Basic Knowledge of Principles of Optics, Semiconductors, Electrical and Electronic devices

Course Objectives:

- The aim of Physics provides an adequate exposure and develop insight about the basic principles of physics along with the engineering applications.
- The acquaintance of basic physics principles would help the engineers to understand the tools and techniques used in the industry and provide the necessary foundations for inculcating innovative approach.
- Student will be able to demonstrate competency and understanding of the concepts found in Quantum Mechanics, lasers, Semiconductor and photo detectors, a broad base of knowledge in physics.
- Hence physics the foundation on which stands the elaborate structure of technology.

UNIT I: Quantum Mechanics
Failures of classical mechanics, Introduction to Quantum mechanics, Wave nature of Particles, Time- dependent and time independent Schrodinger equation for wave function, Significance of Ψ, probability current, Expectation values, Free-particle wave function and wave-packets, Uncertainty principle. Particle in one dimension box. (T.B-3 page no: 3.1-3.35)

UNIT II: Wave Optics
Huygen's principle, superposition of waves and interference of light by wave front splitting and amplitude splitting; Young's double slit experiment, Thin film interference, Newton's rings, Michelson interferometer.
Farunhofer diffraction from a single slit, double slit and circular aperture, Diffraction gratings and their resolving power. (T.B-2 page no: 1-72)

UNIT III : Lasers
Characteristics of lasers, absorption, spontaneous emission, stimulated emission. Einstein's theory of matter radiation interaction and A and B Coefficients; amplification of light by population inversion, Ruby laser, He-Ne laser, CO_2 laser, Nd-YAG laser, applications of lasers in science, Engineering and Medicine. (T.B-2 page no: 101-136)

UNIT IV: Physics of Semi-Conductor Opto-electronics:
Origin of Energy Band formation in Solids, Classification of materials in to conductors, semi- conductors and insulators, Introduction to intrinsic and extrinsic semiconductors,

Fermi level, Effect of carrier concentration and temperature on Fermi level. Energy Diagram of P-N diode, LED, Types of semi conductor photo detectors P-N junction formation, working principles and characteristics of PIN diode, Avalanche diode, and Solar Cell. (T.B-2 page no: 41-100)

UNIT V: Optical Fibres

Optical Fibres introduction, Total internal reflection, Acceptance angle and Cone, Numerical aperture, Types of Optical Fibres, step and graded index fibres, losses in optical fibres, applications of optical fibres. (T.B-2 page no: 139-166)

Course outcomes:

- Illustrate fabrication of semi conductors, photo detectors, design basis of quantum mechanics.
- Recall facts of wave optics extend & construct basics of wave optics.
- Interpret about lasers, which leads to new innovations and improvements.
- Elaborate and formulate the study of characterization properties of opto-devices, organize the students to prepare new materials for various engineering applications.
- Apply basic knowledge on principles and recalls facts of light properties, and motivate for new innovations and analyse applications of optical fibers.

TEXT BOOKS:
1. A Text Book of Engineering Physics, Dr. M.N. Avadhanulu, Dr. P.G. Kshrisagar-S.Chand.
2. Modern Engineering Physics (Vol-I & II), Dr. K. Vijaya Kumar, Dr. S. Chandralingam – S.Chand.
3. Engineering Physics, P.K.Palani Swamy, Scitech Publications.
4. Electric Devices & Circuits – Millman & Halkies.

REFERENCE BOOKS:
1. Haliday and Resnick, Physics-Wiley
2. J. Singh Semiconductor Optoelectronics: Physics and Technology, Mc. Graw-Hill inc(1995).

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EN01) ENGLISH

(Common to All Branches)

B.Tech : I-Semester   **L T P C**

2 0 0 2

Pre-requisites: Basic Knowledge of Grammar and Vocabulary
INTRODUCTION

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students. In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study.

Students should be encouraged to read the texts leading to reading comprehension and different types of passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc.

The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.

Course Objectives: The course will help to
a. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.

 b. Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus.

 c. Develop study skills and communication skills in formal and informal situations.

SYLLABUS

UNIT –I   Inventions and Discoveries

a) Inventors

Vocabulary: Word Formation – Prefixes and Suffixes
Grammar: Contracted forms of verbs, Tense and Aspects.
Reading: Skimming through the Passage
Writing: Information transfer-Describing trends

b) Aliens

Vocabulary: One word substitutes
Grammar: Articles.
Reading: Comprehension and inference
Writing: Description of people, places and objects.

UNIT –II Information and Fashion

a) Social Media

Vocabulary Building: Synonyms and Antonyms
Grammar: Redundancies and Clichés.
Reading: Comprehension and inference, reading for facts and opinions.
Basic Writing Skills: Paragraph writing – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents, E-mail, E-mail etiquette.

b) Fashion

Vocabulary: Words often confused
Grammar: Active and Passive Voice
Reading: Reading a procedure
Writing: Types of essays, argumentative essay.

UNIT –III Know the History

a) Indian Architecture

Vocabulary: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.
Grammar: Conjunctions
Reading: Understanding a historical essay
Writing: Describing structures.

b) History

Vocabulary: Words Misspelt
Grammar: Prepositions.
Reading: Scanning, reading for Comprehension
Writing: Types of Paragraphs.

UNIT –IV Science and Fiction

a) Genetics

Vocabulary: Abbreviations and Acronyms
Grammar: Common Errors in Tenses
Reading: Categorizing Information
Writing: Report writing.

b) Superheroes

Vocabulary: Idiomatic Expressions.
Grammar: Question tags.
Reading: Reading for Comprehension
Writing: Gadget review.

UNIT –V War and Sports

a)War

Vocabulary: Homonyms, Homophones and Homographs
Grammar: Subject-verb agreement
Reading: Reading to summarize

Writing: Letter of enquiry.

b) Sports
Vocabulary: Technical Vocabulary
Grammar: Common Errors in English
Reading: Scanning a text
Writing: Letters of complaint.

Course Outcomes: By the end of the course, students will be able to

- Use English Language effectively in spoken and written forms.
- Comprehend the given texts and respond appropriately.
- Communicate confidently in various contexts and different cultures.
- Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
- Develops and Communicates by stating main ideas relevantly and coherently in speaking & writing.

TEXT BOOK:

English for Technical Communication by **Sudarshana, N.P. and C. Savitha,** Published by Cambridge University Press.

REFERENCE BOOKS:
1. Swan, M. (2016). Practical English Usage. Oxford University Press.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
3. Wood, F.T. (2007).Remedial English Grammar. Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18ME01) ENGINEERING GRAPHICS

B.Tech : I-Sem: CSE, CIVIL, MECH   **L T P C**

II-Sem: ECE, EEE   **1 0 4 3**

Pre-requisites: None

Course Objectives:

- ⬜ Use various engineering drawing instruments.
- ⬜ Learn the basic convention of drawings, dimensioning, scales and conic sections like ellipse, parabola and parabola.
- ⬜ Learn projection of points, lines viewed in different positions.
- ⬜ Learn projections of plane surfaces and solids viewed in different positions.
- ⬜ Gain knowledge of sections of solids and their usage in real time applications.

UNIT - I Introduction to Engineering Drawing:
Principles of Engineering Graphics and their significance, ISO and ANSI standards for coordinate dimensioning- usage of Drawing instruments, lettering

- a. Conic sections including the Rectangular Hyperbola (General method only);
- b. Roulettes-Cycloid, Epicycloid, Hypocycloid
- c. Involute
- d. Scales – Plain, Diagonal and Vernier Scales.

UNIT -II
Principles of Orthographic Projections in First Angle Projection- Conventions Projections of Points

Projection of lines: Parallel, Perpendicular inclined to one plane and inclined to both the planes.

UNIT-III
Projection of planes: Plane parallel, perpendicular and inclined to one reference plane. Planes inclined to both the reference planes – Auxiliary Planes;
Projection of Regular Solids-Projection of regular solids, Cube, prisms, pyramids, tetrahedron, cylinder, Cylinder and cone, axis inclined to one plane and both planes – Auxiliary Views Projections of Regular Solids.

UNIT -IV
Sections and sectional views of right angular solid-Prism, Cylinder, Pyramid, Cone – Auxiliary Views; **Development of surfaces** of Right Regular Solids – Prism, Pyramid, Cylinder and Cone.

UNIT -V Isometric Projections:
Chapter-I Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids; Conversion of Isometric views to Orthographic views and Vice-versa, Conventions.

Chapter-II Overview of Computer Graphics: listing the computer technologies that impact on graphical communication, Demonstrating knowledge of the theory of CAD

software -The Menu System, Toolbars Standard, Object Properties, Draw, Modify and Dimension.

Course Outcomes:
The students will be able to
- Analyze the Projections of points.
- Understand the Projections of solids.
- Estimate the use of Drawings, dimensioning, scales and conic sections.
- Modify the Applications of this knowledge in Computer Graphics.
- Compare the conversion of isometric views to Orthographic views.

TEXT BOOKS:
1. Agrawal B & Agrawal C.M. (2012), Engineering Graphics, TMH Publications.
2. Bhatt N.D., Panchal V.M. & Ingke P.R., (2014), Engineering Drawing, Charotar Publishing House.

REFERENCE BOOKS:
1. Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers.
2. (Corresponding set of) CAD Software Theory and User Manuals.
3. Engineering Graphics. P I Varghese Tata McGraw Hill Education Pvt. Ltd.
4. Engineering Drawing – P.J.Shan S.Chand Publishers.
5. Engineering Drawing – Johle/Tata McGraw Hill Book Publishers.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS01) PROGRAMMING FOR PROBLEM SOLVING

B.Tech : I-Sem: ECE, CSE, MECH & CIVIL   **L T P C**

II- Sem: EEE   **4 0 0 4**

Pre-requisites: None

Course Objectives:

To provide the necessary knowledge on general engineering problem solving methodologies and to provide necessary foundations for step by step computer program development and to present the basic concepts in C programming language and to prepare the students to write modular and readable C Programs. Also the Course introduces the essential concepts like abstract data types, user defined data types, to analyze the performance of algorithms and how to use such knowledge for later processing with the help of files and aims to train the students to write working programs to solve problems.

UNIT -I
Introduction to Computers: Block Diagram of Computer, Memory Hardware ,Software, Operating Systems, Steps in Problem Solving, Algorithms, Flowcharts, Pseudo code, Types of Programming Languages, Introduction to C, History of C, Structure of a C Program. (Chapter 1: 1.1 - 1.10, 1.17 – 1.20)

Introduction to C Programming: The C Character Set, Identifiers and - Keywords, Data Types, Constants and Variables, Declarations, Expressions & Statements, Input / Output Statements (Formatted and Unformatted), Creating and Running a C program.(Chapter 2: 2.1 – 2.27 & Chapter 4: 4.1 – 4.17)
Operators and Expressions : Unary Operators, Arithmetic Operators, Relational and Logical Operators, Assignment Operators, Conditional operator, Bitwise Operators, special operators, Precedence & Associativity, Type Casting and Type Conversion. (Chapter 3 : 3.1 – 3.17)

UNIT – II
Control Statements: Branching Statements – if, if-else, else- if, nested-if. Switch statement. Un - conditional Branching Statement- goto. Looping Statements- while, do- while, for, nested loops. Break & Continue.(Chapter 6 : 6.1 – 6.47)
Functions : Introduction, Defining a Function, Types of Functions, Accessing a Function, Function Prototypes, Passing Arguments to a Function – call by value, Recursion. (Chapter 7: 71. - 7.26)
Storage Classes: Automatic Variables, External (Global) Variables, Static Variables, Register. (Chapter 8: 8.1 – 8.13)

UNIT – III
Arrays: Definition - Single Dimensional Arrays, Multi Dimensional Arrays, Declaration, Initialization, Reading & Writing elements in to an Array, Passing Arrays to Functions. Linear Search, Binary search, Bubble sort. (Chapter 9: 9.1 – 9.29 & Reference book2)
Strings: Declaration and Initialization of Strings, Reading and Writing a String, String Manipulation Functions, String as Array of Characters, Array of strings, Sorting of Strings. (Chapter 10: 10.1 –10.15)
Structures and Unions: User-Defined Data Types , Defining a Structure, Processing a Structure,

Array of Structures, Nested Structures, Passing Structures To Functions. Unions. Typedef, Enumerated types - enum. (Chapter 12:12.1, 12.2, 12.3, 12.5,12.7)

UNIT – IV
Pointers: Introduction, Pointer Declarations, Pointer to Pointer, Operations on Pointers - Pointer Arithmetic, Dynamic Memory Allocation – Malloc(), Calloc(), Realloc(), Free(). Pointers and Functions - call by Reference, Pointers and Arrays (one dimensional, two dimensional), Array of Pointers. Structures and Pointers, Self-Referential Structures. (Chapter 11: 11.1 – 11.31 & Chapter 12: 12.4,12.6)

UNIT- V
File Handling: Introduction, Text Files and Binary Files, File Handling Functions- Opening and Closing a File, File Opening Modes, Reading and Writing a File. Random Access File Functions – fseek() , rewind(), ftell(). (Chapter 13: 13.1 – 13.31)
Command Line Arguments, C Preprocessor Directives (Chapter 15: 15.7, 15.20)

Course Outcomes:
- Understanding how problems are posed and how they can be analyzed for obtaining solutions.
- Understanding the fundamentals of C programming.
- Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.
- Implementing different operations on arrays and creating and using of functions to solve problems.
- Ability to design and implement different types of file structures using standard methodology.

TEXT BOOK:
1. Byron Gottfried, *"Programming with C"* . Third Edition(Schaum's Outlines) McGraw Hill.

REFERENCE BOOKS:

1. B.A. Forouzan and R.F. Gilberg *,"C Programming and Data Structures"* , Cengage Learning (3rd Edition)
2. Pradip Dey & Manas Ghosh, *"Programming in C"*, 2nd Edition , Oxford University Press,2013.
3. E. Balaguruswamy , *"Programming in ANSI C "* ,McGraw-Hill Education, 2008.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18PH02) APPLIED PHYSICS LAB

B.Tech : I-Sem: ECE, CSE & EEE   **L T P C**

II-Sem: CIVIL, MECH   **0 0 3 1.5**

Pre-requisites: Basic Knowledge of Principles of Optics, Semiconductors, Electrical and Electronic devices

Course Objectives: The purpose of doing the experiments in laboratory is not simply to verify a principle but also to explore the other related phenomena and to find their applicability. The students are suggested to work in this direction and get benefit out of it.

• To get practical knowledge which is related to the engineering course in the development of new technologies.
• To impart fundamental knowledge in handling the equipments in Physics laboratory.

S.No.   **Name of the Experiment**
1. Determination of wavelength and radius of curvature of plano convex lens using Newton Rings Experiment.
2. Study of LED & LASER diode Characteristics.
3. Study PHOTO diode Characteristics.
4. Determination of energy gap of material of p-n junction.
5. Bending losses of optical fibres and evaluation of numerical aperture of a given optical fibre.
6. Study P-N diode Characteristics.
7. Study of Characteristics of solar cell.
8. Determination of wavelength of Laser source – Diffraction grating.
9. Determination of frequency of AC supply – sonometer.
10. Determination of dispersive power of a material of a prism-spectrometer.

Course Outcomes:
• Operate different equipments related to light & electronics.
• Develop experimental skills to design new experiments & circuit design
• Understand about modern equipment like solar cell, optical fibre etc.,
• Have Exposure to develop novel semi conductor devices.

TEXT BOOKS:
1. A Text Book of Engineering Physics, Dr. M.N. Avadhanulu, Dr. P.G. Kshrisagar-S.Chand.
2. Modern Engineering Physics (Vol-I & II), Dr. K. Vijaya Kumar, Dr. S. Chandralingam – S.Chand.
3. Engineering Physics, P.K.Palani Swamy, Scitech Publications.
4. Electric Devices & Circuits – Millman & Halkies.
REFERENCE BOOKS:
1. Haliday and Resnick, Physics-Wiley
2. J. Singh Semiconductor Optoelectronics: Physics and Technology, Mc. Graw-Hill inc(1995).
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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS02) PROGRAMMING FOR PROBLEM SOLVING LAB

B.Tech : I-Semester   **L T P C**
                                                           0 0 2 1

Pre-requisites: None

Course Objectives:

To provide the necessary knowledge and practical training on general engineering problem solving methodologies and to provide necessary foundations for step by step computer program development and to present the basic concepts in C programming language and to prepare the students to write modular and readable C Programs. Also the Lab Course implements the essential concepts like abstract data types, user defined data types, to analyze the performance of algorithms and how to use such knowledge for later processing with the help of files and aims to train the students to write working programs to solve problems

WEEK-1

1.a) Write a C program to find the areas of shapes like circle, square, rectangle and triangle
1.b) Write a C program to demonstrate Type Casting and Type Conversion.

WEEK-2

2.a) Write a C program to find the roots of a quadratic equation.
2.b) Write a C program to find greatest of any 3 numbers.
2.c) Write a C program, which takes two integer operands and one operator from the user,
    performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use
    Switch Statement)

WEEK-3

Fibonacci sequence is defined as follows: the first and second terms in sequence are 0 and 1.
Subsequent terms are found by adding the preceding two terms in the sequence. Write a C
program to generate the first n terms of the sequence.
Write a C program to generate all the prime numbers between 1 and n, where n is a value
supplied by the user.
Write a C program to find the second largest number in a set of n numbers.

WEEK-4

Write a C program to generate Pascal's triangle.
Write a C program to find the LCM(Least Common Multiple) and GCD (greatest common
divisor) of two given integers.
Write a C program to construct a pyramid of numbers.

WEEK-5

Write a C program to find sum of series $1+x^1+x^2+x^3+ ...... +x^n$ using functions.
Write a C program to find factorial of a given number using Recursion. 5.c)
Write a C program to demonstrate the use of Storage Classes

WEEK-6
Write a C program to find both the largest and smallest number in a list of integers.
Write a C program to reverse the elements of an array (i.e., the first value should become last value etc.)
Write a C program to insert an element at a given position in an Array using functions.

WEEK-7
7. Write a C program to perform all of the following:
   a) Matrix Addition and subtraction
   b) Matrix Multiplication
   c) Find Transpose and test if a matrix is symmetric or not
   d) test if a matrix is identity matrix or not

WEEK-8

8.a) Write a C program to perform linear search
8.b) Write a C program to perform binary search
8.c) Write a C program to sort the elements using bubble sort

WEEK-9
9.a)Write a C program to insert a sub-string in to a given main string at a given position.
9.b) Write a C program to count number of characters, words and sentences in a given text.
9.c) Write a C program to determine if the given string is a palindrome or not.
9.d) Write a C program to sort the given names in alphabetical order.

WEEK-10
Write a C program to implement array of structures.(use student structure).
Write a menu driven C program that uses functions to perform the following operations on complex numbers stored in a structure:
   i.Reading a complex number
   ii.Writing a complex number
   iii.Addition of two complex numbers
   iv.Multiplication of two complex numbers
   Write a C program to demonstrate Unions and enum.

WEEK-11

Write a C program for Pointer Arithmetic.
Write a C program to swap two numbers using Call by value and Call by reference.
Write a C program to demonstrate calling of a function (like add, subtract, multiply) using a function pointer.

WEEK-12

Write a C program using pointer to create a two dimensional matrix, to input values in to the matrix and to display the matrix and its transpose. Free the memory properly.
Write a C program to demonstrate on structures and pointers.
Write a C program for dynamic creation of structures using pointers

WEEK-13

Write a C program to count no of alphabets, no of digits, no of special symbols, no of white spaces and no of tabs in a given text file.

Write a C program which copies one text file to another text file and verify the correctness. 13.c)
Write a C program which copies one binary file to another binary file and verify the correctness.

WEEK-14

Write a C program to produce reverse of the content of a text fie into another text file and verify the result.

Write a C program to merge two text files into a third text file (i.e., the contents of the first file followed by those of the second are put in the third file) and verify the correctness.

WEEK-15

Write a command-line C program to reverse the first n characters in a file.
(Note: The file name and n are specified on the command line.)

Write a C Program that removes all comment lines from a C source file.

Course Outcomes:

- Understand basic structure of the C Programming, data types, declaration and usage of variables, control structures and all related concepts.
- Ability to understand any algorithm and Write the C programming code in executable form.
- Implement Programs using functions, pointers and arrays, and use the pre-processors to solve real time problems.
- Ability to use file structures and implement programs on files.

TEXT BOOK:

1. Byron Gottfried, **"Programming with C"** . Third Edition(Schaum's Outlines) McGraw Hill.

REFERENCE BOOKS:

4. B.A. Forouzan and R.F. Gilberg *,"C Programming and Data Structures"* , Cengage Learning (3rd Edition)
5. Pradip Dey & Manas Ghosh, *"Programming in C"*, 2nd Edition , Oxford University Press,2013.
6. E. Balaguruswamy , *"Programming in ANSI C "* ,McGraw-Hill Education, 2008.

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18MC01) INDUCTION PROGRAM
(Common to All Branches)

B.Tech : I-Semester :   **L T P C**
                                                                   0 0 0 0

Objectives:

When new students enter an institution, they come with diverse backgrounds, thoughts and preparations. It is very important to help them adjust to the new environment. The following are the activities of induction program in which the students would be fully engaged throughout the day for entire duration of the program.

1. **Physical Activity:** This would involve a daily routine of physical activity with games and sports. Each student should pick one game and learn it for three weeks. This would also involve gardening or other suitably designed activity.

2. **Creative Arts:** Every student would select one skill related to arts whether visual arts or performing arts. The student would practice it every day for the duration of the induction program.

3. **Universal Human Values:** This will help the students to experience the joy of learning, stand up to peer pressure, take decisions with courage, be aware of relationships with inmates, etc.

4. **Proficiency Modules:** During the induction program crash courses have to be conducted to improve English skills.

5. **Lectures by Eminent people:** This period can be utilized for lectures by eminent personalities. It would give the students exposure to people who are in public life and are socially active.

6. **Literary:** Literary activity would encompass reading, writing and debating, enacting a play, etc.

7. **Familiarization to Dept./Branch & Innovations:** The students are explained about different methods of study. They are further explained about the different aspects of their branches, departments and the role they play in the society. The different laboratories, workshops & other facilities available in the departments are introduced to the students.

Course Outcomes:

- Notwithstanding the above activities of the induction program, any other relevant activity may be planned to enthuse, encourage and benefit the students.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MA02) DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS
(Common to All Branches)

B.Tech : II-Semester   **L T P C**
                                                            3 1 0 4

Pre-requisites: Mathematical Knowledge of 12th / Intermediate level

Course Objectives: To learn
- Methods of solving the differential equations of first and higher order.
- Evaluation of multiple integrals and their applications
- The physical quantities involved in engineering field related to vector valued functions
- The basic properties of vector valued functions and their applications to line, surface and volume integrals

UNIT-I: First Order ODE
Exact, linear and Bernoulli's equations; Applications: Newton's law of cooling, Law of natural growth and decay; Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

UNIT-II: Ordinary Differential Equations of Higher Order
Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type e^{ax}, sin ax, cos ax, polynomials in x, $e^{ax}V$ (x); method of variation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

UNIT-III: Multivariable Calculus (Integration)
Evaluation of Double Integrals (Cartesian and polar coordinates); change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals. Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals), Centre of mass and Gravity (constant and variable densities) by double and triple integrals (applications involving cubes, sphere and rectangular parallelopiped).

UNIT-IV: Vector Differentiation
Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V: Vector Integration
Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

Course Outcomes:

On successful completion of this course, students will be able to:

- Apply the fundamental concepts of ordinary differential equations to real time problems.
- Find the complete solution of a non homogeneous differential equations and applying its concepts in solving physical problems of Engineering.
- Evaluate the multiple integrals in various coordinate systems.
- Apply the concepts of gradient, divergence and curl to formulate Engineering problems.
- Analyze line, surface and volume integrals using fundamental theorems.

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Editions, 2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006

REFERENCE BOOKS:

1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002
2. Paras Ram, Engineering Mathematics, 2nd Edition, CBS Publishers
3. S.L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EE02) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

B.Tech : I-Sem : CIVIL, MECH   **L T P C**

II-sem : CSE   **3 0 0 3**

Pre-Requisites: None

Course objectives:

In this course it is aimed to introduce

- The basic concepts of electrical circuits which is the foundation for all subjects of electrical engineering
- To understand about single phase and three phase AC circuits.
- To understand functioning of different types of DC machines, AC machines and transformers .
- To learn basic concepts of diodes , Rectifiers and filters.
- To understand the various operations of transistors and special purpose diodes.

UNIT-I: Electrical Circuits: Circuits concept, R-L-C Parameters, Voltage and Current sources, Source Transformation, V–I relationship for Passive elements, Kirchoff's Laws, Network reduction techniques – series, parallel, series parallel, star-delta & star-delta transformations, Nodal Analysis, Mesh analysis with DC excitations. Network Theorems - Thevenin's, Norton's, Maximum Power Transfer, Superposition, Reciprocity Theorems with DC excitation.

UNIT- II: Single Phase AC Circuits - R.M.S. and Average values, Form Factor, steady state analysis of series, Parallel and Series parallel Combinations of R, L and C with Sinusoidal excitation, concept of reactance, Impedance, Susceptance and Admittance – phase and phase difference, Concept of Power Factor, j-notation, complex and Polar forms of representation. Three Phase AC Circuits: Production of 3▢ Voltages, Voltage & Current relationships of Line and Phase values for Star and Delta connections.

UNIT- III: D.C.Machines: Constructional features, Methods of Excitation, E.M.F.

Equation and Applications, Torque development in D.C motor, Characteristics of DC

motors, losses, Efficiency, Swinburne's test, Speed control of DC Shunt motors Single

Phase Transformers: Construction and principle of operation, 3-Phase Induction Motor:

Constructional features, Principle of Operation (Basic fundamentals only)

UNIT- IV: P-N Junction Diode - Diode equation, Energy Band diagram, V-I characteristic, Temperature dependence, Ideal versus practical, Static and dynamic resistances, Equivalent circuit. Rectifiers and Filters - The P-N junction as a rectifier - A Half Wave Rectifier, Ripple Factor, Full Wave Rectifier, Bridge Rectifier, Filters – Inductor Filters, Capacitor Filters, Lsection Filters, π- section Filters.

UNIT- V: Bipolar Junction Transistor (BJT) - Construction, Principle of Operation, CB, CE and CC configurations. Junction Field Effect Transistor - Construction, Principle of Operation, V-I Characteristic, Comparison of BJT and FET, Zener Diode and SCR Devices- Zener diode characteristics, Use of Zener diode as simple regulator, Breakdown Mechanisms in Zener diode, Principle of Operation of SCR.(Basic fundamentals only)

Course Outcomes: After the course completion, the students are able to:

- Learn Basic circuit concepts such as electrical parameters, quantities , laws and network reduction techniques and apply the network theorems with DC excitation in the systems
- Analyze the steady state operation of single phase and three phase AC circuits and study the relationship between voltage and current for delta and star connections
- Explore the construction, working , control and testing of various DC and AC Machines
- Gain knowledge on basic electronic devices such as P-N junction Diode, rectifiers and filter with their V-I characteristics.
- Acquire extended knowledge on next generation of electronic devices such transistors, zener diode and SCR devices.

TEXT BOOKS:

1. Electronic Devices and Circuits – R.L. Boylston and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
2. Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.
3. Electrical Machines – by P.S.Bimbra

REFERENCE BOOKS:

1. Introduction to Electronic Devices and Circuits-Rober T. Paynter, Pearson Education.
2. Electronic Devices and Circuits - K. Lal Kishore, B.S. Publications, 2nd Edition, 2005.
3. Electrical Machines – by J.B.Gupta.
4. Network Theory by N.C.Jagan&C.Lakshminarayana, B.S. Publications.
5. Network Theory by Sudhakar, Shyam Mohan Palli, TMH.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CH01)ENGINEERING CHEMISTRY

B.Tech : I-Sem: CIVIL,EEE, M E C H   **L T P C**

    II-Sem: ECE, CSE   **3 1 0 4**

Pre-requisites: Knowledge of Chemistry fundamentals, Organic Chemistry, Polymers, Water Technology

Course Objectives:

- To bring adaptability to the concepts of chemistry and to acquire the required skills to become a perfect engineer.
- To impart the basic knowledge of molecular and electronic modifications which makes the student to understand the technology based on them.
- To acquire the knowledge of electrochemistry, different batteries, solar cells, corrosion and water treatment which are essential for the Engineers and in industry.
- To acquire the skills and knowledge to organic reactions and importance of polymers in engineering and everyday life.

UNIT-I: Molecular structure
Metallic bonding, valence bond theory, crystal field theory and the energy level diagrams of transition metal ions (splitting of d-orbitals in octahedral and tetrahedral geometry) and their magnetic properties. Atomic and molecular orbitals. LCAO, molecular orbital theory of diatomic molecules. N_2& O_2. (Text book-2 page no: 1.1-1.28)

UNIT-II: Organic reactions and Polymers
Organic Chemistry: Introduction to types of organic reactions involving substitution, addition, elimination, oxidation by $KMnO_4$, OsO_4, reduction by $LiAIH_4$, $NaBH_4$. (Text book-2 page no: 4.21-4.51)
Polymers: Introduction to polymers, classification of polymers, mechanism of free radical addition polymerization, properties of polymers-crystallinity, melting point, boiling point and glass transition temperature. (Text book-2 page no: 10.1-10.16) Conducting polymers-classification, mechanism of conduction in conducting polymers-poly acetylene and ploy aniline, applications. (Text book-2 page no: 10.48-10.54)

UNIT-III: Electrochemistry
Introduction to electrochemistry, conductance-specific, equivalent and molar conductance, units and their relation. Numerical Problems. Applications of conductance – conductometric titrations.
Electrochemical and Electrolytic cells, Galvanic cell, Electro chemical series-applications, measurement of e.m.f. and single electrode potential, Nernst's equation and its applications, Types of electrodes: Reference electrodes (SHE, SCE and QH), Ion-selective electrode-glass electrode, applications of electrode potentials-determination of pH and potentiometric titrations. Batteries: primary cells-lithium cells. Secondary cells –

Pb-acid storage cell, lithium-ion cells. Fuels cells- hydrogen-oxygen fuel cell. Methanol-oxygen fuel cell-advantages and applications. (Text book-4 page no: 3-84)

UNIT-IV: Water Technology & Corrosion

Introduction, types of hardness, units and Numerical problems. Estimation of hardness of water- EDTA method. (Text book-4 page no: 273-299)

Boiler troubles-scales and sludges. (Text book-4 page no: 313-317)Treatment of Boiler feed water-Ion-exchange process. De-salination of brackish water-Reverse Osmosis. Domestic water treatment-specifications and steps involved in the treatment of potable water. (Text book-4 page no: 347-368)

Corrosion: Introduction, causes of corrosion, types of corrosion-dry and wet corrosion-mechanism of electrochemical corrosion. Caustic embrittlement and boiler corrosion. Factors affecting corrosion and corrosion control methods-proper designing, cathodic protection (sacrificial anodic protection and impressive current cathodic protection) and surface coatings (anodic and cathodic), Methods of application of metal coatings-Hot dipping(galvanization and tinning) and electroplating of copper.
(Text book-4 page no: 101-139)

UNIT-V: Phase rule and Surface chemistry

Phase rule: Definition of terms, phase rule equation, phase diagrams: one component system – water system, two component system- Ag-Pb system, Iron-carbon phase diagram-cooling curves, annealing and case hardening. (Text book-4 page no: 496-532)

Surface Chemistry: Adsorption-types of adsorption, adsorption isotherms- Freundlich adsorption isotherm and Langmuir adsorption isotherm, applications of adsorption. (Text book-4 page no: 380-391)

Course Outcomes: The basic concepts included in this course will help the student to gain:

- ☐ Recall previous knowledge regarding atomic and molecular structure.
- ☐ Design polymeric engineering materials. Recall basic organic reactions
- ☐ Construct batteries and classify different electronics and electrical like cells , electrodes, e.t.c…help them to construct different electrical/ electronic parts.
- ☐ Examine which type of impurities are present in water, specification of drinking water and explain the corrosion behavior/ activity of metals.
- ☐ Apply phase rule and adsorption to construct the materials by analyzing their compositions.

TEXT BOOKS:
1. Text book of Engineering Chemistry by Jain & Jain.
2. Text book of Engineering Chemistry, CENGAGE learning by Prasanta Rath, B.Ramadevi, Ch. Venkata Ramana Reddy & Subhendu Chakroborty.
3. University chemistry, by B. H. Mahan
4. Engineering Chemistry by Shashi Chawla

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EN02) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

B.Tech : II-Sem: CSE, ECE   **L T P C**

                                                            0 0 2 1

Pre-requisites: Knowledge of Grammar and Vocabulary

The **Language Lab** focuses on the production and practice of sounds of language to familiarize the students with the use of English in everyday situations both in formal and informal contexts.

Course Objectives:

- To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
- To sensitize students to the nuances of English speech sounds, stress and intonation.
- To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
- To improve the fluency of students in spoken English and neutralize the influence of the sounds of their mother tongue
- To train students to use language appropriately for public speaking and interviews

Syllabus

English Language and Communication Skills Lab (ELCS) shall have two parts:

a. Computer Assisted Language Learning (CALL) Lab

b. Interactive Communication Skills (ICS) Lab

Listening Skills

Objectives

1. To enable the students develop their listening skills so that they may appreciate its role in developing LSRW skills language and improve their pronunciation

2. To impart the students with necessary training in listening so that they can understand the speech of people of different backgrounds and regions

Students should be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the right intonation in sentences.

• Listening for general content • Listening to fill in information • Intensive listening • Listening for specific information

Speaking Skills

Objectives

1. To involve the students in speaking activities in various contexts

2. To enable the students express themselves fluently and appropriately in social and professional contexts

• Oral practice: Just A Minute (JAM) Sessions • Describing objects/situations/people • Role play – Individual/Group activities

The following course content is prescribed for the English Language and Communication Skills Lab based on Unit-6 of AICTE Model Curriculum 2018 for B. Tech First English.

Exercise – I

CALL Lab: *Understand:* Listening Skill- Its importance – Purpose- Process- Types- Barriers. *Practice*: Introduction to Phonetics – Speech Sounds – Vowels and Consonantal Phonemes.

ICS Lab: *Understand:* Communication at Work Place- Spoken vs. Written language. *Practice:* Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others.

Exercise – II

CALL Lab: *Understand:* Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context. *Practice:* Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

ICS Lab: *Understand:* Features of Good Conversation – Non-verbal Communication. *Practice:* Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise - III

CALL Lab: *Understand:* Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).

Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.

ICS Lab: *Understand:* How to make Formal Presentations. *Practice:* Formal Presentations.

Exercise – IV

CALL Lab: *Understand:* Listening for General Details. *Practice:* Listening Comprehension Tests.

ICS Lab: *Understand:* Public Speaking – Exposure to Structured Talks. *Practice:* Making a Short Speech – Extempore.

Exercise – V

CALL Lab: *Understand:* Listening for Specific Details. *Practice:* Listening Comprehension Tests.

ICS Lab: *Understand:Debate/Group Discussion/* Interview Skills. *Practice:Mock Group Discussion/* Mock Interviews.

Minimum Requirement of infrastructural facilities for ELCS Lab:

1. Computer Assisted Language Learning (CALL) Lab:

The Computer Assisted Language Learning Lab has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English language learning software for self- study by students. **System Requirement (Hardware component):** *Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:*

i) Computers with Suitable Configuration

ii) High Fidelity Headphones

2. Interactive Communication Skills (ICS) Lab:

The Interactive Communication Skills Lab: A Spacious room with movable chairs and audio-visual aids with a Public-Address System, a LCD and a projector etc.

Course Outcomes:

Students will be able to attain -

- Neutralization of the influence of the sounds of their mother tongue
- Better understanding of nuances of English language through audio- visual experience and group activities
- Speaking with clarity and confidence which in turn enhances their employability skills
- Using language appropriately for public speaking

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EE03) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
LAB

B.Tech : II-Semester   **L T P C**

Pre-Requisites: None   **0 0 3 1.5**

Course Objectives:

• Impart a basic knowledge of electrical quantities such as current, voltage, power, energy and frequency to understand the impact of technology in a global and societal context.
• Provide working knowledge for the analysis of basic DC and AC circuits used in electrical and electronic devices.

• To explain the working principle, construction, applications of DC machines, AC machines & measuring instruments.

• Highlight the importance of transformers in transmission and distribution of electric power.

List of Experiments

1. Verification of Kirchhoff's Laws.
2. Verification of Superposition and Reciprocity Theorems.
3. Verification of Thevenin's and Maximum Power transfer theorem.
4. Speed Control of DC Shunt Motor.
5. Swinburne's Test on DC shunt machine.
6. Brake test on DC shunt motor.
7. OC & SC tests on single phase transformer.
8. PN Junction Diode characteristics (Forward bias & Reverse bias).
9. Transistor CE Characteristics (Input and Output)
10. Rectifier with and without filters (Full wave & Half wave)

Course outcomes: After the course completion, the students are able to

• Learn to simplify complex electric and electronic circuits by applying the KVL and KCL laws
• Identify the optimal loading on the system.
• Analyze the performance of DC machines
• Identify and analyze the performance and operation of semi conducting devices.

TEXT BOOKS:

1. Electronic Devices and Circuits – R.L. Boylston and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
2. Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.
3. Electrical Machines – by P.S.Bimbra

REFERENCE BOOKS:

1.   Introduction to Electronic Devices and Circuits-Rober T. Paynter, Pearson Education.
2.   Electronic Devices and Circuits - K. Lal Kishore, B.S. Publications, 2nd Edition, 2005.
3.   Electrical Machines – by J.B.Gupta.
4.   Network Theory by N.C.Jagan&C.Lakshminarayana, B.S. Publications.
5.   Network Theory by Sudhakar, Shyam Mohan Palli, TMH.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18ME02) ENGINEERING WORKSHOP & IT WORKSHOP

B.Tech : I-Sem:ECE, EEE   **L T P C**
         II-Sem: Civil, MECH, CSE   **0 0 3 1.5**

Pre-requisites: None

Course Objectives:
- Know the usage of various tools and their application in carpentry, tin smithy.
- Know the usage of various tools and their application in black smithy, foundry, welding and house wiring.
- Make lap joint and dove tail joint in carpentry.
- Make scoop, funnel and tray like items in tin smithy.
- Use one – way, two-way switches, parallel and series connections in house wiring.
- Know the basics of welding.

UNIT- I
TRADES FOR EXERCISES: (Any six trades from the following for Mechanical Engineering Branch & Any four trades for all other Branches with minimum of two exercises in each trade)
1. Carpentry
2. Fitting
3. Tin – Smithy
4. Black Smithy
5. House – wiring
6. Foundry
7. Plumbing
8. Soldering

UNIT- II
TRADES FOR DEMONSTRATION & EXPOSURE
1. Demonstration of Power tools & wiring
2. Welding.
3. Machine Shop

UNIT- III
IT WORKSHOP I: Computer hardware, identification of parts, Disassembly, Assembly of computer to working condition, simple diagnostic exercises.
IT WORKSHOP II: Installation of operating system windows and Linux simple diagnostic exercises.

Course Outcomes:
The students will be able to
- Know the fundamental knowledge of various trades and their usage in real time Applications.
- Gain knowledge of Foundry, Welding, Black smithy, Fitting, Machine shop and house wiring.
- Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering.

- Use basic concepts of computer hardware for assembly and disassembly

TEXTBOOKS:

1. Workshop Manual – P.Kannaiah / K.L.Narayana/Scitech Publishers.
2. Workshop Manual – Venkat Reddy/BS Publication / 6th Edition.

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VAAGDEVI COLLEGE OF ENGINEERING
(UGC AUTONOMOUS)

(B18CS03) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

B.Tech : III SEMESTER **L T P C**
 4 0 0 4

Pre-Requisites: None

Course Objectives:
This course is designed to introduce students to the techniques, algorithms, and reasoning processes involved in the study of Mathematical Foundation of Computer Science. Students will be introduced to set theory, elementary and advanced counting techniques, equivalence relations, recurrence relations, graphs, and trees. Through their study of these topics students will develop a greater understanding of the breadth of mathematics and will acquire a familiarity with concepts, structures and algorithms that are essential to the field of computer science and applied mathematics.

UNIT-I
Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms. **Predicates :** Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving.(Refer: Text Book1.P.g.Nos.1,2,7-18,23,24,26,30,32,50-58,68-74,79-88).

UNIT-II
Relations: Properties of binary Relations, equivalence, transitive closure, compatibility and partial ordering relations. **Functions:** Inverse Function, Composition of functions, recursive Functions, Lattice and its Properties. (Refer: Text Book1.P.g.Nos.149, 153,154,164-183,198-201,232).

UNIT-III
Elementary Combinatorics: Basis of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion -Exclusion. Pigeon hole principles and its application... (Refer: Text Book2.P.g.Nos.125, 126,143,162,172,189,201,211).

UNIT-IV
Recurrence Relation : Generating Functions, Function of Sequences Calculating Co-efficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating functions. Characteristics roots solution of In- homogeneous Recurrence Relation... (Refer: Text Book2.P.g.Nos.237, 247,264,280,300,306).

UNIT-V
Graph Theory: Basic Concepts, Isomorphisms and Subgraphs, Trees and Their Properties Spanning Trees, B.F.S,D.F.S. Directed Trees, Binary Trees, Planar Graphs, Euler's Formula, Multigraphs and Euler Circuits, Hamiltonian Graphs, Chromatic Numbers, The Four-Color Problem...(Refer: Text Book2.P.g.Nos.437,449,468,480,498,507,523,530,535,452,558,569).

Course Outcomes:

After the completion of this course, the students should be able to

- Evaluate the notions of propositions, predicate formulae, Rules of inference.
- Illustrate and describe various types of Relations and Functions.
- Apply knowledge of Mathematics, Combinations & Permutations, Binomial Multinomial theorems, Pigeon hole principles.
- Develop to solve the recurrence relations by using various methods.
- Perceive the basic concepts of graph theory and apply for real time examples.

TEXT BOOKS:

1. Discrete Mathematical Structures with Applications to Computer Science-J.P.Tremblay R.Manoharn, Tata McGraw Hill.
2. Discrete mathematics for computer scientists & mathematicians JL Mott, A Kandel, T.P.Baker PHI.

REFERENCE BOOKS:

1. Discrete Mathematics and its Applications, Kenneth H.Rosen, Fifth Edition.TMH.
2. Discrete Mathematical Structures Theory and application-Malik & Sen, Cengage.
3. Discrete Mathematics with Applications, Thomas Koshy, Elsevier.
4. Logic and Discrete Mathematics, Grass Man & Trembley, Pearson Education.
5. Mathematical Foundations of Computer science, 3rd Edition, Dr. D.S.C.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EC49) DIGITAL LOGIC DESIGN & MICRO PROCESSORS

B.Tech : III SEMESTER

L T P C
3 0 0 3

Pre-Requisites: None

Course Objectives:
This course provides in depth knowledge of switching theory and the design techniques of digital circuits, which is the basis for design of any digital circuit, and to develop an in-depth understanding of the operation of microprocessors. Machine language programming.

UNIT – I
Number systems, conversion, signed binary numbers, floating point number representation, binary codes, digital logic gates, Boolean algebra, basic theorems & properties, Boolean functions, canonical and standard forms.

UNIT – II
Gate level minimizations, K-Map - three variable, four variable and five variable, SOP, POS simplifications, NAND and NOR implementation and other two level implementation.

UNIT – III
Combinational circuits for code converters, Binary adders, subtractor, basic multiplier, comparator, decoders, encoders, multiplexers and demultiplexers, latches, flip-flops counters and shift registers.

UNIT – IV
8086 Architecture and Register Organization, Memory Organization & Segmentation, 8086 flag register, Minimum Mode & Maximum Mode with Timing Diagrams, Signal description of 8086 common function signals.

UNIT – V
Addressing Modes of 8086, instruction set & formats, Assembly language programs involving Branch & Call instructions, sorting, evaluation of arithmetic expressions.

Course Outcomes:
After the completion of this course, the students should be able to

- Understand the basic concepts of different Number systems and basic theorems using in Boolean algebra.
- Design the logic circuits using basic logic gates by reducing the Boolean expressions with the help of Karnaugh Map.
- Analyze various types of combinational and sequential circuits.
- Understand the internal organization of popular 8086microprocessors.
- Learn the design of microprocessors – based systems.

TEXT BOOKS:

1. Digital Design. M. Morris Mano.
2. Advanced microprocessors and peripherals – A. K. Ray & K. M. Bhurchandani, TMH, 2nd Edition 2006
3. Digital logic and state machine design – David. J Comer Oxford University Press
4. Microprocessor and interfacing – N. Senthil Kumar, M. Saravanan S. Jeevananthan s. K. Shah Oxford University Press

REFERENCE BOOKS:

1. D. V. Hall, microprocessor and interfacing, TMGH, 2nd Edition 2006.
2. Micro computer system 8086/8088 Family Architecture, Programming and Design – Liu and GA Gibson, PHI, 2nd Ed.
3. Switching and Finite Automata Theory by Zvi. Kohavi, Tat McGraw Hill.
4. Switching and logic design, C.V.S. Rao. Pearson Education.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS04)DATABASE MANAGEMENT SYSTEMS

B.Tech : III SEMESTER   **L T P C**
                                                           4 0 0 4

Pre-requisites: Data Structures, Mathematics-I

Course Objectives:
This Course provides an emphasis on how to organize, maintain and retrieve information efficiently and effectively from a Database and it presents an introduction to data base management systems (DBMS) and relational data model. Also the course introduces the concepts of transactions and transaction processing and the issues and techniques relating to concurrency and recovery in multi-user database environments.   .

UNIT- I: Introduction
 Database system Applications - Database System versus File Systems - View of Data– Instances and schema - Data Models - Database Languages -DDL-DML - Database Users and Administrator –Transaction Management - Database System Structure-Application Architectures – History of Database Systems.**(Text book1 Chapter 1:-Refer Pg.No 1-24 & 27-30)**

UNIT- II: Database Design and ER model
Basic concepts - Entity sets and Relationship Sets – Constraints - Keys - Design Issues - Entity-Relationship Diagram- Weak Entity Sets - Extended E-R Features - Designing of an E-R Database Schema-Reduction of an E-R Schema to Tables.**(Text book1 Chapter 7:-Refer Pg.No 259-271 & 274-303)**

UNIT- III: Relational Model
Introduction to the Relational Model – Structure of Relational Databases - Relational Algebra – Relational Calculus – Domain relational Calculus, Tuple Relational Calculus - Integrity and Security –Domain Constraints, Referential Integrity Constraints-Triggers-security and Authorization – SQL- Basic Structure, Set operations, Aggregate Operations –Null values- Nested Sub queries – Views –Modification of Database- Joined relations, Data Definition Language. **(Text book1 Chapter 2:-Refer Pg.No 39-45,Chapter 6:-Refer Pg.No 217-247, Chapter 3:-Refer Pg.No 57-103).**

UNIT- IV: Informal Design guidelines for Relation Schema
Functional Dependencies– Normal Forms based on Primary Keys-Decomposition–Desirable properties of Decomposition – First Normal Form,Second Normal Form–Third Normal Form-Boyce- Codd Normal Form - Multivalued Dependency- Fourth Normal Form- Fifth Normal Form-Transactions-Transaction Concept- Transaction state- Implementation of atomicity and Durability-Concurrent Executions – Serializability, Recoverability-Implementation of Isolation **(Text Book 2 Chapter 14:-Refer Pg.No 489-520 ,Text Book 1 Chapter 14:-Refer Pg. No 627-649)**

UNIT-V: Concurrency Control

Lock Based Protocols, Dead Lock Handling, Multiple Granularity, Time-stamp Based Protocols, Validation Based Protocols.

Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Log Based recovery, Shadow Paging, Recovery with concurrent transactions.

Storage and File Structure - File Organization – Organization of records in file - Data Dictionary Storage – Indexing and Hashing – Basic Concepts , Ordered Indices, B+ Tree Index files, B- tree index files – Static Hashing – Dynamic Hashing – Comparison of Indexing and Hashing. (**Text book1 Chapter 15:-Refer Pg.No 661-668, Chapter 16:-Refer Pg.No 721-755, Chapter 10:-Refer Pg.No 429-463, Chapter 11:-Refer Pg.No 475-523**)

Course Outcomes:

After the completion of this course, the students should be able to

- Perceive the fundamental concepts of database management.
- Analyze database models & Entity Relationship models and to draw the E-R diagram for the given case study.
- Apply relational Database Theory, and be able to write relational algebra expressions for queries.
- Apply Normalization Process to construct the database and explain Basic Issues of Transaction processing.
- Compare the basic Database storage structures and access techniques: File Organization indexing methods including B- Tree and Hashing.

TEXT BOOKS:

1. Database System Concepts, Silberschatz, Korth , sixth Edition, McGraw hill.

2. Database Systems,Ramez Elmasri Shamkant B.Navathe Pearson Education,6th edition

REFERENCE BOOKS:

1. Database Management Systems, Raghuramakrishnan, Johannes Gehrke, TATA Mc Graw Hill
2. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
3. Database Systems ,The Complete Book, Hector Garcia-Molina, Jeffrey D.Ullman,Jennifer Widom.
4. An Introduction to Database Systems, C.J. Date ,Eighth edition

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS05) DATA STRUCTURES THROUGH C++

B.Tech : III SEMESTER   **L T P C**

                                                                 4 0 0 4

Pre-requisites: Programming for Problem Solving

Course Objectives:

To provide a comprehensive working knowledge on the object oriented language C++ and to implement abstract data types, linear and nonlinear data structures for problem solving. To provide a foundation on generic programming based on over loading concepts, inheritance and virtuality. To inculcate ability to grasp the behavior of data structures such as stacks, queues, trees, hash tables, search trees, graphs and their representation and to apply them in problem solving. To provide a working knowledge on programs to solve problems on arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees

UNIT-I

C++ Class Overview- Class Definition, Objects, Class Members, Access Control, Class Scope **(Book1:223-257)**, Constructors and destructors, parameter passing methods**(Book1:32-36)**, Inline functions, static class members**(Book1:144-147)**, this pointer, friend functions**(Book1:32-33)**, dynamic memory allocation and de-allocation (new and delete)**(Book1:127-128,576-577).**

UNIT-II

Function over Loading, Operator Overloading **(Book1:149-156,261-297)**, Generic Programming- Function and class templates**(Book1:327-352)**, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes**(Book1:301-325).**

UNIT-III

Algorithms, performance analysis- time complexity and space complexity**(Book 3:95-120)**. Review of basic data structures- The list ADT (Single Linked List, Double Linked List, Circular Linked List), Stack ADT**(Book3:271-286)**, Queue ADT, implementation, operations- insertion, deletion and searching**(Book3:317-333)**. Hash Table Representation, Hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing. **(Book3:381-394), (Book2:49-66)**

UNIT-IV

Priority Queues _ Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion. **(Book3:464-478) (Book2:406-424)** Trees definitions. **(Book2:305-324)** Binary trees, Tree Traversing Techniques. Binary Search Trees ADT - Implementation, Operations Searching, Insertion and Deletion. **(Book3:529-545)** AVL Trees, Definition, Height of an AVL Tree, Operations _ Insertion, Deletion and Searching. **(Book3:566-575)** B-Trees, B-Tree of order m, height of a B-Tree, insertion, deletion and searching, Comparison of Search Trees**(Book3:598-612)**

UNIT-V

Graphs: Basic terminology, representations of graphs, graph search methods DFS, BFS. **(Book3:644-656)** **(Book2:561-584)**

Sorting: Types of sorting, General sort concepts, Insertion sort**(Book2:505-515)**, Quick sort**(Book2:529-535)**, Heap sort, Merge sort**(Book2:546-552),** Comparison of all sorting methods.

Course Outcomes :

- To find the difference between structured programming and object oriented programming Language and understanding the features of C++ supporting object oriented programming.
- To explain and apply the major object oriented concepts to implement object oriented Programs in C++.
- To build the basic knowledge to handle operations like insertions, deletions, searching, and Traversing mechanisms in linear data structures.
- Examine with advanced data structure such as hash tables and priority queue data structures.
- Ability to have knowledge on trees, balanced trees, graphs and developing C++ code for non- linear data structures, and different sorting techniques.

TEXTBOOKS:

1. The C++ Programming Language 3rd Edition Bjarne Stroustrup,Pearson Education.

2. DataStructures:APseudocodeApproachwithC++,RichardFGilberg,Behrouz A

    Forouzan, CengageLearning

3. Datastructures,AlgorithmsandApplicationsinC++,S.Sahni,UniversityPress (India)

    Pvt.Ltd,2ndedition,UniversitiesPressOrientLongmanPvt.Ltd.

4. DataStructures And Algorithm in C++, M.T.Goodritch, R.Tamassia and D.Mount,Wiley India

REFERENCE BOOKS:

1. Object Oriented Programming With C++5thEdition, EBalaguruswamy, Tata Mcgraw Hill Education PrivateLimited
2. Problem solving with C++,T he OOP, Fourthedition,W.Savitch,Pearsoneducation.
3. Programming in C++, Suresh Kumar Mandala and Neelima Gurrapu, Horizon Books.
4. Datastructures and Algorithm Analysis in C++, Mark AllenWeiss, PearsonEducation. Ltd. SecondEdition.
5. Datastructures and algorithms in C++, 3rd Edition, AdamDrozdek,CengageLearning.
6. DataStructures Using C++,D.s.Malik, CengageLearning, IndiaEdition.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS06) COMPUTER ORGANIZATION & ARCHITECTURE

B.Tech : III SEMESTER   **L T P C**
                                                                   4 0 0 4

Pre-requisites: IT Workshop

Course Objectives:

To make the students learn the fundamentals of computer organization and its relevance to classical and modern problems of computer design, make them understand the structure and behavior of various functional modules of a computer, understand the techniques that computers use to communicate with I/O devices, understand the concepts of pipelining and the way it can speed up processing and to understand the basic characteristics of multiprocessors.

UNIT-I : STRUCTURE OF COMPUTERS:

Computer types, Functional units, Basic Operational concepts, Von-Neumann Architecture, Bus Structures, Software, Performance, Multiprocessors and Multicomputer.(Text book 1: pg 1-18)

REGISTER TRANSFER AND MICRO-OPERATIONS:

Register Transfer Language, Register Transfer, Bus and Memory transfers, Arithmetic micro-operations, Logic micro-operations, Shift micro-operations, Arithmetic logic shift unit.(Text book 2: pg 93-117)

UNIT-II: BASIC COMPUTER ORGANIZATION AND DESIGN:

Instruction codes, Computer registers, Computer instructions, Timing and Control, Instruction cycle, Memory-reference instructions, Input-Output and Interrupt, Complete Computer Description, Design of Basic Computer, Design of Accumulator Logic. (Text book 2: pg 125-168)

MICRO-PROGRAMMED CONTROL: Control memory, Address sequencing, Micro-program example, Design of Control Unit.(Text book 2: pg 215-236)

UNIT- III: CENTRAL PROCESSING UNIT:

General Register Organization, Stack organization, Instruction formats, Addressing modes, Data Transfer and Manipulation, Program control, Reduced Instruction Set Computer (RISC). (Text book 2: pg 243-292)

COMPUTER ARITHMETIC: Addition and Subtraction, Multiplication and Division Algorithms.(Text book 2: pg 335-354)

UNIT- IV: COMPUTER ARITHMETIC:

Floating-Point Arithmetic Operation, Decimal Arithmetic Unit, Decimal Arithmetic Operations.(Text book 2: pg 356-378)

INPUT-OUTPUT ORGANSATION:

Peripheral devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access(DMA).(Text book 2: pg 383-341)

UNIT-V: THE MEMORY SYSTEM

Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, cache memory, virtual memory. (Text book 2: pg 447-477)

PIPELINE: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline. (Text book 2: pg 301-320)

Course Outcomes:
After the completion of this course, the students should be able to

- Perceive basics Computer types, buses, registers.
- Understand basic design of Computer, addressing modes, Micro Program Example.
- Perceive control unit operations and arithmetic Operations.
- Understand various Peripheral devices operations.
- Design memory organization that uses banks for different word size operations.

TEXT BOOKS:
1. Computer Organization "Carl Hamacher, Zvonks Vranesic, SafeaZaky" , , 5th edition, McGraw Hill, New Delhi, India 2002 (Unit-I).
2. "Computer Systems Architecture", 3/e, M. Moris Mano, PEA, 2007 (Unit-II, III, IV, V).

REFERENCE BOOKS:
1. "Computer Organization and Architecture", 8/e, William Stallings, PEA, 2010.
2. "Andrew S. Tanenbaum , Structured Computer Organization", 5th edition, Pearson Education Inc, New Jersy 2006.
3. Sivarama P. Dandamudi , "Fundamentals of Computer Organization and Design", Springer Int. Edition, USA 2003.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EC50) DIGITAL LOGIC DESIGN & MICROPROCESSORS LAB

B.Tech : III SEMESTER   **L T P C**
                                                                              0 0 3 1.5

Pre-Requisites: None
Course Objectives:
- Understand need of microprocessors, microcontrollers and to know complete architectural, programming, details of 8086 microprocessor
- This course provides in depth knowledge of switching theory and the design techniques of digital circuits

Verify the functionality of the following
1. Logic gate (AND, OR, NOT, NAND, NOR, XOR, XNOR)
2. Flip flops (SR, D, JK, T)
3. Half adder and full adder circuits.
4. 3 to 8 Decoder
5. Multiplexer/Demultiplexer
6. Counters (ripple/sync)

The following programs are to be written for assembler and execute the same with 8086 kits.
1. 16 bit addition, subtraction, multiplication & division.

2. LCM (Least common multiple)

3. Greatest common divisor (GCD)

4. Fibonacci series.

5. Sorting of numbers (ascending and descending order)

6. String manipulation.

7. Searching of numbers (largest and smallest)

Course Outcomes:
After the completion of this course, the students should be able to
- Demonstrate various types of logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR) and flip flops.
- Analyze and design various types of combinational and sequential circuits.
- Develop microprocessor based programs for Arithmetic and Logical Operations
- Develop microprocessor based programs for various problems.

TEXT BOOKS:

1. Digital Design. M. Morris Mano.
2. Advanced microprocessors and peripherals – A. K. Ray & K. M. Bhurchandani, TMH, 2nd Edition 2006
3. Digital logic and state machine design – David. J Comer Oxford University Press
4. Microprocessor and interfacing – N. Senthil Kumar, M. Saravanan S. Jeevananthan s. K. Shah Oxford University Press

REFERENCE BOOKS:

1. D. V. Hall, microprocessor and interfacing, TMGH, 2nd Edition 2006.
2. Micro computer system 8086/8088 Family Architecture, Programming and Design – Liu and GA Gibson, PHI, 2nd Ed.
3. Switching and Finite Automata Theory by Zvi. Kohavi, Tat McGraw Hill.
4. Switching and logic design, C.V.S. Rao. Pearson Education.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CS07) DATABASE MANAGEMENT SYSTEMS LAB

B.Tech: III SEMESTER   **L T P C**
                                                                         0 0 3 1.5

Pre-Requisites: None
Course Objectives:

This lab enables the students to practice the concepts learnt in the subject DBMS by developing a database for an example company named "Roadway Travels" whose description is as follows. The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travels". Students are expected to use "Mysql" database.

Roadway Travels

"Roadway Travels" is in business since 1997 with several buses connecting different places in India. Its main office is located in Hyderabad.

The company wants to computerize its operations in the following areas:
 • Reservations and Ticketing
 • Cancellations

Reservations & Cancellation: Reservations are directly handled by booking office. Reservations can be made 30 days in advance and tickets issued to passenger. One Passenger/person can book many tickets (to his/her family).

Cancellations are also directly handed at the booking office. In the process of computerization of Roadway Travels you have to design and develop a Database which consists the data of Buses, Passengers, Tickets, and Reservation and cancellation details. You should also develop query's using SQL to retrieve the data from the database.

The above process involves many steps like

1. Analyzing the problem and identifying the Entities and Relationships
2. E-R Model
3. Relational Model
4. Normalization
5. Creating the database
6. Querying.

Students are supposed to work on these steps week wise and finally create a complete "Database System" to Roadway Travels. Examples are given at every experiment for guidance to students.

WEEK 1: E-R Model

Analyze the carefully and come up with the entities in it. Identify what data has to be persisted in the database. This contains the entities, candidate attributes etc.

Identify the primary keys for all the entities. Identify the other keys like keys, partial keys, if any.

Example: Entities:
1. BUS
2. Ticket
3. Passenger

Relationships:
1. Reservation

2. Cancellation
PRIMARY KEY ATTRIBUTES:
1. Ticket ID (Ticket Entity)
2. Passport ID (Passenger Entity)
3. Bus_NO(Bus Entity)
Apart from the above mentioned entities you can identify more. The above mentioned are few.
Note: The student is required to submit a document by writing the Entities and Keys to the lab teacher.

WEEK 2: Concept design with E-R Model
Relate the entities appropriately. Apply cardinalities for each relationship. Identify strong entities and weak entities (if any). Indicate the type of relationships (total / partial). Try to incorporate generalization, aggregation, specialization etc wherever required.
Note: The student is required to submit a document by drawing the E-R Diagram to the lab teacher.

WEEK 3: Relational Model
Represent all entities (Strong, Weak) in tabular fashion. Represent relationships in a tabular fashion. There are different ways of representing relationships as tables based on the cardinality. Represent attributes as columns in tables or as tables based on the requirement. Different types of Attributes (Composite, Multi-valued, and Derived) have different way of representation.
Example: The passenger tables look as below. This is an example. You can add more attributes based on E-R model. This is not a normalized table.
Passenger

Name	Age	Sex	Address	Ticket_id	Passport ID

Note: The student is required to submit a document relationships in a tabular fashion to the lab teacher.

WEEK 4: Normalization
Database normalization is a technique for designing relational database tables to minimize duplication of information and, in so doing, to safeguard the database against certain types of logical or structural problems, namely data anomalies. For example, when multiple instances of a given piece of information occur in a table, the possibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multiple instances of the same information should be represented by a single instance only.
For the above table in the First normalization we can remove the multi valued attribute Ticket_id and place it in another table along with the primary key of passenger.
First Normal Form: The above table can be divided into two tables as shown below. Passenger

Name	Age	Sex	Address	Passport_ID

Passport_ID	Ticket_id

You can do the second and third normal forms if re wired. Any ht)* given Normalized tables are at the end.

WEEK 5: Installation of Mysql and practicing DDL commands

Installation of MySql. In this week you will learn Creating databases, How to create tables, altering the database, dropping tables and databases if not required. You will also try truncate, rename commands etc.

 Example for creation of a normalized "Passenger" table.

CREATE TABLE Passenger (Passport_id INTEGER PRIMARY KEY, Name VARCHAR (50) Not NULL, Age Integer Not NULL, Sex Char, Address VARCHAR (50) Not NULL);

Similarly create all other tables.

Note: Detailed creation of tables is given at the end.

WEEK 6: Practicing DML commands

DML commands are used to for managing data within schema objects. Some examples:

* SELECT - retrieve data from the a database
* INSERT - insert data into a table
* UPDATE - updates existing data within a table
* DELETE - deletes all records from a table, the space for the records remain

Inserting values into "Bus" table:

Insert into Bus values (1234,'hyderabad', lirupathi');

Insert into Bus values (2345,1hyderabd,Banglore');

Insert into Bus values (23,'hyderabd','Kolkata');

Insert into Bus values (45,11rupathi,'Banglore');

Insert into Bus values (34,1h derab yc11,1Chennar);

Inserting values into "Passenger" table:

Insert into Passenger values (1, 45,'ramesh', 45,'M','abc123');

Insert into Passenger values (2, 78,'geetha', 36,'F','abc124');

Insert into Passenger values (45, 90,'ram', 30,'M',1abc12');

Insert into Passenger values (67, 89,'ravi', 50,'M','abc14');

Insert into Passenger values (56, 22,'seetha', 32,'F','abc55');

Few more Examples of DML commands**:**

Select * from Bus; (selects all the attributes and Display)

UPDATE BUS SET Bus No = 1 WHERE BUS NO=2;

WEEK 7: Querying

In this week you are going to practice queries (along with subquries) Using queries ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.

Practice the following Queries:

1. Display unique PNR_no of all passengers.
2. Display all the names of male passengers.
3. Display the ticket numbers and names of all the passengers.
4. Find the ticket numbers of the passengers whose name start with and ends with 'h'.

5. Find the names of passengers whose age is between 30 and 45,
6. Display all the passengers names beginning with 'A'
7. Display the sorted list of passengers names

WEEK 8 and WEEK 9: Querying (continued...)

You are going to practice queries using Aggregate functions (COUNT, Sum, AVG, and MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.

1. Write a Query to display the Information present in the Passenger and cancellation tables. Hint: Use UNION Operator.
2. Display the number of days in a week on which the 9W01 bus is available.
3. Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. Hint: Use GROUP BY on PNR No.
4. Find the distinct PNR numbers that are present.
5. Find the number of tickets booked by a passenger where the number of seats is greater than 1. Hint: Use GROUP BY, WHERE and HAVING CLAUSES.
6. Find the total number of cancelled seats.

WEEK 10: Triggers

In this week you are going to work on Triggers. Creation of insert trigger, delete trigger, update trigger. Practice triggers using the above database.
Eg: CREATE TRIGGER updcheck BEFORE UPDATE ONpassenger FOR EACH ROW BEGIN IF NEW.TickentNO > 60 THENSET New.Tickent no = Ticket no;ELSE SET New.Ticketno:at 0; END IF; END;

WEEK 11: Procedures

This session you are going to learn Creation of stored procedure, Execution of procedure and modification of procedure. Practice procedures using the above database.
Eg: CREATE PROCEDURE myProc()
BEGIN
SELECT COUNT(Tickets) FROM Ticket WHERE age>=40; End;

WEEK 12: Cursors

In this week you need to do the following: Declare a cursor that defines a result set.
Open the cursor to establish the result set. Fetch the data into local variables as needed from the cursor, one row at a time. Close the cursor when done
CREATE PROCEDURE myProc(in_customer_id INT)
BEGIN
DECLARE v_id INT;
DECLARE v_name VARCHAR (30);
DECLARE c1 CURSOR FOR SELECT stdld,stdFirstname FROM students WHERE stdId=in_customer_id;
OPEN c1;
FETCH cl into v_id, v_name;
Close c1;
END;
Tables

BUS
Bus No: Varchar: PK (public key)
Source : Varchar
Destination : Varchar
Passenger
PPNO: Varchar(15)) :
PK Name: Varchar(15)
Age int (4)
SexIChar(10) : Male / Female
Address: VarChar(20)
Passenger_Tickets
PPNO: Varchar(15)) :
PK Ticket_No: Numeric (9)
Reservation
PNR_No: Numeric(9) :
FK Journey_date : datetime(8)
No_of_seats : int (8)
Address : Varchar (50)
Contact_No: Numeric (9) --> Should not be less than 9 and Should not accept any other character other than Integer
Status: Char (2) : Yes / No
Cancellation
PNR_No: Numeric(9) : FK
Journey_date : datetime(8)
No_of_seats : int (8)
Address : Varchar (50)
Contact_No: Numeric (9) --> Should not be less than 9 and Should not accept any other character other than Integer
Status: Char (2) : Yes / No
Ticket
Ticket_No: Numeric (9): PK
Journey date : datetime(8)
Age : int (4)
Sex:Char(10) : Male / Female
Source : Varchar
Destination : Varchar
Dep_time : Varchar

Course Outcomes:
After the completion of this course, the students should be able to

- Design database schema for given Application.
- Transform ER Model to Relational Model.
- Apply the normalization techniques for development of application software to realistic problems.
- Construct SQL queries to retrieve information from databases.

TEXT BOOKS:
1. Introduction to SQL, Rick F.Vander Lans, Pearson education.
2. Oracle PL/SQL, B.Rosenzweig and E.Silvestrova, Pearson education
3. Oracle PL/SQL Programming, Steven Feuerstein, SPD.

REFERENCE BOOKS:

1. SQL & PL/SQL for Oracle 10g, Black Book, Dr. P. S. Deshpande, Dream Tech.

2. Oracle Database 11g PL/SQL Programming, M. Mc Laughlin, TMH.

3. SQL Fundamentals, J.J. Patrick, Pearson Education.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS08) DATA STRUCTURES THROUGH C++ Lab

B.Tech : III SEMESTER   **L T P   C**
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Pre-Requisites: Programming for Problem Solving
Course Objectives:

       To provide a comprehensive working knowledge on the object oriented language C++ and to provide implementation experience on abstract data types, linear and non-linear data structures for problem solving. To provide a working knowledge on generic programming based on over loading concepts, inheritance and virtuality. To inculcate ability to grasp the behaviour of data structures such as stacks, queues, trees, hash tables, search trees, graphs and their representation and to apply them in problem solving. To provide an application oriented working knowledge to write programs to solve problems on arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.

Syllabus Content

1. Write a C++ program to demonstrate classes.

2. Write a C++ program to overload operator + to find the addition of two complex numbers.

3. Write a C++ program to demonstrate

   i) single level inheritance ii) multilevel inheritance iii) multiple inheritance
   iv) Hierarchical inheritance v) Hybrid inheritance

4. Write a C++ program to demonstrate on constructors (default, parameterized and copy Constructor) and destructors

5. Write a C++ program for hashing with quadratic programming

6. C++ programs using class templates to implement the following using an array.

      a) Stack ADT   b) Queue ADT

7. Write C++ programs using class templates to implement the following using a singly linked list.

      a) Stack ADT   b) Queue ADT

8. Write C++ programs using class templates to implement the deque (double ended queue) ADT using a doubly linked list and an array.

9. Write C++ programs, using class templates, that use non-recursive functions to traverse the given binary tree in

     a) preorder   b) inorder and   c) postorder.

10. Write C++ programs, using class templates, that use recursive functions to traverse the given binary tree in

     a) preorder   b) inorder and   c) postorder.

11. Write a C++ program using class templates to perform the following operations

     a) Insert an element into a binary search tree.
     b) Delete an element from a binary search tree.
     c) Search for a key element in a binary search tree.

12. Write C++ programs using class templates for the implementation of bfs and dfs for a given graph.

13. Write a C++ program using class templates to perform the following operations

      a) Insertion into a B-tree   b) Deletion from a B-tree

14. Write a C++ program using class templates to perform the following operations

      a) Insertion into an AVL-tree b) Deletion from an AVL-tree

15. Write C++ programs using classes to implement

   a) Insertion sort b) Quick sort

16. Write C++ programs using classes to implement

   a) Heap sort   b) Merge sort

Course Outcomes:

After the completion of this course, the students should be able to

- To be able to design and implement Object Oriented Programming concepts.
- Be able to select the appropriate Data Structure for given problem.
- To illustrate operations like searching, insertion, deletion and traversing mechanism on Various Data Structures.
- To understand and apply the hashing techniques.

TEXT BOOKS:

1. Data structures a pseudo code approach with c++, Indian edition, R.F.Gilberg and B.A.Forouzan Cengage Learning.
2. Programming Prinicples and Practice using C++, B.Stroustrup, Addition-Wiesly (Pearson Education)
3. Data Structures and STL,W.J.Collins,mc Graw Hill,Internationational Edition.
4. Data Structures and Algorithms with OODesign patterns in C++,B.R.Priess,John Wiley &sons.
5. The Art,Philosophy and Science of OOP with C++,Rick Miller,SPD.
6. C++ for Programmers ,P.J.Deitel and H.M.Deitel,PHI/Pearson.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MC02) ENVIRONMENTAL SCIENCE

B.Tech : III SEMESTER   **L T P C**
                                                                                                      2 0 0 0

Pre-Requisites: Environmental Science
Course Objectives:
• Understanding the importance of ecological balance for sustainable development.
• Understanding the impacts of developmental activities and mitigation measures.
• Understanding the environmental policies and regulations

UNIT-I Ecosystems:
Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Bio magnification, ecosystem value, services and carrying capacity, Field visit. (T.B.page nos:54-67)

UNIT-II Natural Resources:
Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies. (T.B.page nos:15-53)

UNIT-III Biodiversity And Biotic Resources:
Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Bio diversity act. Field visit. (T.B.page nos:85-116)

UNIT-IV: Environmental Pollution and Control Technologies:
Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation.
Global Environmental Issues and Global Efforts: Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances(ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montreal Protocol. NAPCC-GoI Initiatives. (T.B.page nos:118-163)

UNIT-V Environmental Policy, Legislation & EIA:
Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of

baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP).
Towards Sustainable Future: Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style. (T.B.page nos:175-217)

Course Outcomes:
After the completion of this course, the student should be able to
- Recall previously learned ecosystem and find how the biodiversity changes went in the environment.
- Demonstrate outlines of types of pollutions and related to day-to-day life.
- Organize important seminars on natural resources.
- Apply models of food chains and energy flow models to solve the identified parameters.
- Classify the types of pollutants and distinguish the functions of sustainable development that take part in the environment.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS.Publications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MA04) STATISTICAL METHODS FOR ENGINEERS

B.Tech : IV SEMESTER   **L T P C**
3 0 0 3

Pre-requisites: Mathematical Knowledge at pre-university level
Course Objectives:

- To understand the mathematical probability concept and applications.

- Find the application of distributions.

- The basic ideas of statistics including measures of central tendency, correlation and regression.

- To apply the tests in deriving the conclusions of the data.

- To analyze the nature of the queues.

UNIT-I: Probability and Random Variables

Sample space and events, Probability, The axioms of probability, Some Elementary theorems, Conditional probability, Baye's theorem.

Random variables, Discrete and continuous random variables, Probability distributions, Probability mass function of a probability distribution, Mathematical Expectation.

UNIT-II: Probability distributions and Concepts

Distributions: Binomial distribution, Poisson distribution, normal distributions and their properties.

UNIT-III: Applied Statistics

Curve fitting by the method of least squares: Fitting of straight lines, second degree parabolas and more general curves, Correlation and regression, Rank correlation.

UNIT-IV: Testing of Hypothesis

Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, Test for single mean, difference of means for small samples, test for ratio of variances for small samples.

UNIT- V: Queuing Theory

Queuing Theory: Structure of a queuing system, operating characteristics of queuing system, terminology of queuing systems, arrival and service processes, pure birth-death process. Deterministic queuing models: M/M/1 Model of infinite system, M/M/1 model of finite system.

Course Outcomes:

Students who successfully complete this course should be able to:

- Use probability theory and deals with modeling uncertainty in order to evaluate the probability of real time events.
- Develop discrete and continuous probability distributions to generate data from Binomial, Poisson and Normal Distributions.
- Perform correlation and regression analysis, in order to estimate the nature and the strength of the linear relationship between two variables.
- Construct confidence interval estimates for population parameters to test the hypothesis.
- Formulate concrete problems using Queuing theoretical approaches and gain strong knowledge and principles of Queuing Theory.

TEXT BOOKS:

1. Fundamentals of Mathematical Statistics - Sultan Chand & Sons Publications, S C Guptha and V.K. Kapoor.

2. Probability and statistics for engineers and scientists - 9th Edition, Pearson Publications, Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, keying Ye.

REFERENCE BOOKS:

1. Probability and Statistics for Engineers - 8th Edition, Pearson Educations, Miller and Freund's.

2. A First Course in Probability - 6th Ed., Pearson Education India 2002, S. Ross.

3. Probability and Statistics - S. Chand Publications, T.K.V. Iyengar, B.Krishna Gandhi, S. Ranganatham, M.V.S.S.N. Prasad.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS09) DESIGN AND ANALYSIS OF ALGORITHMS

B.Tech : IV SEMESTER   **L T P C**
                                                                 3 1 0 4

Prerequisites: MFCS, Data Structures

Course Objectives:
- This course trains the students to study a few known methods of solution processes, build new solution algorithms, analyze the asymptotic performance of algorithms and to write rigorous correctness proofs for algorithms.
- Focus would be to make the students to choose the appropriate data structures and algorithm design methods for specified classes of applications.
- To understand how the choice of data structures and algorithm design methods would impact the performance of programs and how to compare them.
- Design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound; and methods to deal with logarithmic type, polynomial type and non-polynomial type of classes of problems.
- Synthesis of efficient algorithms in common engineering design situations would be discussed.

UNIT I:
Introduction: Algorithm, algorithm specifications, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Randomized analysis, Amortized analysis.
Disjoint Sets: Disjoint set operations, union and find algorithms**.** (T.B-1 chapter: 1.1-1.4, chapter 2.5)

UNIT II:
Divide and Conquer: General method, **Applications**-Binary search, Quick sort, Merge sort, Stassen's matrix multiplication, Selection Problem.
Greedy method: General method, Applications-Job sequencing with deadlines, knapsack problem, Minimum cost spanning trees, Single source shortest path problem. (T.B-1 chapter: 3.1, chapter:3.2, chapter:3.4, chapter:3.7)

UNIT III:
Dynamic Programming: General method, **Applications**-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.
Differences between Greedy method and Dynamic programming approaches**.** (T.B-1 chapter: 5.1, chapter: 5.3, chapter 5.5, chapter: 5.7, chapter: 5.9, Reference book -1 chapter: 16.1)

UNIT IV:
Backtracking: General method, Applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles, connected components and biconnected components. (T.B-1 chapter: 7.1- chapter: 7.5, chapter: 6.4)

Branch and Bound: General method, Applications - Travelling sales person problem, 0/1 knapsack problem, LC Branch and Bound solution, FIFO Branch and Bound solution. (T.B-1 chapter: 8)

UNIT V:
NP-Hard and NP-Complete problems: Basic concepts, non deterministic algorithms, NP - Hard and NP-Complete classes, proofs-CLIQUE is NP Complete, NP completeness of Vertex covering problem. (T.B-1 chapter: 11.1, chapter: 11.3.1, chapter: 11.3.2/ reference book-1 chapter: 36.4)

Course Outcomes:
After the completion of this course, the students should be able to
- Expose student's to few known methods of solution processes, build new solution algorithms, analyze the asymptotic performance of algorithms and to write rigorous correctness proofs for algorithms.
- Identify appropriate data structures and algorithm design methods for specified classes of applications;
- Perceive how the choice of data structures and algorithm design methods would impact the performance of programs and how to compare them.
- Design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound
- Perceive methods to deal with logarithmic type, polynomial type and non-polynomial type of classes of problems and Synthesis of efficient algorithms in common engineering design situations would be discussed.

TEXT BOOKS:
1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, Galgotia publications pvt. Ltd.
2. Design and Analysis of Algorithms, S.Sridhar Oxford Higher Education.

REFERENCE BOOKS:
1. Introduction to Algorithms, secondedition, T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, PHI Pvt. Ltd. / Pearson Education
2. Design and Analysis Algorithms - Parag Himanshu Dave, Himanshu Bhalchandra Dave Publisher: Pearson
3. Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and R. Tomassia, John wiley and sons.
4. Introduction to Design and Analysis of Algorithms A strategic approach, R. C. T. Lee, S. S. Tseng, R. C. Chang and T. Tsai, Mc Graw Hill.
5. Data structures and Algorithm Analysis in C++, Allen Weiss, Second edition, Pearson education.
6. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.
7. Algorithms – Richard Johnson baugh and Marcus Schaefer, Pearson Education
8. Data Structures and Algorithms C V Sastry, CH Rajaramesh & Rakesh Nayak I K International Publishing House**ISBN-13:** 978-9385909849

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS10) FORMAL LANGUAGES AND AUTOMATA THEORY

B.Tech : IV SEMESTER   **L T P C**

                                                                                      3 0 0 3

Pre-Requisites: Mathematical Foundation & Computer Science

Course Objectives:
The purpose of the course is to make students
- Understand all basic concepts in theoretical computer science and its application language-theory ideas, such as regular expressions and context free grammars, in the design of software, such as compliers and text processors.
- Understand various Computing models like Finite State Machine, Pushdown Automata, and Turing Machine.
- Understand Decidability and Undecidability of various problems.
- Classify machines by their power to recognize languages.
- Comprehend the hierarchy of problems arising in the computer sciences.
- Qualified to have an insight of the software for a better and efficient utilization of time and resources.
- Eligible of understanding the given CFL and defining a new Lemma.

UNIT-I
Fundamentals: Strings, Alphabet, Language, Set Notations, Relations, transition diagrams and Language recognizers (1, 6, 16)
Finite Automata: Finite State System, Basic definitions, Deterministic Finite Automata(DFA) Nondeterministic Finite Automata (NFA) , Equivalence and Conversion of NFA to DFA, NFA with ε-moves, Equivalence and Conversion of NFA's with and without ε- moves, Equivalence between two FSM's. , minimization of Finite Automata, Finite Automata with output- Moore Machines, Mealy Machines
(13, 16, 19, 22, 24, 26, 45)

UNIT-II
Regular expression & Regular Languages: regular expressions, Regular sets, identity rules, equivalence and Conversion of Regular expressions to Finite Automata & vice-versa, pumping lemma of regular sets.
Context Free Grammars – I: Regular Grammar– Right linear grammar, Left Linear Grammar, Equivalence between Regular Grammar and Finite Automata & Inter Conversion. Derivations – Right Most Derivation (RMD), Left Most Derivation (LMD) Derivation Trees. (217, 219)
(Ref .Introduction to Theory of Computation –Sipser 2nd edition Thomson Pg.No:66-76)

UNIT-III
Context Free Grammars – II: Simplification of Context Free Grammars, Chomsky Normal Form, Greibach normal form, Pumping Lemma for Context Free Languages, Enumeration of properties of CFL(without Proof) (87, 92 ,94, 125, 177).
Pushdown Automata: Informal descriptions, Definitions, Model, Acceptance of CFL – Acceptance by final State, Acceptance by empty stack. Pushdown Automata Versus CFL's – equivalence & conversions. (107,108, 112, 114)

UNIT-IV
Turing Machine: Introduction, The Turing Machine Model, Computable Languages and Functions, Techniques for Turing Machine Construction, Modifications of Turing Machine, Variants of Turing Machine(146, 147, 150)
(Ref. Introduction to Theory of Computation –Sipser 2nd edition Thomson Pg.No:150-155)

UNIT-V
Computability Theory: Universal Turing Machine and an Undecidable Problem, Undecidability of Post's Correspondence problem, Chomsky Hierarchy of Languages, Linear Bounded Automata and Context Sensitive language (181, 193, 271, 255, 223, 248, 107)

Course Outcomes:
   After the completion of this course, the students should be able to
   - Explain basic concepts in formal language theory, grammars, automata theory (DFA&NFA), computability theory, and complexity theory.
   - Know the production rules of regular expressions and grammars, including context: free and context: sensitive grammars.
   - Construct a pushdown automata and context free, regular, normal form grammars to design computer languages
   - Evaluate solution for various problems using a theoretical computer (Turing machine) for a computer language.
   - Explain the relationship among language classes and grammars with the help of Chomsky Hierarchy, and Distinguish between decidability and undecidability.

TEXT BOOKS:
   1. Introduction to Automata Theory Languages and Computation‖. Hopcroft H.E. and Ullman J. D. Pearson Education
   2. Introduction to Theory of Computation‖–Sipser2nd edition Thomson

REFERENCE BOOKS:

   1. Theory of Computer Science – Automata languages and computation-Mishra and Chandrashekaran, 2nd edition,PHI
   2. Introduction to Computer Theory, Daniel I.A. Cohen, JohnWiley.
   3. Introduction to languages and the Theory of Computation ,John C Martin,TMH

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS11) OPERATING SYSTEMS

B.Tech : IV SEMESTER   **L T P C**
                                                            4 0 0 4

Pre-Requisites: Computer Organization & Architecture.

Course Objectives:

- To understand the OS role in the overall computer system
- To study the operations performed by OS as a resource manager
- To understand the scheduling policies of OS and process concurrency and synchronization
- To understand the different memory management techniques
- To understand the goals and principles of protection

UNIT - I
Overview-Introduction-Operating system objectives, User view, System view, Operating system definition, Computer System Organization, Computer System Architecture, OS Structure, OS Operations, Process Management, Memory Management, Storage Management, Protection and Security, Special Purpose Systems, Computing Environments. (Text Book-1. page no: 4-42)
System Structures- Operating System services, User and OS Interface, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation, OS Structure. (Text Book-1. page no: 53-83)

UNIT - II
Process Concept- Process Concept, Process Scheduling, Inter process Communication, Multithreading Models. **Process Scheduling-** Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Algorithm Evaluation. **Synchronization-** Background, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors. (Text Book-1. page no: 103-112,120-127,167-168,201-216,240-243,253-281)

UNIT – III
Memory-Management Strategies-Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table.
Virtual-Memory Management- Demand Paging, Copy-on-Write, Page Replacement, Thrashing. (Text Book-1. page no: 345-381, 393-421)

UNIT – IV
Deadlocks-System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock.
File System -File Concept, Access Methods, Directory and Disk Structure, Protection.
Implementing File-Systems - File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management. (Text Book-1. page no: 311-334, 495-515)

UNIT – V
Mass Storage Structure – Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling, Disk Management, RAID structure, Swap space Management.

Protection – System Protection, Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix, Implementation of Access Matrix, Access Control, Revocation of Access Rights, Capability-Based Systems, Language-Based Protection. (Text Book-1. page no: 539-565, 611-634)

Course Outcomes:
After the completion of this course, the students should be able to
- Compare various Operating Systems architectures, IO structures, Network Structure
- Analyze the virtual memory, paging and memory allocation techniques for various applications.
- Apply Deadlock prevention and Deadlock Detection algorithms and perceive the working of an operating system as a File manager, I/O manager, Process manager.
- Understand the overview of Disk Storage Structure.
- Analyze assess access controls to protect files.

TEXT BOOKS:

1. Operating System Concepts , Abraham Silberschatz, Peter B. Galvin, Greg Gagne, 9th Edition, Wiley, 2016 India Edition
2. Operating Systems – Internals and Design Principles, W. Stallings, 7th Edition, Pearson.

REFERENCE BOOKS:
1. Modern Operating Systems, Andrew S Tanenbaum, 3rd Edition, PHI

2. Operating Systems: A concept-based Approach, 2nd Edition, D.M. Dhamdhere, TMH.

3. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.

4. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.

5. Principles of Operating systems, Naresh Chauhan, Oxford University Press.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MB01) MANAGERIAL ECONOMICS & FINANCIAL ACCOUNTANCY

B.Tech : IV SEMESTER   **L T P C**

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Pre-Requisites: None

Course Objective:

To enable the student to understand and appreciate, with a practical insight, the importance of certain basic issues governing the business operations namely: demand and supply, production function, cost analysis, markets, forms of business organisations, capital budgeting and financial accounting and financial analysis.

UNIT-I

Introduction & Demand Analysis.

Definition, Nature and Scope of Managerial Economics. Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting. (T.B. page no: 1.4-4.6)

UNIT-II

Production & Cost Analysis:

Production Function- lsoquants and lsocosts, MRTS, Least Cost Combination of inputs, Cobb-Douglas Production function, Laws of Returns, internal and External Economies of Scale. Cost Analysis: Cost concepts. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems) - Managerial Significance. (T.B. page no: 5.3- 7.13)

UNIT-III

Markets & New Economic Environment:

Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly. Pricing Objectives and Policies of Pricing. Methods of Pricing. Business; Features and evaluation of different forms of Business Organization: Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, New Economic Environment Changing Business Environment in Post-liberalization scenario. (T.B. page no: 8.5- 12.18)

UNIT-IV

Capital Budgeting:

Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising capital - Trading Forecast, Capital Budget, Cash Budget. Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems). (T.B. page no: 16.3-17.21)

UNIT- V

Introduction to Financial Accounting & Financial Analysis:

Accounting concepts and conventions - introduction IFRS - Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts (Trading Account, Profit and Loss Account and Balance sheet with simple adjustments). (T.B. page no: 13.8- 13.40)

Financial, Analysis: Analysis and interpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profitability ratios. Du Pont Chart (T.B. page no: 14.3- 14.28)
'

Course Outcomes:

After the completion of this course, the students should be able to

- ☐ Understand the nature, scope and importance of Managerial Economics.
- ☐ Know what demand is, analyze demand and how elasticity of demand is used for pricing decisions and to evaluate methods for forecasting demand.
- ☐ Know how production function is carried out to achieve least cost combination of Inputs and how to analyze cost.
- ☐ Understand the characteristics of different kinds of markets and outline different form of business organization and analyze how capital budgeting techniques are used for investment decisions.
- ☐ Know how to prepare final accounts and how to interpret them, analyze and interpret financial statements using ratio analysis.

TEXT BOOK:

1. A.R. Aryasri, MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS, Himalaya Publishing House.

REFERENCE BOOKS:

1. Varshney & Maheswari: Managerial Economics, Sultan Chand' 2009.
2. S.A. Siddiqui & A.S. Siddiqui, Managerial Economics and Financial Analysis, New Age international Publishers, Hyderabad 2013'
3. M' Kasi Reddy & Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi, 2012.
4. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi. 2012.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS12) OPERATING SYSTEMS LAB

B.Tech : IV SEMESTER   **L T P C**
                                                                           0 0 3 1.5

Pre-Requisites: Programming for Problem Solving

Course Objective:
☐ To provide an understanding of the language translation peculiarities by designing a complete translator for a mini language and understanding the design aspects of operating system.
☐ It introduces the basic principles in Operating System and covers all the management modules present in the OS like process management, Memory management, File management, Disk management, Network management, I/O management.

Syllabus Content
Week 1 : Simulate the following CPU scheduling algorithms
        a) FCFS   b) SJF   c) Preemptive SJF

Week 2: Simulate the following CPU scheduling algorithms
        a) Priority   b) Round Robin

Week 3: Simulate all file allocation strategies
        a) Sequential   b) Indexed c) Linked

Week 4: Simulate MVT and MFT

Week 5: Simulate all File Organization Techniques
        a) Single level directory   b) Two level

 Week 6: Simulate all File Organization Techniques
        c) Hierarchical   d) DAG

Week 7: Simulate Bankers Algorithm for Dead Lock Avoidance

Week 8: Simulate following page replacement algorithms
        a) FIFO   b) LRU
Week 9: Simulate Optimal page replacement algorithms

Week 10: Simulate Paging Technique of memory management.

Week 11: Simulate all Disk scheduling Technique.

Week 12: Implement all Synchronization Techniques.

Week 13: Write a C program to solve the Dining- Philosopher problem using semaphores.

Week 14: Simulate all file accessing methods
        a) Sequential access method   b)Random access method

Week 15: Change File protection modes using commands

Course Outcomes:

After the completion of this course, the students should be able to

- Apply CPU scheduling algorithms, Page replacement algorithms.
- Explain Bankers Algorithm for Dead Lock Avoidance & Dead Lock Prevention
- Describe the concepts of paging and segmentation.
- Make use of Linux commands

TEXT BOOKS:

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 9th Edition, John Wiley.
2. Operating Systems – Internal and Design Principles Stallings, Sixth Edition–2005, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internal and Design Principles Stallings, Sixth Edition–2005, Pearson education.
2. Operating systems- A Concept based Approach-D.M.Dhamdhere, 2nd Edition, TMH

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS13)WEB TECHNOLOGIES LAB

B.Tech : IV SEMESTER   **L T P   C**

0 0 3 1.5

Pre-Requisites: Programming for Problem Solving, Data Structures Through C++.

Course Objectives:
- This course introduces basic concepts of Object oriented Programming concepts, apply them in Problem solving and to learn the basics of java Console and GUI based Programming. Understand the basic and some advanced issues related to writing classes and methods such as data, visibility, scope, method parameters, object references, and nested classes. Develop solid Java programming skills and the ability to put in practice they acquired knowledge and understanding of the Java language and object-oriented design in relatively simple case studies.
- The goal of this course is to equip students with advanced design and programming techniques in object oriented programming paradigms. To this end, specific objectives are to increase students knowledge of object-oriented design concepts. To get knowledge and skills needed to develop reusable, quality programs. To instruct students on the use of object- oriented design tools for modelling problem solutions and complex systems and to increase student's proficiency in programming in object-oriented environments and also enable the student to learn program web applications using the technologies like Servlets and JSP.

Syllabus Content

Week-1:

- Write a program to demonstrate class.
- Write a java program to implement constructor overloading.
- Write a program on multiple inheritance using interfaces.

Week-2:
- Write a program on this keyword.
- Write a program on super keyword.
- Write a program on abstract class.
- Write a program that illustrates how run time polymorphism is achieved.

Week-3:
- Write a java program to implement following exception types
- try - catch .
- throw .
- user defined exceptions.
- Multiple exceptions

Week-4:
- Write a java program to implement packages.
- Creation of simple package.
- Accessing a package.
- Implementing interfaces.

Week-5:
- Write a Java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

Week-6:
- Write a Java program for handling mouse events.
- Write a Java program for handling keyboard events.

Week-7:
- Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -, *, % operations. Add a text field to display the result. Handle any possible exceptions like divided by zero.

Week-8:
- Write an applet that displays a simple message.
- Develop an applet in Java that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named "Computer" is clicked.

Week-9:
- Write a Java program that connects to a database using JDBC and does add, delete, modify and retrieve operations.

Week-10:
- Write a servlet program for invoking the get and post methods.
- Write a servlet program in the format using HttpServlet.

Week-11:
- Write a servlet program to insert the values into database, values should read as a client request.

Week-12:
- Write a servlet program to Retrieve the results from database depends on client request.

Week-13:
- Write a servlet program for session tracking using HttpSession.

Week-14:
- Write a servlet program for session tracking using Cookie.
- Write a program to display a message using JSP.

Week-15:
- Write a program to insert Values in to database using JSP pages.
- Write a program to retrieve Values from database using JSP pages.

Course Outcomes:

After the completion of this course, the students should be able to
- □ Develop applications for a range of problems using object oriented programming techniques.
- □ Design GUI based applications and Applets for web applications.
- □ How to connect a java program with the mysql database.
- □ Develop web pages using advanced server side programming through Servlets and JSP.

TEXT BOOKS:

1. JAVA How to program Sixth Edition by H.M. Deitel & P.J. Deitel.
2. Java The Complete Reference 8th Edition, Herbert Schildt, ORACLE
3. The Complete Reference JSP 2.0

REFERENCE BOOKS:

1. Java for Programmers, P.J. Dietel and H.M Dietel,Pearson Education (OR) JAVA:
2. How to Program P.J. Dietel and H.M. Dietel, PHI.
3. *Object Oriented Programming through Java, P. Radha Krishna, University Press.*
4. Thinking in Java, Bruce Ecel, Pearson Education
5. Programming in Java, S. Malhotra and S. Choudary, Oxford Univ. Press.
6. Java Server Pages-Hilbert Schiltz.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MC07) GENDER SENSITIZATION

B.Tech : IVSEMESTER   **L T P C**
                                                          2 0 0 0

Pre-Requisites: None
Course Objectives:

☐ To develop students sensibility with regard to issue of gender in contemporary India.

☐ To provide a critical perspective on the socialization of men and women.

☐ To introduce students to information about some key biological aspects of genders.

☐ To expose the students to debates on the politics and economics of work.

☐ To help students reflect critically on gender violence.

☐ To expose students to more egalitarian interactions between men and women.

UNIT – I
A. Gender: Why Should We Study It? (T.B. Page Nos: 1-6)

B. Socialization: Making Women, Making Men
  i.   Introduction
  ii.   Preparing for womanhood
  iii. Growing up male
  iv.   First lessons in caste
  v.   Different masculinities (T.B. Page Nos: 7-39)

UNIT – II
A. Housework: The Invisible Labour
  i.   "My mother does not work"
  ii.   "Share the load" (T.B. Page Nos: 40-55)

B. Missing Women: Sex Selection and Its consequences
  i.   Declining sex ratio
  ii.   Demographic consequences (T.B. Page Nos: 56-66)

UNIT – III

A. Knowledge: Through the Lens of Gender
  i.   Point of view
  ii.   Gender and the structure of knowledge
  iii. Further reading: Unacknowledged women artists of Telangana. (T.B. Page Nos: 67-89)

B. Sexual Harassment: Say No!
    i.   Sexual harassment, not eve-teasing
    ii.   Coping with everyday harassment
    iii.   Further reading: "Chupulu" (T.B. Page Nos: 90-107)

C. Women' Work: Its Politics and Economics
    i.   Fact and fiction
    ii.   Unrecognized and unaccounted work
    iii.   Further reading: Wages and conditions of work (T.B. Page Nos:108-123)

UNIT – IV
A. Domestic Violence: Speaking Out
    i.   Is home a safe place?
    ii.   When women unite [Film]
    iii.   Rebuilding lives
    iv.   Further reading: New forums for justice (T.B. Page Nos:124-144)

B. Whose History? Questions for Historians and Others
    i.   Reclaiming a past
    ii.   Writing other histories
    iii.   Further reading: Missing pages from modern Telangana history (T.B. Page Nos:145-176)

C. Gender Spectrum: Beyond the Binary
    i.   Two or many?
    ii.   Struggles with discrimination (T.B. Page Nos:177-195)

UNIT – V

A. Thinking about Sexual Violence
    i.   Blaming the victim
    ii.   "I fought for my life…"
    iii.   Further reading: The caste face of violence (T.B. Page Nos:196-211)

B. Just Relationships: Being Together as Equals
    i.   Mary Kom and Onler
    ii.   Love and acid just do not mix
    iii.   Love letters
    iv.   Mothers and fathers
    v.   Further Reading: Rosa Parks – The Braveheart (T.B. Page Nos:212-241)

C. Additional Reading: Our Bodies, Our Health (T.B. Page Nos:242-266)

Course Outcomes:
After the completion of this course, the students should be able to

- Define the need and importance of women empowerment.
- Extend the levels of understanding and classification of gender disparities.
- Identify the need of equal distribution of work in the entire sector irrespective of gender.
- Construct the emergency needs of saving girl child.

- Improves thinking levels to find solution to the missing women and bring realization in the society.

TEXT BOOK:

1. Towards A World of Equals, Published by 'A Bilingual Text book on Gender', telugu academy.

REFERENCE BOOKS:

1. I Fought For My Life… and won by Abdulali, Sohaila.
2. My Story… Our Story of Re-building Broken lives by Agnes, Flavia.
3. How I upstaged the 'Clevers' of my class by Babu, Mohammed Khadeer.
4. I want a wife by Brady, Judy.
5. A Worker Reads History by Brecht, Bertolt.

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VAAGDEVI COLLEGE OF ENGINEERING

(UGC AUTONOMOUS)

(B18CS14) DATA COMMUNICATIONS AND COMPUTER NETWORKS

B.Tech : V SEMESTER   **L T P C**
                                                               3 0 0 3

Pre-requisites: None

Course Objectives:
- To expose the students to the basic principles of the technology of data communications and networking.
- To understand the concept of data communication and its components.
- To comprehend the use of different types of transmission media and network devices, error detection and correction in transmission of data.
- To understand the concept of flow control, error control, LAN protocols and functions performed by Network Management System.

UNIT-I: Introduction
Introduction: Data Communications, Networks, The Internet, Protocols and Standards, Network Models, Layered Tasks, The OSI Model, TCP/IP Protocol Suite, Addressing.
Physical Layer and Media: Data and Signals, Analog and Digital.
Transmission Media: Guided Media, Unguided Media.(**Text Book-1 page No: 1-27, 57-160, 191-212**)

UNIT-II: Data Link Layer
Data link layer: Error Detection and Correction, Framing, Flow and Error Control, Protocols, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocol, Multiple Access, Random Access, Controlled Access, Channelization,
Wired LANs : Ethernet **Wireless LANs :**IEEE 802.11, Bluetooth.
Network Devices : Repeaters, Hubs, Bridges, Switches, Routers, and Gateways.
Virtual Circuit Networks: Frame Relay and ATM, Frame Relay, ATM, ATM LANs. (**Text Book-1 page No: 267-444, 491-546**)

UNIT-III: Network Layer
Network Layer: Logical Addressing, IPv4 Addresses, **CIDR, Subnets, Classfull and special addressing,** IPv6 Addresses, Transition from IPv4 to IPv6, Network Layer: Address Mapping, ICMP, IGMP, ICMPv6,
Network Layer: Delivery, Forwarding, Unicast Routing Protocols, Multicast Routing Protocols.(**Text Book-1 page No: 547-700**)

UNIT-IV: Transport Layer
Transport Layer: Process to Process Delivery: UDP, TCP and SCTP, Data Traffic, Congestion, Congestion Control, Two Examples, Quality of Service, Techniques to improve QoS. (**Text Book-1 page No: 701-841**)

UNIT-V:Application Layer

APPLICATION LAYER : DNS, The DNS Name Space, Domain Resource Records, Name Servers, **ELECTRONIC MAIL**- Architecture and Services, The User Agent, Message Formats ,Message Transfer, Final Delivery, The World Wide Web, Architectural Overview, Static Web Pages, Dynamic Web Pages and Web Applications, HTTP—The Hypertext Transfer Protocol, The Mobile Web, Web Search. **(Text Book-2 page No: 661-695)**

Course Outcomes:

- Illustrate basic computer network technology.
- Identify the different types of network topologies and protocols.
- Categorize the hardware and software commonly used in data communications and networking.
- Interpret Design and Evaluate subnet masks and addresses to fulfill networking requirements.
- Analyze the features and Operations of TCP/UDP, FTP, HTTP, SMTP,SNMP etc.

TEXT BOOKS:

1. Data Communications and Networking, Fourth Edition by Behrouza A.Forouzan, TMH.
2. Computer Networks,A.S.Tanenbaum,5th edition, Pearson education

REFERENCE BOOKS:

1. Introduction to Data communications and Networking, W.Tomasi,Pearson education.
2. Data and Computer Communications, G.S.Hura and M.Singhal,CRC Press, Taylor and Francis Group.
3. An Engineering Approach to Computer Networks S. Keshav,2nd Edition, Pearson Education.
4. Understanding communications and Networks, 3rd Edition, W.A.Shay, Cengage Learning.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CS15) COMPILER DESIGN

B.Tech : V SEMESTER   **L T P C**
                                                                              3 1 0 4
Prerequisites: Formal Languages and Automata Theory

Course Objectives:
The main objective of this course is to provide the foundation for understanding the theory and practice of compilers. Learning programming language translation and compiler design concepts, language recognition, symbol table management, semantic analysis and code generation. Topics include specification of languages and its relation to automata, lexical analysis, finite state machines, context free languages, LL and LR parsing methods, syntax directed translation, error recovery, code generation, and portability.

UNIT – I
Overview of Compilation: Phases of compilation, lexical analysis, regular grammar and regular expression for common programming language features. Pass and phases of Translation, interpretation**,** cross compiler**,** bootstrapping, data structures in compilation, LEX lexical analyzer generator.
(Page No: 22-27, 95-117, 95-117, 106-109, 32-33, 15-16, 432, 23, 117-125)

UNIT – II
Top Down Parsing: Context free grammars, top down parsing, backtracking, LL (1), recursive descent parsing, predictive parsing, pre-processing steps required for predictive parsing. Elimination of left recursion and left factoring from CFG (Page No: 97-106)
Bottom up parsing: Shift reduce parsing, LR and LALR parsing, error recovery in parsing, handling ambiguous grammar, YACC – automatic parser generator.(Page No: 207-215, 227-278).

UNIT – III
Semantic Analysis: Intermediate forms of source programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, syntax directed translation, conversion of popular programming languages language constructs into intermediate code forms, type checker. (Page No: 475-484, 92&592, 335)

UNIT – IV
Symbol Tables: Symbol table format, organization for block structures languages, hashing and Tree structures representation of scope information. Block structures and non block structure storage allocation: static, runtime stack and heap storage allocation, storage allocation for arrays, strings and records. (Page No: 441-452, 413-435)
Code optimization: Consideration for optimization, scope of optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation. (Page No: 595-614, 302-305,105)

UNIT – V
Data Flow Analysis: Flow graph, data flow equation, global optimization, redundant sub Expression elimination, induction variable elements, live variable analysis, copy propagation. (Page No: 540-545, 620-635, 643-664)
Object Code Generation: Object code forms, machine dependent code optimization,

register allocation and assignment, generic code generation algorithms, DAG for register allocation.
(Page No: 610-614,553, 579, 558)

Course Outcomes:
After the completion of this course the students should be able to:
- Apply the knowledge of modern phases of compiler and its features.
- Identify the similarities and differences among varies parsing techniques.
- Explain semantic analysis in the context of the compilation process.
- Design a symbol table format for the language defined by a grammar
- Analyze the code generation algorithm.

TEXT BOOK:
1. Principles of Compiler Design -A.V. Aho . J.D.Ullman; Pearson Education.

REFERENCE BOOKS:
1. lex &yacc , John R. Levine, Tony Mason, Doug Brown, O'reilly
2. Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wiley Dreamtech.
3. Engineering a Compiler, Cooper & Linda, Elsevier.
4. Compiler Construction, Louden, Thomson.
5. Modern Compiler Implementation in C,Andrew N. Appel, Cambridge University Press.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS16) SOFTWARE ENGINEERING

B.Tech : V SEMESTER   **L T P C**
         3 0 0 3

Perquisites: Computer Programming and Data Structure.

Course Objectives:
- To understand of software process models such as waterfall and evolutionary models.
- To understand of software requirements and be able to prepare SRS document.
- To understand of different software architectural system models.
- To understand design engineering process at varied level.
- To understand testing procedure and software metrics
- To understand quality control and how to ensure good quality software.

UNIT- I
Introduction to Software Engineering: The evolving role of software, changing nature of software, software myths.
A Generic view of process: Software engineering- a layered technology, a process framework, the capability maturity model integration (CMMI), process patterns, process assessment, personal and team process models.
Process models: The waterfall model, incremental process models, evolutionary process models, the unified process.

UNIT- II
Software Requirements: Functional and non-functional requirements, user requirements, system requirements, interface specification, the software requirements document.
Requirements engineering process: Feasibility studies, requirements elicitation and analysis, requirements validation, requirements management.
System models: Context models, behavioral models, data models, object models, structured methods.

UNIT- III
Design Engineering: Design process and design quality, design concepts, the design model.
Creating an architectural design: software architecture, data design, architectural styles and patterns, architectural design, conceptual model of UML, basic structural modeling, class diagrams, sequence diagrams, collaboration diagrams, use case diagrams, component diagrams.

UNIT- IV
Testing Strategies: A strategic approach to software testing, test strategies for conventional software, black-box and white-box testing, validation testing, system testing, the art of debugging.

Product metrics: Software quality, metrics for analysis model, metrics for design model, metrics for source code, metrics for testing, metrics for maintenance.

UNIT- V
Metrics for Process and Products: Software measurement, metrics for software quality.
Risk management: Reactive Vs proactive risk strategies, software risks, risk identification, risk projection, risk refinement, RMMM, RMMM plan.

Quality Management: Quality concepts, software quality assurance, software reviews, formal technical reviews, statistical software quality assurance, software reliability, the ISO 9000 quality standards.

Course Outcomes:
- Define Software Engineering and list core principles of software engineering and understand various process models
- Develop an understanding of software requirements and be able to prepare SRS document.
- Understand software design engineering process using structural and object oriented approaches and be able to model.
- Differentiate the techniques of verification and validation in the process of software development, Apply the testing strategies on different level of implementation (unit, integration,…)
- Understand and able to compute quality measures and develop a software quality assurance plan for a software development.

TEXT BOOKS:
1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6 th edition, Mc Graw Hill International Edition.
2. Software Engineering- Sommerville, 7 th edition, Pearson Education.
3. The unified modeling language user guide Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.

REFERENCE BOOKS:
1. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiley.
2. Software Engineering principles and practice- Waman S Jawadekar, The Mc Graw-Hill Companies.
3. Fundamentals of object-oriented design using UML Meiler page-Jones: Pearson Education.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS17) MACHINE LEARNING

B.Tech : V SEMESTER   **L T P C**

3 0 0 3

Pre-requisites: Knowledge of DAA and Programming for Problem solving

Corse Objectives:
- To be able to formulate machine learning problems corresponding to different applications.
- To understand a range of machine learning algorithms along with their strengths and weaknesses.
- To understand the basic theory underlying machine learning.
- To be able to apply machine learning algorithms to solve problems of moderate complexity.
- To be able to read current research papers and understands the issues raised by current research.

UNIT-I:

The ingredients of machine learning, Tasks: the problems that can be solved with machine learning, Models: the output of machine learning, Features, the workhorses of machine learning. Binary classification and related tasks: Classification, Scoring and ranking, Class probability estimation. (Text Book 1- page no: 1-80)

UNIT- II:

Beyond binary classification: Handling more than two classes, Regression, Unsupervised and descriptive learning. Concept learning: The hypothesis space, Paths through the hypothesis space, Beyond conjunctive concepts. (Text Book 1- page no: 81-127)

UNIT-III:

Models: Decision trees, Ranking and probability estimation trees, Tree learning as variance reduction. Rule models: Learning ordered rule lists, Learning unordered rule sets, Descriptive rule learning, First-order rule learning. (Text Book 1- page no: 129-156)

UNIT-IV:

Linear models: The least-squares method, The perceptron: a heuristic learning algorithm for linear classifiers, Support vector machines, Probabilistic models: The normal distribution and its geometric interpretations, Probabilistic models for categorical data, Discriminative learning by optimizing conditional likelihood Probabilistic models with hidden variables. (Text Book 1- page no: 194-218, 262-297).

UNIT- V:

Getting Started with R: Installing R, Running R, The Comprehensive R Archive Network, Getting Help in R, Packages in R. Essentials of the R Language: Calculations, Logical Operations, Vectors and Subscripts, Matrices and arrays, Random numbers , Sampling and shuffling, loops and repeats, List, Data Input, Data Frames, Graphics.(Text Book 2- page no: 1 - 242).

Course Outcomes:

After the completion of this course the students should be able to :

- Explain the theory underlying machine learning.
- Learn beyond binary classification.

- Recognize and implement various genetic algorithms.
- Construct algorithms to learn tree, to learn linear, non-linear models and Probabilistic models
- Able to analyze the data using R Programming.

TEXT BOOKS:

1. Machine Learning: The art and science of algorithms that make sense of data, Peter Flach, Cambridge.
2. The R Book. Second Edition. Michael J. Crawley.
3. Machine Learning, Tom M. Mitchell, MGH.

REFERENCE BOOKS:
1. Understanding Machine Learning: From Theory to Algorithms, Shai Shalev-Shwartz, Shai Ben-David, Cambridge.
2. Machine Learning in Action, Peter Harington, 2012, Cengage.

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CS18) PRINCIPLES OF PROGRAMMING LANGUAGES

(PROFESSIONAL ELECTIVE-I)

B.Tech : V SEMESTER   L   T   P   C
                                                                                    3   0   0 3

Pre-requisites: Programming Languages(C, C++, JAVA)
Course Objectives:

- [ ] To introduce the major programming paradigms, and the principles and techniques involved in design and implementation of modern programming languages.
- [ ] To introduce notations to describe syntax and semantics of programming languages.
- [ ] To analyze and explain behavior of simple programs in imperative languages using concepts such as binding, scope, control structures, subprograms and parameter passing mechanisms.
- [ ] To introduce the concepts of ADT and object oriented programming for large scale software development. To introduce the concepts of concurrency control and exception handling.

UNIT - I Preliminaries
Reasons for Studying Concepts of Programming Languages, Programming Domains ,Language Evaluation Criteria, Influences on Language Design , Language Categories, Programming paradigms-Imperative, Object Oriented, Functional Programming, Logic Programming, Programming Language Implementation –Compilation and virtual Machines , Programming Environments.**(Refer to pg 19 to 51).**
Syntax and Semantics: General Problem of describing Syntax and Semantics, Formal Methods of Describing Syntax-BNF,EBNF for common Programming Language features, Parse trees, Ambiguous Grammars, Attribute Grammars, Denotational semantics and Axiomatic semantics for common Programming Language features. **(Refer to pg 133 to 174).**

UNIT- II Data Types
Introduction, Primitive, Character, User-Defined, Array, Associative, Record, Union, Pointer and Reference Types, design and Implementation uses related to these types.**(Refer to pg 265 to 313).**
.Names, Variables, Concept of Binding, Type Checking, Strong Typing, Type Compatibility, Named Constants, Variable Initialization. (**Refer to pages 219 to 254**)
Expressions and Statements: Arithmetic, Relational and Boolean Expressions, Short-Circuit Evaluation, Mixed-Mode Assignment, Assignment Statements, Control Structures-Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, Guarded Commands. **(Refer to pages 329 to 390).**

UNIT - III Subprograms and Blocks
Fundamentals of Subprograms, Scope and Lifetime of Variable, static and Dynamic scope Design Issues for Subprograms and Operations, Local Referencing Environments, Parameter -Passing Methods, Overloaded Subprograms, Generic Subprograms Parameters that are Sub-program names, Design Issues for Functions, User-Defined Overloaded Operators, Co routines.**(Refer to pages 401 to 449).**

UNIT- IV Abstract Data Types

Abstractions and Encapsulation, Introduction to data abstraction, Design Issues, Language examples C++ parameterized ADT, Object Oriented Programming in Small talk, C++, JAVA,C#,ADA 95.**(Refer to pages 487 to 553)**

Concurrency: Subprogram-Level Concurrency, Semaphores, Monitors, Message Passing, Java Threads, C# Threads. **(Refer to pages 573 to 608)**

Exception Handling: Exceptions, Exception Propagation, Exception handler in ADA, C++ and JAVA. **.(Refer to pages 619 to 638).**

UNIT- V Functional Programming Language

Introduction, Features of LISP, Applications of Functional Languages, Comparison of Functional and Imperative Languages**. (Refer to pages 659 to 694)**

Logic Programming Language: Introduction and overview of Logic Programming, Basic elements of Prolog, application of Logic Programming.**.(Refer to pages 701 to 731)**

Course Outcomes:

After the completion of this course the students should be able to :

- ☐ Analyze Syntax related concepts including context free grammars, Attribute Grammar parse trees.
- ☐ Perceive the semantic issues associated with function implementations.
- ☐ Perceive the concepts of Abstraction and Encapsulation constructs of classes,interfaces, packages of various Language Examples.
- ☐ Perceive the implementation of object oriented languages.
- ☐ Compare the Functional Programming Languages and Logic Programming Languages.

TEXT BOOKS:

1. Concepts of Programming Languages Robert .W. Sebesta 8/e , Pearson Education,2008.

REFERENCE BOOKS:

1. Concepts of Programming Languages Robert .W. Sebesta 10/e, Pearson Education,2012

2. Programming Languages, 2nd Edition, A.B. Tucker, R.E. Noonan, TMH.

3. Programming Languages, K. C.Louden, 2nd Edition, Thomson, 2003.

4. LISP, Patric Henry Winston and Paul Horn, Pearson Education.

5. Programming in Prolog, W.F. Clocksin & C.S.Mellish, 5th Edition, Springer.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS19) COMPUTER GRAPHICS
(PROFESSIONAL ELECTIVE-I)

B.Tech : V SEMESTER   **L   T   P   C**
                                                                           3   0   0   3

Pre requisites:
   Desired concepts of Problem Solving and Computer Programming, Mathematics, Coordinate
   geometry and linear algebra, Engineering Drawing.

Course Objectives:
- This study is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.
- A thorough introduction to computer graphics techniques and focus on 3D modeling, image synthesis, and rendering.

UNIT I: INTRODUCTION:
Introduction: Application areas of Computer Graphics, Overview of Graphics systems, Video-Display Devices, Raster –scan system, Random Scan system, Graphics Monitors and Work Stations and input**. (Text book-1, Ch-1 & 2, Pg No. 1-101)**

UNIT II: Output Primitives :
Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. **Filled area primitives:** Scan line polygon fill algorithm, boundary-fill and flood- fill algorithms**. (Text book 1, Ch-3, Pg No. 103-150)**

UNIT –III: 2-D Geometrical Transforms:
Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems. **(Text Book 1, Ch-5, Pg No. 204-227). 2-D viewing:** The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm**. (Text Book 1, Ch-6, Pg .No. 227- 263)**

UNIT IV: 3-D Object Representation:
Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. (**Text Book 1, Ch-9 & 10, Pg No. 324-353),** Basic Illumination Models, Polygon Rendering methods **3-D Geometric transformations:** Translation, rotation, scaling, reflection and shear transformations, composite transformations. 3D Viewing pipeline, clipping, projections **(Text Book 1, Ch-11 & 12, Pg No. 451-481)**

UNIT V: Visible surface detection methods:
Classification, back-face detection, depth-buffer, scan- line, depth sorting, BSP tree methods, area sub-division and octree methods**. (Text book-1, Pg-No.490-505)**. **Computer Animation:** Design of

animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications. **(Text Book 1, Ch-13 & 16, Pg No. 603-616)**

Course Outcomes:

After the completion of this course the students should be able to :

- Get overview on applications areas of Computer Graphics, Graphic devices and Monitors.
- Learn about basic tools for constructing pictures with straight lines, methods for performing geometric transformations i.e 2-Dimensional, curves, filled area, celNo. of Hours L:array patterns, and text.
- Learn about various surface functions such as quadrics, polygon surfaces, super quadrics, splines or blobby objects and 3-Dimensions transformations in computer graphics.
- Describe the importance of viewing. Learn major considerations in the generation of realistic graphic displays, detecting visible surfaces in a 3-Dimension scene and designing animation sequences.
- Discuss the applications of computer Graphics. Analyze the fundamentals of animations

TEXT BOOK:

1. Computer Graphics *C* version, Donald Hearn, M.Pauline Baker, Pearson

REFERENCE BOOKS:

1. Computer Graphics with Virtual Reality Systems, Rajesh K Maurya, Wiley
2. Introduction to Computer Graphics, Using Java 2D and 3D, Frank Klawonn, Springer
3. Computer Graphics, Steven Harrington, TMH
4. Computer Graphics, Amarendra N Sinha, Arun Udai, TMH
5. Computer Graphics Principles & practice, 2/e, Foley, VanDam, Feiner, Hughes, Pearson
6. Computer Graphics, Peter, Shirley, CENGAGE
7. Principles of Interactive Computer Graphics, Neuman , Sproul, TMH.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS20) MOBILE APPLICATION DEVELOPMENT
(PROFESSIONAL ELECTIVE-I)

B.Tech : V SEMESTER   **L T P C**
                                                                                                              3 0 0 3

Pre requisites:
- A Course on Web Technologies (JAVA etc)
- A Course on DBMS

Course Objectives:
- To demonstrate their understanding of the fundamentals of Android operating systems
- To demonstrate their skills of using Android software development tools
- To demonstrate their ability to develop software with reasonable complexity on mobile platform
- To demonstrate their ability to deploy software to mobile devices
- To demonstrate their ability to debug programs running on mobile devices

UNIT I
Introduction to Android Operating System: Android OS design and Features – Android development framework, SDK features, Installing and running applications on Eclipse platform, Creating AVDs, Types of Android applications, Best practices in Android programming, Android tools. Android application components – Android Manifest file, Externalizing resources like values, themes, layouts, Menus etc, Resources for different devices and languages, Runtime Configuration Changes Android Application Lifecycle – Activities, Activity lifecycle, activity states, monitoring state changes

UNIT II
Android User Interface: Measurements – Device and pixel density independent measuring units Layouts – Linear, Relative, Grid and Table Layouts User Interface (UI) Components – Editable and non editable Text Views, Buttons, Radio and Toggle Buttons, Checkboxes, Spinners, Dialog and pickers Event Handling – Handling clicks or changes of various UI components Fragments – Creating fragments, Lifecycle of fragments, Fragment states, Adding fragments to Activity, adding, removing, and replacing fragments with fragment transactions, interfacing between fragments and Activities, Multi-screen Activities

UNIT III
Intents and Broadcasts: Intent – Using intents to launch Activities, Explicitly starting new Activity, Implicit Intents, Passing data to Intents, Getting results from Activities, Native Actions, using Intent to dial a number or to send SMS Broadcast Receivers – Using Intent filters to service implicit Intents, Resolving Intent filters, finding and using Intents received within an Activity Notifications – Creating and Displaying notifications, Displaying Toasts.

UNIT IV

Persistent Storage: Files – Using application specific folders and files, creating files, reading data from files, listing contents of a directory Shared Preferences – Creating shared preferences, saving and retrieving data using Shared Preference Database – Introduction to SQLite database, creating and opening a database, creating tables, inserting retrieving and deleting data, Registering Content Providers, Using content Providers (insert, delete, retrieve and update)

UNIT V

Advanced Topics: Alarms – Creating and using alarms Using Internet Resources – Connecting to internet resource, using download manager Location Based Services – Finding Current Location and showing location on the Map, updating location

Course Outcomes:

After the completion of this course the students should be able to:

- Student understands the working of Android OS Practically.
- Ability to evaluate and select appropriate solutions to the mobile computing platform.
- Ability to develop the user interface.
- Ability to work with SQLITE DB.
- Student will be able to develop, deploy and maintain the Android Applications.

TEXT BOOKS:

1. Professional Android 4 Application Development, Reto Meier, Wiley India, (Wrox) , 2012
2. Android Application Development for Java Programmers, James C Sheusi, Cengage Learning, 2013

REFERENCE BOOK:

1. Beginning Android 4 Application Development, Wei-Meng Lee, Wiley India (Wrox), 2013

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MB06) INTELLECTUAL PROPERTY RIGHTS
(OPEN ELECTIVE-I)

B.Tech : V SEMESTER.   **L   T   P   C**
                                                                    3   0   0   3

Pre-requisites: None
Course Objectives:

In the interest of the national economic growth the innovations and improvements are to be owned and used for the production and distribution process. The students of technology will be benefited by knowing the process of obtaining recognition of their innovations. This course will enable them to know the legal process of registering the innovations.

UNIT – I

INTRODUCTION TO INTELLECTUAL PROPERTY: Introduction, types of intellectual property, International organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

TRADE MARKS: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting and evaluating trade mark, trademarks registration processes.

UNIT – III

LAW OF COPY RIGHTS: Fundamental of copy right law, originally of material, rights of reproduction, rights of perform the work publicity, copy right ownership issues, copy right registration, notice of copy right, international copy right law.
LAW OF PATENTS: Foundation of patent law, patent searching process ownership rights and transfer.

UNIT- IV

TRADE SECRETS: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission trade secrete litigation.

UNIT-V

NEW DEVELOPMENT OF INTELLECTUAL PROPERTY: New developments in trade mark law: Copy right law, patent law, intellectual property audits.

Course Outcomes:

Upon completion of the course, the student should be able to learn the following:
- Understand the legal rights related to design, trade and unfair competition.
- Ability to apply and assess principles in intellectual property.
- Discuss the real time areas related to semiconductor chip protection act.
- Develop different law of patents.
- Introduce trade secret and apply state law and trade secret law.

TEXT BOOOKS & REFERENCES:

1. Intellectual property rights, Deborah, E. Bouchux, cengage learing
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tate Mc Graw Hill Publishing company ltd.,

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CE53) DISASTER MANAGEMENT
(OPEN ELECTIVE-I)

B.Tech : V SEMESTER   **L T P C**

                                                            3 0 0 3

Pre-requisites: None
Course Objectives:
1. To know the types of Disasters and its triggering factors.
2. Understand the stages of disaster in hydrological disaster and kinds of data are required to support emergency management work during the disasters.
3. Develop and understand the causes, effects, impacts and analysis of hydrological, geological and coastal hazards.
4. Assess the potential of new, evolving technologies to meet vulnerability mapping, 91odeling and emergency management needs for geological hazards, hydrological and coastal hazards.

COURSE CONTENT

UNIT I
Disasters: Definition- Hazard Risk, Mitigation, Natural and human induced disasters types of hazards, disasters and catastrophes – Disaster Management.

UNIT II
Hydrological Hazards: Flooding – PMP – PMF – Inundation mapping –flood prone area analysis and management. Dam breach analysis – Drought- types of drought – Factors influencing drought – delimiting drought prone areas – drought index, SPI and Palmer.

UNIT III
Geological Hazards: Earthquakes; location, faults, causes, types, associated hazards and impacts, Richter scale and Modified Mercalli scale. Mass movements: Definition of landslide – types – causes – slope stability analysis.

UNIT IV
Coastal Hazards – storm surge – Tsunami and floods – cyclone – coastal vulnerability – shore line erosion – shore defense structures.

UNIT V
Mitigation and Management: Hazard, Risk and Vulnerability mapping and modeling using GIS. Case studies for earthquake zonation. Risk Assessment – Preparedness- GIS case studies for earthquake, landslide–risk assessment–GIS case studies for earthquake, landslide and cyclones. Emergency Management Systems (EMS) in theDisaster Management Cycle.
Course Outcomes:
Upon completion of the course, the student should be able to learn the following:

- Perceive the various types of disaster.
- Interpret the various types of Hazards and Vulnerability.
- Perceive different approaches of disaster risk reduction.
- Describe the disaster management and safety plan.
- Discuss the various disaster risks in India..

TEXT BOOKS:
1. Singhal J.P. "Disaster Management", Laxmi Publications, 2010. ISBN-10: 9380386427
   ISBN-13: 978-9380386423
2. Tushar Bhattacharya, "Disaster Science and Management", McGraw Hill India Education Pvt. Ltd.,
   2012. ISBN-10: 1259007367, ISBN-13: 978-1259007361]
3. Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management,
   NIDM, New Delhi, 2011
4. Kapur Anu Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New
   Delhi, 2010.

REFERENCE BOOKS:
1. Govt. of India: Disaster Management Act , Government of India, New Delhi, 2005
2. Government of India, National Disaster Management Policy,2009.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MB02) MANAGEMENT SCIENCE
(OPEN ELECTIVE –I)

B.Tech : V SEMESTER   **L T P C**
                                                                                 3 0 0 3

Pre-requisites: None
Course Objectives:

This course is intended to familiarize the students with the framework for the managers and leaders available for understanding and making decisions relating to issues related organisational structure, production operations, marketing, Human resource Management, product management and strategy.

UNIT - I:

Introduction to Management and Organisation: Concepts of Management and organization-nature, importance and Functions of Management, Systems Approach to Management - Taylor's Scientific Management Theory- Fayal's Principles of Management- Maslow's theory of Hierarchy of Human Needs- Douglas McGregor's Theory X and Theory Y - Hertzberg Two Factor Theory of Motivation - Leadership Styles, Social responsibilities of Management, Designing Organisational Structures: Basic concepts related to Organisation - Departmentation and Decentralisation, Types and Evaluation of mechanistic and organic structures of organisation and suitability. (T.B. page no: 1.3-5.10)

UNIT - II:

Operations and Marketing Management: Principles and Types of Plant Layout-Methods of Production(Job, batch and Mass Production), Work Study - Basic procedure involved in Method Study and Work Measurement - Business Process Reengineering(BPR) - Statistical Quality Control: control charts for Variables and Attributes (simple Problems) and Acceptance Sampling, TQM, Six Sigma, Deming's contribution to quality, Objectives of Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Store Records - JIT System, Supply Chain Management, Functions of Marketing, Marketing Mix, and Marketing Strategies based on Product Life Cycle, Channels of distribution. (T.B. page no: 6.7-11.15)

UNIT - III:

Human Resources Management(HRM): Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRM vs PMIR, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating - Capability Maturity Model (CMM) Levels – Performance Management System (T.B. page no: 12.3-20.11)

UNIT - IV:

Project Management (PERT/ CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing (simple problems). (T.B. page no: 15.1-16.4)

UNIT - V:

Strategic Management and Contemporary Strategic Issues: Mission, Goals, Objectives, Policy, Strategy, Programs, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives. Bench Marking and Balanced Score Card as Contemporary Business Strategies. (T.B-1 page no: 17.4-20.21)

Course Outcomes:
Upon completion of the course, the student should be able to learn the following:
- Outline the fundamentals of management and contributions to management.
- Define the social Responsibilities of an organization towards stakeholders and build the suitable organization structure and to identify factors influencing plant location and layout decisions.
- Know importance of materials management, evaluate quality of products using SQC techniques and Identify the basic concepts of marketing mix and Human Resource concepts.
- Know how PERT and CPM different and to construct network by proper planning organizing an managing the efforts to accomplish a successful project.
- Appraise all contemporary management practices and analyze how these contemporary management practices one applicable in modern business and service organizations.

TEXT BOOK:

1. A.R.Aryasri, Management Science, 4th edition,TMC, 2017.

REFERENCE BOOKS:

1. Kotler Philip and Keller Kevin Lane: Marketing Management, Pearson, 2012.
2. Koontz and Weihrich: Essentials of Management, McGraw Hill, 2012.
3. Thomas N. Duening and John M. Ivancevich Management - Principles and Guidelines, Biztantra, 2012.
4. Kanishka Bedi, Production and Operations Management, Oxford Uiversity Press, 2012.
5. Samuel C. Certo: Modern Management, 2012.
6. Schermerhorn, Capling, Poole and Wiesner: Management, Wiley, 2012.
7. Parnell: Strategic Management, Cengage, 2012.
8. Lawrence R Jauch, R. Gupta and William F. Glueck: Business Policy and Strategic Management Science, McGraw Hill, 2012.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS21) COMPUTER NETWORKS AND COMPILER DESIGN LAB

B.Tech : V SEMESTER   **L T P C**
                                                            0   0 3 1.5

Pre-requisites: Knowledge of C Programming and FLAT
Course Objectives:

To understand the functionalities of various layers of OSI model and facilitate an understanding of the fundamental concepts of computer networking. To improve the ability of the students to program computer network using languages like C, C++. The second part of the Course aims to make the students to understand the enumeration of top down and bottom up parsing techniques used in compilation process. Students will have hands-on experience of LEX tool

Syllabus Content:

COMPUTER NETWORKS

PART-A

Week 1:
Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.

Week 2:
Study of Network Devices in Detail.

Week 3:
Study of network IP.

Week 4:
Connect the computers in Local Area Network.

Week 5:
Study of basic network command and Network configuration commands.

Week 6:
Configure Star topology using packet tracer software.

Week 7:
 Configure Bus topology using packet tracer software.

Week 8:
 Configure Mesh topology using packet tracer software.

Text Books:

1. ComputerNetworks—AndrewSTanenbaum,4thEdition.PearsonEducation/PHI.
2. 1.Principlesofcompilerdesign-A.V.Aho.J.D.Ullman;PearsonEducation.

COMPILER DESIGN

PART-B

Week 9:

    1. Consider the following mini Language, a simple procedural high-level language, only operating on Integer data, with a syntax looking vaguely like a simple C crossed with Pascal. The syntax of the language is defined by the following BNF grammar:

```
<program> ::= <block>
<block> ::= { <variabledefinition> <slist> }
| { <slist> }
<variabledefinition> ::= int <vardeflist> ;
<vardeflist> ::= <vardec> | <vardec> , <vardeflist>
<vardec> ::= <identifier> | <identifier> [ <constant> ]

<slist> ::= <statement> | <statement> ; <slist>
<statement> ::= <assignment> | <ifstatement> | <whilestatement>
| <block> | <printstatement> | <empty>
<assignment> ::= <identifier> = <expression>
| <identifier> [ <expression> ] = <expression>
<ifstatement> ::= if <bexpression> then <slist> else <slist> endif
| if <bexpression> then <slist> endif
<whilestatement> ::= while <bexpression> do <slist> enddo
<printstatement> ::= print ( <expression> )
<expression> ::= <expression> <addingop> <term> | <term> | <addingop> <term>
<bexpression> ::= <expression> <relop> <expression>
<relop> ::= < | <= | == | >= | > | !=
<addingop> ::= + | -
<term> ::= <term> <multop> <factor> | <factor>
<multop> ::= * | /
<factor> ::= <constant> | <identifier> | <identifier> [ <expression>]
| ( <expression> )
<constant> ::= <digit> | <digit> <constant>
<identifier> ::= <identifier> <letterordigit> | <letter>
<letterordigit> ::= <letter> | <digit>
<letter> ::= a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z
<digit> ::= 0|1|2|3|4|5|6|7|8|9
```

<empty> has the obvious meaning

Comments (zero or more characters enclosed between the standard C/Java-style comment brackets /*...*/) can be inserted. The language has rudimentary support for 1-dimensional arrays. The declaration int a[3] declares an array of three elements, referenced as a[0], a[1] and a[2]. Note also that you should worry about the scoping of names.

A simple program written in this language is:

```
{       int    a[3],t1,t2;
        t1=2;
        a[0]=1; a[1]=2; a[t1]=3;
        t2=-(a[2]+t1*6)/(a[2]-t1);
        if t2>5
```

```
      print(t2);


else
{
int t3;
t3=99;

      t2=-25;
      print(-t1+t2*t3); /* this is a comment on
      2 lines */
} endif
      }
```

Design a Lexical analyzer for the above language. The lexical analyzer should ignore redundant spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.

Week 10:

i) Write a Lex Program for recognizing operators in a given input file.
ii) Write a Lex Program for recognizing special symbols in a given input file.
iii) Write a Lex Program for recognizing keyword and identifier in a given input file.

Week 11:

i) Write a Lex Program that identifies positive integer and negative integer.
ii) Write a Lex Program to recognizes strings of number in the input

Week 12: Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.

Week 13: Design Predictive parser for the given language**.**

E->TA

A-

>+TA/@

T->FB

B-

>*FB/@

F->(E)/i

Week 14: Design LALR bottom up parser for the above language**.**

Course Outcomes:

After the completion of this course the students should be able to:
- Create any topology using network devices and build a device for sharing on network.
- Explain the major software and hardware technologies used on computer networks.
- Demonstrate a working process of lexical analysis, parsing and other compiler design aspects.
- Interpret the working of lex and yacc compiler for debugging of programs.

TEXT BOOKS:
1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.
2. Principles of compiler design - A.V. Aho . J.D.Ullman; Pearson Education.

REFERENCE BOOKS:

1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
2. lex &yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly.
3. Compiler Construction, Louden, Thomson.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS22) MACHINE LEARNING LAB

B.Tech : V SEMESTER   **L T P C**
                                                                                                       0 0 3 1.5

Pre-requisites: Knowledge of DAA and Programming for Problem solving
Course Objectives:
- Understand the complexity of Machine Learning algorithms and their limitations.

- Understand modern notations in data analysis oriented computing.

- Capable of confidently applying common Machine Learning algorithms in practice and implementing their own**.**

- Capable of performing distributed computations.

- Capable of performing experiments in Machine Learning using real world data.

List of Programs :

Week-1: Write a program to represent each document as a vector uses term frequency to identify commonly used terms that help classify the documents from various documents

Week-2: Write a program to identify an object from a given set.

Week-3: Write a program to derive knowledge from a given dataset using Decision Support System.

Week-4 : Write a program to predict the future data based on past data (take past data as a data set)
Week-5 : Write a program to recognize authorized person from a given set using face recognition technique.

Week-6: Write a program to implement bayes theorem for support vector machine

Week-7: Experiment on " to demonstrate least-square method".

Week-8: Write a program to create and combine data frames to get whole data.

Week-9: Write a program to demonstrate data visualization based on user requirement.

Week-10: Write a program for finding the most specific hypothesis based on a given set of training data samples. Read the data from .csv file

Week-11: Write a program to predict data on Insurance Fraud Detection based on given past historical data

Week-12: a) Write a R program to Create Pie-Chart.

b) Write a R Program to Demonstrate Scatterplots.

Week-13: a) Write a R Program to Create Line Chart.

b) Write a R Program to Create Multiple Line Chart.

Week-14:   Write a R Program to Create Histograms

Week-15:   Write a R Program to Create Boxplots

Week-16:   Write a R Program to Create Bar Charts

Course Outcomes:

After the completion of this course the students should be able to :
- Discuss different application on Machine Learning problems.
- Describe various algorithms on Machine Learning mentioning its strengths and weaknesses.
- Improve the performance of Machine Learning algorithms with different parameters.
- Understand the latest issues raised by current researchers.

TEXT BOOKS:

1. Machine Learning: The art and science of algorithms that make sense of data, Peter Flach, Cambridge.
2. The R Book. Second Edition. Michael J. Crawley
3. Machine Learning, Tom M. Mitchell, MGH.

REFERENCE BOOKS:
1. Understanding Machine Learning: From Theory to Algorithms, Shai Shalev-Shwartz, Shai Ben-David, Cambridge.
2. Machine Learning in Action, Peter Harington, 2012, Cengage.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MC04) INDIAN CONSTITUTION

B.Tech : V SEMESTER   **L T P C**

                                                              2 0 0 0

Pre-requisites: None

Course objectives:

1. To introduce the concepts and features Indian constitution.
2. To identify the core values reflected in Preamble of the Constitution.
3. To examine the nature of the Indian federal system and the parliamentary form of government.

UNIT-I

Introduction to Constitution: meaning of the term, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy.

UNIT-II

Union Government and its Administration Structure of the Indian Union: Federalism, Centre- State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha

UNIT-III

State Government and its Administration Governor: Role and Position, CM and Council of ministers, State Secretariat: Organisation, Structure and Functions

UNIT -IV

Local Administration District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayatiraj: Introduction, PRI: Zilla parishadh, Elected officials and their roles, CEO Zila parishadh: Position and role, Block level: Organizational Hierarchy (Different departments) village level: Role of Elected and Appointed officials, Importance of grass root democracy

UNIT- V

Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and bodies for the welfare of SC/ST/OBC and women.

Course Outcomes:

- Demonstrate the fundamental rights and duties of a citizen

- Classify the administrative structure of the Indian union

- Identify the power of state government and make use of positions

- Categorize the various department and local administrations responsibilities

- Functions of election commission and its roles

TEXT BOOKS:

1. Durga Das Basu, Introduction to the constitution of India, Lexis, 2013

2. Granville Aurtin: The Indian Constitution, Oxford University Press, 1999

3. R. Sudarshan, Zoya Hasan Et al, India's Living constitution, Ideas, Practices, Controversies, Anthem 2005.

REFERENCE BOOKS:

1. Indian Polity by Laxmikanth

2. Indian Administration by Subhash Kashyap

3. Indian Administration by Avasti and Avasti

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CS23) NETWORK PROGRAMMING

B.Tech : VI SEMESTER   **L T P C**

                                                                          3 0 0 3

Prerequisites: Programming for Problem Solving,

                        Operating Systems, Data Communications and Computer Network

Course Objectives:

        The course introduce students basics of computer networks and internet programming. The students will be focused on various forms of IPC through UNIX, Sockets and using TCP/IP. It motivates them to understand modern network architecture from design and performance perspective.

UNIT-I Introduction to Network Programming:

        OSI model, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application. (Text Book1, Pg.No: 18-27, Text Book2, Pg.No:547-604)

UNIT-II Sockets:

        Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function. (Text Book1, Pg.No: 57, 63-107)

UNIT-III TCP Client Server:

        Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host shutdown of server host.
I/O Multiplexing and socket options: I/O Models, select function, Batch input, shutdown function, poll function, getsockopt and setsockopt functions. Socket states, Generic socket option IPV4 socket options. (Text Book1, Pg.No: 111-135,143-204)

UNIT-IV Elementary UDP sockets:

        Elementary UDP sockets: Introduction UDP Echo server function, lost datagram, summaryof UDP example, Lack of flow control with UDP, determining outgoing interface with UDP. Elementary name and Address conversions: DNS, gethost by Name function, Resolver option, Function and IPV6 support, uname function, other networking information. (TextBook1, Pg.No: 211-231,237-256)

UNIT-V IPC:

        Introduction, Pipes, FIFOs streams and messages, Namespaces, system IPC, Message queues, Semaphores. Remote Login: Terminal line disciplines,
Pseudo-Terminals, Terminal modes, Control Terminals, rlogin Overview, RPC Transparency Issues. (Text Book2, Pg.No: 87-137,589-616,692-694)

Course Outcomes:
After completion of this course the student should be able to:
- Demonstrate advanced knowledge of OSI layers, TCP & UDP concepts, Networking.
- Summarize the TCP socket functions and Byte Ordering.
- Make use of TCP client server applications and analyze I/O Multiplexing and socket options.
- Define about the Elementary UDP sockets and Address conversions.
- Explain inter process communication consisting of pipes, FIFOs, Semaphores, Message Queues and Remote Procedure Calls

TEXT BOOKS:

1. UNIX Network Programming, Vol. I, Sockets API, 2ndEdition. W.Richard Stevens, Pearson Edn. Asia.
2. UNIX Network Programming, 1st Edition,-W.Richard Stevens. PHI.

REFERENCE BOOKS:

1. UNIX Systems Programming using C++ T CHAN, PHI.
2. UNIX for Programmers and Users, 3 rd Edition Graham GLASS, King abls, PearsonEducation.
3. Advanced UNIX Programming 2nd Edition M. J. ROCHKIND, Pearson Education.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS24) SOFTWARE TESTING

B.Tech : VI SEMESTER   `   **L T P C**
                                                                        3 0 0 3

Pre-Requisites: Software Engineering.

Course Objectives:

The purpose of the course is to make students
- To determine software testing objectives and criteria
- To develop and validate a test plan
- To select and prepare test cases
- To identify the need for testing
- To prepare testing policies and standards
- To use testing aids and tools

UNIT - I

Introduction: Testing as an Engineering Activity, Testing as a Process, Testing axioms, Basic Definitions Software Testing Principles, The Tester's Role in a Software Development Organization, Verification & Validation, Quality Assurance, Quality Control Origins of Defects, Cost of Defects, Defect Classes, The Defect Repository and Test Design, Developer/Tester Support for Developing a Defect Repository, Defect Prevention Strategies. **(Book 1: Pg no: 1- 57) (Book 2: Pg no: 27-29)**

UNIT - II

Test case Design, Test Case Design Strategies, Using Black Box Approach to Test Case Design, Random Testing, Requirements based Testing, Boundary Value Analysis, Decision tables, Equivalence Class Partitioning, State-based Testing, Cause-effect graphing, Error guessing, Compatibility testing, User documentation testing, Domain testing.

White Box Approach to Test Design, Test Adequacy Criteria, Static testing vs. Structural testing, code functional testing, Coverage and Control Flow Graphs, Covering Code Logic, Paths Their Role in White–box Based Test Design, Code complexity testing, Evaluating Test Adequacy Criteria. **(Book 1: Pg no: 63-108) (Book 2: Pg no: 48-63, 87)**

UNIT - III
Levels of Testing, The Need for Levels of Testing, Unit Test, Unit Test Planning, Designing the Unit Tests, The Test Harness, Running the Unit tests and Recording results, Integration tests, Designing Integration Tests, Integration Test Planning, Scenario testing, Defect bash elimination

System Testing, Acceptance testing, Performance testing, Regression Testing, Internationalization testing, Ad-hoc testing, Alpha , Beta Tests, testing OO systems, Usability and Accessibility testing Configuration testing, Compatibility testing, Testing the documentation, Website testing. **(Book 1: Pg no: 133- 176) (Book 2: Pg no: 118,122,211)**

UNIT - IV
Test Management, People and organizational issues in testing, organization structures for testing teams, testing services, Test Planning, Test Plan Components, Test Plan Attachments, Locating Test Items, Test management, Test process, Reporting Test Results, The Role of three groups in Test Planning and Policy Development, Introducing the

test specialist, Skills needed by a test specialist Building a Testing Group. **(Book 1: Pg no: 189- 230) (Book 2: Pg no: 299, 320,338)**

UNIT - V
Test Automation, Software test automation, Skills needed for automation, Scope of automation, Design and architecture for automation, Requirements for a Test Tool, Challenges in automation, Test metrics and measurements, Project progress and Productivity metrics. **(Book 2: Pg no: 387-452)**

Course Outcomes:
After completion of this course the student should be able to:

- Design test cases suitable for a software development for different domains.
- Prepare test planning based on the document.
- Identify suitable tests to be carried out.
- Validate test plan and test cases designed.
- Use of automatic testing tools.

TEXT BOOKS:

1. Ilene Burnstein, "Practical Software Testing", Springer International Edition, 2003.

2. Srinivasan Desikan and Gopalaswamy Ramesh, "Software Testing – Principles and Practices", Pearson education, 2006.

REFERENCE BOOKS:

1. Ron Patton, " Software Testing", Second Edition, Sams Publishing, Pearson education, 2007

2. Renu Rajani, Pradeep Oak, "Software Testing – Effective Methods, Tools and Techniques", Tata McGraw Hill, 2004.

3. Edward Kit, "Software Testing in the Real World – Improving the Process",
4. Pearson Education,1995.
5. Boris Beizer, "Software Testing Techniques" – 2nd Edition, Van Nostrand Reinhold, New York, 1990.

6. Aditya P. Mathur, "Foundations of Software Testing – Fundamental algorithms and techniques", Dorling Kindersley (India) Pvt. Ltd., Pearson Education, 2008

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS25) DATA WAREHOUSING AND DATA MINING

B.Tech : VI SEMESTER   **L T P C**
                                                            3 0 0 3

Pre-requisites: Data base Management Systems.

Course Objectives:
- To enable students to make more effective use of data stored in databases.
- To create a clean and consistent repository of data within a data warehouse.
- To utilize various levels and types of summarization of data to support management decision making.
- To discover patterns and knowledge that is embedded in the huge quantities of data records using different data mining techniques.

UNIT -I
Data Warehouse and OLAP Technology: Introduction to Data Warehouse, Differences between operational database systems and data warehouses (OLAP & OLTP) (Textbook1 Page No. 105-108), **Multidimensional Data Model**: Data Warehouse Architecture, Data Cube and OLAP Technology, Data Warehouse Implementation. (Textbook1 Page No. 110-144).

UNIT -II
Data Mining: Types of Data, Data Mining Functionalities(Textboo1 Page No. 5-27), Interestingness Patterns-Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse System, Major issues in Data Mining.(Textbook1 Page No.29-39). Applications of Data mining(Textbook1 Page no.649-660).

Data Preprocessing: Data cleaning, Data integration and data transformation, data reduction: data cube aggregation, dimensionality reduction (Textbook1 Page No.47-80).

UNIT -III
Association Rule Mining and Classification: Mining Frequent Patterns, Associations and Correlations, Mining Methods, Mining various kinds of Association Rules, Correlation Analysis, Constraint based Association Mining(Textbook1 Page No.227-272).

UNIT -IV
Classification and Prediction: Basic Concepts, Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Back propagation, Support Vector Machines, Associative Classification, Lazy Learners, Other Classification Methods, Prediction. (Textbook1 Page No.285-359).

UNIT -V
Clustering And Applications: Types of Data in Cluster Analysis, Categorization of Major Clustering Methods, Partitioning Methods: K-Means, K-Mediods, Hierarchical Methods, Density-Based Methods: DBSCAN, Grid-Based Methods: CLIQUE, Model-Based Clustering Methods,

Clustering High-Dimensional Data, Constraint-Based Cluster Analysis, Outlier Analysis (Textbook1 Page No.383-459).

Course Outcomes:
After completion of this course the student should be able to:

- Introduce data mining concepts and develops understanding of data mining application.
- Develop an understanding of data warehouse, designing and using data in data warehouse using various operations.
- Develop an outlook of Association rule mining, association rule mining methods and their application on some sample data sets, evaluate these methods based on need.
- Develop an understanding of classification and prediction, classification methods and their application on some sample data sets, evaluate these methods based on need.
- Develop conceptual understanding of clustering, various clustering methods and their application on some sample data sets, evaluate these methods based on need.

TEXT BOOK:

1. Data Mining – Concepts and Techniques - Jiawei Han & Micheline Kamber, Morgan Kaufmann Publishers, Elsevier ,2nd Edition, 2006.

REFERENCE BOOKS:

1. Data Mining Techniques – Arun K Pujari,2nd edition, Universities Press.
2. Data Warehousing in the Real World – Sam Aanhory & Dennis Murray Pearson Edn Asia.
3. Insight into Data Mining,K.P.Soman,S.Diwakar,V.Ajay,PHI,2008.
4. Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley student Edition
5. Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson education.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS26) WEB SERVICES

B.Tech : VI SEMESTER   **L T P C**

                                                                       3 0 0 3

Prerequisites: WT (JAVA, AJT)

Course Objectives:

- To understand the details of web services technologies like WSDL, UDDI, and SOAP.

- To learn how to implement and deploy web service client and server.

- To explore interoperability between different frameworks.

UNIT-I

Evolution and Emergence of Web Services – Evolution of distributed computing, Core distributed computing technologies — client/server, CORBA, JAVA RMI, Microsoft DCOM, MOM, Challenges in Distributed Computing, The role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA). (Page No:1-20)
.Introduction to Web Services -The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services. (Page No:21-34)

UNIT-II

Web Services Architecture — Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication models, basic steps of implementing web services. (Page No:41-55)
Fundamentals of SOAP — SOAP Message Structure, SOAP encoding, Encoding of different data types, SOAP message exchange models, SOAP communication and messaging, (Page No:104-130) limitations of SOAP. (Page No:199)

UNIT- III

Describing Web Services — WSDL — WSDL in the world of Web Services, Web Services life cycle, anatomy of WSDL definition document, WSDL bindings, WSDL Tools, limitations of WSDL. (Page No: 103-222)

UNIT- IV

Discovering Web Services — Service discovery, role of service discovery in a SOA, service discovery mechanisms, UDDI — UDDI registries, uses of UDDI Registry, Programming with UDDI, UDDI data structures, Publishing API, Publishing, searching and deleting information in a UDDI Registry, limitations of UDD1. (Page No: 222-269)

UNIT- V

Web Services Interoperability — Means of ensuring Interoperability, Overview of .NET, Challenges in creating Web Services Interoperability (Page No:272-291)

Interoperability: Web Services Security — XML security frames work, four Goals of Cryptography, XML signature, Digital Certificate, XML Encryption. (Page No: 619 -657)

Course Outcomes:

After completion of this course the student should be able to:

- Implement Web service client and server with interoperable systems like core distributed computing, J2EE, SOA, WSDL, UDDI and EBXML
- Perceive and analyze the principles of SOAP.
- Perceive the implement Web Services life cycle, Anatomy of WSDL definition document.
- How to utilize the semantics of web services. Working with UDDI, programming with UDDI, UDDI data structures.
- Explore interoperability between different frameworks. Design web based applications that use web services

TEXT BOOK:

1. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India.

REFERENCE BOOKS:

1. Java Web Service Architecture, James McGovern, Sumer Tyagi etal., Elsevier
2. Building Web Services with Java, 2 Edition, S. Graham and others, Pearson Edn.
3. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly,SPD.
4. Web Services, G. Alonso, F. Casati and others, Springer. Outcomes
5. Basic details of WSDL, UDDI, SOAP
6. Implement WS client and server with interoperable systems

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS27) ADVANCED DATABASE MANAGEMENT SYSTEMS
(PROFESSIONAL ELECTIVE-II)

B.Tech : VI SEMESTER   **L T P C**
                                                            3 0 0 3

Pre-requisites: Database Management Systems

Course Objectives:
The objective aims at features and benefits of Database Management System in Information Technology. It introduces recovery in database system. Various sections explain the basic design and execution of relational databases. It also provides knowledge and understanding of the underlying principles of Relational Database Management Solution. The information about implementing and maintaining an effective, efficient database system with the help of the rising trends are also focused.

UNIT-I Database System Concepts and Architecture
Data Models, Schemas, and Instances- Three-Schema Architecture and Data Independence- Database Languages and Interfaces- The Database System Environment- Centralized and Client/Server Architectures for DBMSs-Classification of Database Management Systems. **(Pg.No: 21-36)**

UNIT-II Database Recovery Techniques

Recovery Concepts- NO-UNDO/REDO Recovery Based on Deferred Update- Recovery Techniques Based on Immediate Update- Shadow Paging- The ARIES Recovery Algorithm- Recovery in Multi database Systems- Database Backup and Recovery from Catastrophic Failures. **(Pg.No: 454-464)**

UNIT-III The Enhanced Entity-Relationship (EER) Model

Subclasses, Super classes, and Inheritance- Specialization and Generalization- Constraints and Characteristics of Specialization and Generalization Hierarchies- Modelling of UNION Types Using Categories- A Sample UNIVERSITY EER Schema, Design Choices, and Formal Definitions- Example of Other Notation: Representing Specialization and Generalization in UML Class Diagrams- Data Abstraction, Knowledge Representation, and Ontology Concepts. **(Pg.No: 61-79)**

UNIT- IV Database Security

Introduction to Database Security Issues- Discretionary Access Control Based on Granting and Revoking Privileges- Mandatory Access Control and Role-Based Access Control for Multilevel Security- SQL Injection- Introduction to Statistical Database Security- Introduction to Flow Control- Encryption and Public Key Infrastructures- Privacy Issues and Preservation- Challenges of Database Security- Oracle Label-Based Security. **(Pg.No: 478-494)**

UNIT-V Enhanced Data Models for Advanced Applications
Active Database Concepts and Triggers- Temporal Database Concepts- Spatial Database Concepts- Multimedia Database Concepts- Introduction to Deductive Databases. **(Pg.No: 568-600)**

Course Outcomes:
After completion of this course the student should be able to:

- Define Database Languages, Models along with Client Server Architecture.
- Explain principles of Database Recovery protocols.
- Construct EER model for real world problems.
- Determine various database security issues.
- Adapt with advanced Data models and its applications.

TEXT BOOK:

1. Ramez Elmasri , Shamkant B. Navathe, Fundamentals of Database Systems – six edition-TMH

REFERENCE BOOKS:

1. Raghu Ramakrishnan, Johannes Gehrke- Database Management Systems- Third edition- McGraw-Hill.

2. Silberschatz, Korth, Sudarshan- Database System Concepts- Forth edition- McGraw-Hill.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS28) DESIGN PATTERNS
(PROFESSIONAL ELECTIVE-II)

B.Tech : VI SEMESTER   **L T P C**
                                                                                                          3 0 0 3

Prerequisites:
Desired concepts of Software Engineering, Object Oriented Analysis & Design

Course Objectives:
1. It focuses on incremental/iterative development and common design patterns.
2. To identify appropriate design patterns for various problems, able to refractor poorly designed program by using appropriate design patterns.

UNIT I: INTRODUCTION: Introduction: What Is a Design Pattern? Design Patterns in Smalltalk MVC Describing Design Patterns The Catalog of Design Patterns Organizing the Catalog How Design Patterns Solve Design Problems How to Select a Design Pattern, How to Use a Design Pattern. (Pg.No: 33-76)

UNIT II: A Case Study : Designing a Document Editor : Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, (Pg.No: 33-76)

UNIT –III: Creational Patterns: Abstract Factory Builder Factory Method Prototype Singleton Discussion of Creational Patterns. (Pg.No: 79-135)

UNIT IV: Structural Pattern, Adapter, Bridge, Composite, Decorator, Façade, Flyweight Proxy. Discussion of Structural Patterns (Pg.No: 137-219)

UNIT V: Behavioral Patterns Part-I: Chain of Responsibility, Command Interpreter, Iterator Behavioral Patterns Part-II: Mediator, Memento, Observer, State, Strategy, Template Method, Visitor, Discussion of Behavioral Patterns. What to Expect from Design Patterns, A Brief History The Pattern Community An Invitation, A Parting Thought. (Pg.No: 221-357)

Course Outcomes:

Upon completion of the course, the student should be able to learn the following:
- Identify the appropriate design patterns to solve object oriented design problems.
- Identify and implement appropriate solutions to recurring programming problems by consulting technical documentation and specifications, including design pattern catalogs and existing source code.
- Understand basic elements of structural patterns and their implementation.
- Understand basic elements of creational patterns and their implementations.
- Understand basic elements of behavioral patterns and their implementation along with growth in the field of using design patterns.

TEXT BOOK:

1. Design Patterns - Elements of Reusable Object-Oriented Software, <u>Erich Gamma</u> ,<u>Richard Helm</u> , <u>Ralph Johnson</u> <u>John Vlissides</u> , <u>Grady Booch</u>

REFERENCE BOOKS:

1. Pattern's in JAVA Vol – II BY Mark Grand, Wiley Dream Tech.
2. JAVA Enterprise Design Patterns Vol – III By Mark Grand, Wiley Dream TECH.
3. Head First Design Patterns By Eric Freeman – Oreilly – spd.
4. Peeling Design Patterns, Prof Meda Srinivasa Rao, Narsimha Karumanchi, Career Monk Publication.
5. Design Patterns Explained By Alan Shallowy, Pearson Education.
6. Pattern Oriented Software Architecture, af.Buschman & others, John Wiley & Sons.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS29) OPEN SOURCE SOFTWARE

(PROFESSIONAL ELECTIVE-II)

B.Tech : VI SEMESTER
L T P C
3 0 0 3

Prerequisites: Any Programming language

Course Objectives:

1. The student should be made to be exposed to the context and operation of free and open source software (FOSS) communities and associated with software projects.
2. Be familiar with participating in a FOSS project and to learn scripting language like Python or Perl or Ruby
3. To learn some important FOSS tools and techniques

UNIT I: INTRODUCTION: Introduction to Open sources – Need of Open Sources – Advantages of Open Sources– Application of Open Sources. Open source operating systems: LINUX: Introduction – General Overview – Kernel Mode and user mode
LINUX: Process – Advanced Concepts – Scheduling – Personalities – Cloning – Signals – Development with Linux. (**Text Book 1: page no. 1-105**)

UNIT II: OPEN SOURCE PROGRAMMING LANGUAGES PHP: PHP Basics- Features, Embedding PHP Code in your Web pages Outputting the data to the browser, Data types, variables Constants, expressions, string interpolation control structures Function, Creating a Function Libraries, Arrays, strings, Regular Expressions. Php and Web Forms, Files PHP Authentication and Methodologies -Hard Coded File Based, Database Based, IP Based Login Administration, Uploading Files with PHP Sending Email using PHP, PHP Encryption Functions, the Mcrypt, package, Building Web sites for the World Translating Websites- Updating Web sites Scripts Creating the Localization Repository Translating Files text, Generate Binary Files, Set the desired language within your scripts, Localizing Dates, Numbers and Times. (**Text Book 2: page no. 1-195**)

UNIT III: PYTHON: Introduction to Python language, python-syntax statements, functions, Built-in-functions and Methods Modules in python, Exception Handling
Integrated Web Applications in Python – Building Small Efficient Python Web Systems
Web Application Frame work(**Text Book 4: page no. 1-85**)

UNIT IV: PERL : Perl backgrounder – Perl overview – Perl parsing rules – Variables and Data – Statements and Control structures – Subroutines, Packages, and Modules- Working with Files – Data Manipulation. PERL- Names and Values, Variables, Scalar Expressions Control Structures arrays, list, hashes, strings pattern and regular expressions, subroutines finer points of looping, pack and unpack, file system, eval data structures, packages, modules objects, interfacing to the operating system, Creating Internet ware applications, Dirty Hands Internet Programming, security Issues. (**Text Book 5: page no. 1-143**)

UNIT V: PROGRAMMING LANGUAGE RUBY: Getting started, Ruby new, Classes, Objects and variables, sharing functionality: Inheritance, modules and mixings, exceptions, catch and throw, fibers, threads and processes, namespaces, source files and distribution, built-in classes and

modules. (**Text Book 3: page no. 1-116**)

Course Outcomes:

Upon completion of the course, the student should be able to learn the following:
- Install and run open-source operating systems.
- Gather Information about free and open source software projects from software releases and from sites on the internet.
- Build and modify one or more free and open source software packages.
- Ability to learn version control system and interface with version control systems used by development communities.
- Contribute software to and interact with free and open source software development Projects.

TEXT BOOKS:

1. Remy Card, Eric Dumas and Frank Mevel, "The Linux Kernel Book", Wiley Publications, 2003.
2. Rasmus Lerdorf and Levin Tatroe, "Programming PHP", O'Reilly, 2002.
3. Dave Thomas, Chad Fowler and Andy Hunt "The Pragmatic Programmers' Guide Programming Ruby "4th edition, O'Reilly publications, 2009.

4. Wesley J. Chun, "Core Phython Programming", Prentice Hall, 20012.
5. Martin C. Brown, "Perl: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

REFERENCE BOOKS:

1. Steven Holzner, "PHP: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing company limited, Indian reprint 2009.
2. Python Web Programming, Steve Holden and David Beazely, New Riders Publications David Flanagan and Yukihiro Matsumoto, "The Ruby Programming Language" O'Reilly publisher, 2008

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CE52)AIR POLLUTION CONTROL
(OPEN ELECTIVE – II)

B.Tech : VI SEMESTER   **L T P C**
                                                                      3 0 0 3

Pre-requisites: None
COURSE OBJECTIVE:
To impart knowledge on the principle and design of control of Indoor/ particulate/ gaseous air pollutant and its emerging trends.

UNIT- I INTRODUCTION
Structure and composition of Atmosphere – Definition, Scope and Scales of Air Pollution – Sources and classification of air pollutants and their effect on human health, vegetation, animals, property, aesthetic value and visibility- Ambient Air Quality and Emission standards –Ambient and stack sampling and Analysis of Particulate and Gaseous Pollutants.

UNIT- II METEOROLOGY
Effects of meteorology on Air Pollution - Fundamentals, Atmospheric stability, Inversion, Wind profiles and stack plume patterns- Atmospheric Diffusion Theories – Dispersion models, Plume rise.

UNIT- III CONTROL OF PARTICULATE CONTAMINANTS
Factors affecting Selection of Control Equipment – Gas Particle Interaction – Working principle, Design and performance equations of Gravity Separators, Centrifugal separators Fabric filters, Particulate Scrubbers, Electrostatic Precipitators – Operational Considerations.

UNIT- IV CONTROL OF GASEOUS CONTAMINANTS
Factors affecting Selection of Control Equipment – Working principle, Design and performance equations of absorption, Adsorption, condensation, Incineration, Bio scrubbers, Bio filters – Process control and Monitoring - Operational Considerations.

UNIT -V INDOOR AIR QUALITY MANAGEMENT
Sources, types and control of indoor air pollutants, sick building syndrome and Building related illness- Sources and Effects of Noise Pollution – Measurement – Standards –Control and Preventive measures.

Course Outcomes:
The students completing the course will have
* Perceive Air pollution Concepts.
* Analyze the Effects of air pollution on the environment.
* Identify the significance of meteorological factors in pollutant dispersion and to predict the pollutant concentration.
* Apply plume dispersion modelling and assess the concentrations.
* Perceive Air quality monitoring devices.

TEXTBOOKS:

1. Lawrence K. Wang, Norman C. Pareira, Yung Tse Hung, "Air Pollution Control Engineering", Tokyo, springer science + science media LLC,2004.
2. Noel de Nevers, "Air Pollution Control Engineering", Waveland press,Inc 2017.

3. Anjaneyulu. Y, "Air Pollution and Control Technologies", Allied Publishers (P) Ltd., India2002.

REFERENCE BOOKS:
1. David H.F. Liu, Bela G. Liptak, "Air Pollution", Lweis Publishers, 2000.
2. Arthur C. Stern, "Air Pollution (Vol.I – Vol.VIII)", Academic Press, 2006.
3. Wayne T.Davis, "Air Pollution Engineering Manual", John Wiley & Sons, Inc, 2000.
4. M.N Rao and HVN Rao, "Air Pollution",Tata McGraw Hill Publishing Company limited,2007.
5. C.S.Rao, "Environmental Pollution Control Engineering",New Age International (P) Limited Publishers,2006.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EC23) BIOMEDICAL INSTRUMENTAION
(OPEN ELECTIVE – II)

B.Tech : VI SEMESTER   **L T P C**
                                                              3 0 0 3

Pre Requisites: Electronic Measurements& Instrumentation
Course Objectives
The following are the course objectives
- To study bioamplifier, biosignals and measurement of physiological parameters.
- To know about different bioelectrodes and activities of heart.
- To understand therapeutic and cardic instrumentation.
- To study EEG and EMG machines, recordings and interpretations.

UNIT-I
Components of Medical Instrumentation System: Bloamplifier, Static and Dynamic Characteristics of Medical Instruments, Biosignals and Characteristics, Problems encountered with Measurements from Human beings. Organization of Cell, Derivation of Nernst equation for Membrane Resting Potential Generation and Propagation of Action Potential, Conduction through Nerve to Neuromuscular Junction.

UNIT -II
Bio Electrodes: Biopotential Electrodes-External Electrodes, Internal Electrodes, Biochemical Electrodes. Mechanical Function, Electrical Conduction System of the Heart, Cardiac Cycle, Relation between Electrical and Mechanical Activities of the Heart.

UNIT -III
Cardiac Instrumentation: Blood Pressure and Blood Flow Measurement, Specification of ECG Machine, Einthoven Triangle, Standard 12-Lead Configurations, Interpretation of ECG waveform with respect to Electro Mechanical Activity of the Heart.

UNIT -IV
Therapeutic Equipment: Pacemaker, Defibrillator, Shortwave Diathermy, Hemodialysis Machine.
Respiratory Instrumentation: Mechanism of Respiration, Spirometry, Pnemuotachograph Ventilators.

UNIT -V
Neuro-Muscular Instrumentation: Specification of EEG and EMG Machines, Electrode Placement for EEG and EMG Recording, Interpretation of EEG and EMG.

Course Outcomes
At the end of the course, the student will be able to
- Understand the functions of bio amplifiers, characteristics of medical instruments and bio signals.
- Discuss the various internal, external Bio electrodes and relations between electrical and mechanical activities of heart.
- Compare various concepts of Cardiac Instrumentation and gain the knowledge about

- Analyze the Therapeutic Equipment and their operation.
- Acquires knowledge about neuro-muscular Instrumentation like ECG EMG and EEG.

TEXT BOOKS:

1. Biomedical Instrumentation and Measurements — by Leslie Cromwell, F.J. Weibell, E.A. Pfeiffer, PHI.
2. Medical Instrumentation, Application and Design — by John G.Webster, John Wiley.

REFERENCE BOOKS:
1. Principles of Applied Biomedical Instrumentation — by L.A. Geoddes and L.E. Baker, John Wiley and Sons.
2. Hand-book of Biomedical Instrumentation — by R.S. Khandpur, McGraw-Hill, 2003.
3. Biomedical Telemetry — by Mackay, Stuart R., John Wiley.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EC24) DIGITAL IMAGE PROCESSING
(OPEN ELECTIVE – II)

B.Tech : VI SEMESTER   **L T P C**
                                                                                                              3 0 0 3

Pre Requisites: None

Course Objectives
Provide the student with the fundamentals of digital image processing.
- Give the students a taste of the applications of the theories taught in the subject. This will be achieved through the project and some selected lab sessions. Introduce the students to some advanced topics in digital image processing.
- Give the students a useful skill base that would allow them to carry out further study should they be interested and to work in the field.

UNIT- I
Digital Image Fundamentals & Image Transforms: Digital Image Fundamentals, Sampling and Quantization, Relationship between Pixels,
Image Transforms: 2-D FFT, Properties, Walsh Transform, Hadamard Transform, Discrete Cosine Transform, Haar Transform, Slant Transform, Hotelling Transform.

UNIT –II
Image Enhancement (Spatial Domain): Introduction, Image Enhancement in Spatial Domain, Enhancement Through Point Operation, Types of Point Operation, Histogram Manipulation, Linear and Non — Linear Gray Level Transformation, Local or Neighborhood Operation, Median Filter, Spatial Domain High-Pass Filtering.
Image Enhancement (Frequency Domain): Filtering in Frequency Domain, Obtaining Frequency Domain Filters from Spatial Filters, Generating Filters Directly in the Frequency Domain, Low Pass (Smoothing) and High Pass (Sharpening) Filters in Frequency Domain.

UNIT –III
Image Restoration: Degradation Model, Algebraic Approach to Restoration, Inverse Filtering, Least Mean Square Filters, Constrained Least Squares Restoration, Interactive Restoration.

UNIT-IV
Image Segmentation: Detection of Discontinuities, Edge Linking And Boundary Detection, Thresholding, Region Oriented Segmentation.
Morphological Image Processing: Dilation and Erosion: Dilation, Structuring Element Decomposition, Erosion, Combining Dilation and Erosion, Opening and Closing, The Hit or Miss Transformation.

UNIT-V
Image Compression: Redundancies and their Removal Methods, Fidelity Criteria, Image Compression Models, Huffman and Arithmetic Coding, Error Free Compression, Lossy Compression, Lossy and Lossless Predictive Coding, Transform Based Compression, JPEG 2000 Standards.

Course Outcomes:

- Gain the knowledge of digital image fundamentals and image transforms.
- Discuss the analysis of image enhancement in spatial and frequency domain.
- Understand the different methods to restore an image.
- Inspect different image segmentation techniques and understand morphological image processing.
- Analyze the different image compression techniques.

TEXT BOOKS:

1. Digital Image Processing – Rafael C. Gonzalez, Richard E. Woods, 3rd Edition, Pearson, 2008
2. Digital Image Processing- S Jayaraman, S Esakkirajan, T Veerakumar- TMH, 2010.

REFERENCE BOOKS:

1. Digital Image Processing and Analysis-Human and Computer Vision Application with using CVIP Tools – Scotte Umbaugh, 2nd Ed, CRC Press, 2011
2. Digital Image Processing using MATLAB — Rafael C. Gonzalez, Richard E Woods and Steven L. Eddings, 2nd Edition, TMH, 2010.
3. Fundamentals of Digital Image Processing — A.K.Jain, PHI, 1989
4. Digital Image Processing and Computer Vision — Somka, Hlavac, Boyle- Cengage Learning (Indian edition) 2008.
5. Introductory Computer Vision Imaging Techniques and Solutions- Adrian low, 2008, 2nd Edition
6. Introduction to Image Processing & Analysis — John C. Russ, J. Christian Russ, CRC Press, 2010.
7. Digital Image Processing with MATLAB & Labview — Vipula Singh, Elsevier.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18EN03) ADVANCED ENGLISH COMMUNICATION SKILLS LAB

B. Tech: VI SEMESTER   **L   T   P   C**
                                                                                                            0   0   3   1.5

Pre Requisites: Knowledge of Grammar and Vocabulary

1. Introduction

The introduction of the Advanced English Communication Skills Lab is considered essential at 3rd year level. At this stage, the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.

The proposed course should be a laboratory course to enable students to use 'good' English and perform the following:

- Gather ideas and information to organize ideas relevantly and coherently.
- Engage in debates.
- Participate in group discussions.
- Face interviews.
- Write project/research reports/technical reports.
- Make oral presentations.
- Write formal letters.
- Transfer information from non-verbal to verbal texts and vice-versa.
- Take part in social and professional communication.

2. Course Objectives:

This Lab focuses on using multi-media instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.
- To prepare all the students for their placements.

3. Syllabus:

The following course content to conduct the activities is prescribed for the Advanced English Communication Skills (AECS) Lab:

1. **Fundamentals of Inter-personal Communication and Building Vocabulary** -   Starting a conversation – responding appropriately and relevantly – using the right body language – Role Play in different situations and Discourse Skills- using visuals - Synonyms and   antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, business vocabulary, analogy, idioms and phrases, collocations and usage of vocabulary.

2. **Reading Comprehension** –General Vs Local comprehension, reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, critical reading & effective googling.

3. **Writing Skills** – Structure and presentation of different types of writing – *letter writing/Resume writing/ e-correspondence/ Technical report writing/ Portfolio writing* – planning for writing – improving one's writing.

4. **Presentation Skills** – Oral presentations (individual and group) through JAM sessions/seminars/**PPTs** and written presentations through posters/projects/reports/ e-mails/assignments etc.

5. **Group Discussion and Interview Skills** – Dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and organization of ideas and rubrics for evaluation- Concept and process, pre-interview planning, opening strategies, answering strategies, interview through tele-conference and video-conference and Mock Interviews.

4. Minimum Requirement:

The Advanced English Communication Skills (AECS) Laboratory shall have the following infra-structural facilities to accommodate at least 35 students in the lab:

- Spacious room with appropriate acoustics
- Round Tables with movable chairs
- Audio-visual aids
- LCD Projector
- Public Address system
- P – IV Processor, Hard Disk – 80 GB, RAM–512 MB Minimum, Speed – 2.8 GHZ
- T. V, a digital stereo & Camcorder
- Headphones of High quality

5. **Prescribed Lab Manual:** A book titled *A Course Book of Advanced Communication Skills Lab* published by Universities Press, Hyderabad.

6. Suggested Software:

The software consisting of the prescribed topics elaborated above should be procured and used.

Course Outcomes
- Developing effectively and appropriate vocabulary to be used contextually.
- Inculcating flair for Writing and felicity in written expression.
- Enhancing job prospects.
- Acquiring effective speaking abilities

Oxford Advanced Learner's Compass, 8th Edition
- **DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.**
- **Lingua TOEFL CBT Insider**, by Dreamtech
- **TOEFL & GRE** (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
- **The following software from 'train2success.com'**
  - ➢ **Preparing for being Interviewed**
  - ➢ **Positive Thinking**
  - ➢ **Interviewing Skills**
  - ➢ **Telephone Skills**
  - ➢ **Time Management**
  - ➢ **Skillmate**
  - ➢ **Presentation skills, Cambridge** (with VCD)

7. Books Prescribed:

1. **Technical Communication** by Meenakshi Raman & Sangeeta Sharma, Oxford University Press 2009.
2. **English Language Communication : A Reader cum Lab Manual** Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, Anuradha Publications, Chennai 2008.
3. **Advanced Communication Skills Laboratory Manual** by Sudha Rani, D, Pearson Education 2011.
4. **Technical Communication** by Paul V. Anderson. 2007. Cengage Learning pvt. Ltd. New Delhi.

5. **Business and Professional Communication:** Keys for Workplace Excellence. Kelly M. Quintanilla & Shawn T. Wahl. Sage South Asia Edition. Sage Publications. 2011.

Suggested Books:

1. **The Basics of Communication: A Relational Perspective**. Steve Duck & David T. McMahan. Sage South Asia Edition. Sage Publications. 2012.
2. **English Vocabulary in Use** series, Cambridge University Press 2008.
3. **Management Shapers Series** by Universities Press(India)Pvt Ltd., Himayatnagar, Hyderabad 2008.
4. **Handbook for Technical Communication** by David A. McMurrey & Joanne Buckley. 2012. Cengage Learning.
5. **Communication Skills** by Leena Sen, PHI Learning Pvt Ltd., New Delhi, 2009.
6. **Handbook for Technical Writing** by David A McMurrey & Joanne Buckely CENGAGE Learning 2008.
7. **Job Hunting** by Colm Downes, Cambridge University Press 2008.
8. **Master Public Speaking** by Anne Nicholls, JAICO Publishing House, 2006.
9. **English for Technical Communication for Engineering Students, Aysha Vishwamohan, Tata Mc Graw-Hil 2009.**
10. Books on **TOEFL/GRE/GMAT/CAT/ IELTS** by Barron's/DELTA/Cambridge University Press.
11. **International English for Call Centres** by Barry Tomalin and Suhashini Thomas, Macmillan Publishers, 2009.
12. **Towards Career Advancement** - Excerpts from a Professor's Folio by **P. Satyanarayana Prof. of English, Vaagdevi College of Engineering** , published by Vaagdevi Group of Colleges Engineering, Warangal (T.S.) India, 2015.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS30) NETWORK PROGRAMMING LAB

B.Tech : VI SEMESTER   **L T P C**
                                                      0   0 3 1.5

Prerequisites: Programming for Problem Solving

Course Objectives:

      To impart a solid foundation on state of art trends in computer networking to provide a hands on experience of the same. The lab work concentrate on insight of all areas in networking and familiarize students with the Linux environment. The experiments may be taken up with the intention to solidify the foundation of the basic networking course such asUnix/Linux environments.

Week 1:

a) Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
b) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.

Week 2:

a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
b) Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.

Week 3:

a) Write a shell script to list all of the directory files in a directory.
b) Write a shell script to find factorial of a given integer.

Week 4:

a) Write an awk script to count the number of lines in a file that do not contain vowels.
b) Write an awk script to find the number of characters, words and lines in a file.

Week 5:

Design TCP iterative Client and server application to reverse the given input sentence.

Week 6:

Design TCP client and server application to transfer file.

Week 7:

Design a TCP concurrent server to convert a given text into upper case using multiplexing system call ─select.
Week 8:

Design a TCP concurrent server to echo given set of sentences using poll functions.

Week 9:

Design UDP Client and server application to reverse the given input sentence.

Week 10:

Design UDP Client server to transfer a file.

Week 11:

Design using poll client server application to multiplex TCP and UDP requests for converting a given text into upper case.

Week 12:

Implement the following forms of IPC.   a) Pipes   b) FIFO

Week 13:

Implement file transfer using Message Queue form of IPC.

Week 14:

Write a programme to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions.

Week 15:

Design a RPC application to add and subtract a given pair of integers.

Course Outcomes:
After the completion of this course, the students should be able to
- Elaborate basic UNIX commands, shell scripts and AWK scripts.
- Organize and manipulate files and directories.
- Model TCP and UDP client server applications and outline the I/O multiplexing concepts of Select and Poll functions.
- Design inter process communication consisting of pipes, FIFOs, Semaphores and message Queues and develop RPC applications.

TEXT BOOKS:

1. UNIX Network Programming, Vol. I, Sockets API, 2ndEdition. W. Richard Stevens, Pearson Edn. Asia.
2. UNIX Network Programming, 1st Edition, W. Richard Stevens. PHI.

REFERENCE BOOKS:

1. Advance Unix Programming Richard Stevens, Second Edition Pearson Education.

2. Unix and Shell programming, B.A.Forouzan and R.F.Gillberg,Cengage Learning.

3. Unix and Shell Programming, M.G.Venkatesh Murthy, Pearson Education, 2005.

4. Advance UNIX Programming, N.B. Venkateswarlu, BS Publication.

5. Unix Shells by Example, 4th Edition,Ellie Quigley,Pearson Education.

6. Sed and Awk, O.Dougherty&A.Robbins, 2nd edition,SPD.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS31)DATAMINING AND SE LAB

B.Tech : VI SEMESTER   **L T P C**
                                                                    0   0 3 1.5

Pre-Requisites:
> A course on "Computer Programming and Data Structures"
> A course on "Object Oriented Programming Through Java**"**

Course Objectives:
After the completion of this course, the students should be able to

- ☐ This practical paper is designed to help students to design a data warehouse and implement OLAP operations.
- ☐ This shall give them exposure to application of data warehousing.
- ☐ The next part of the practical helps the students to perform data mining functionalities such as association rule mining, classification and clustering.
- ☐ To have hands on experience in developing a software project by using various software engineering principles and methods in each of the phases of software development.

Syllabus Content

Part A

Week 1: Design a data warehouse for auto sales analysis.

Week 2: Perform OLAP operations on auto sales data warehouse.

Week 3: Perform Data Preprocessing :
> a)Data Selection and Loading.
> b)Handing Missing values.
> c)Creating arff file.

Week 4: a) Introduction to WEKA Explorer.
> b) Implement Apriori Algorithm using supermarket data.

Week 5: Implement FP-Growth Algorithm using Super market data.

Week 6: Implement the following Tree based classification Algorithms on sample dataset:
> a) ID3
> b) C4.5

Week 7: Implement Naive Bayesian Classification Algorithm on sample dataset.

Week 8: Implement the following Clustering Algorithms on sample data set:
> a) K-Means
> b) DBSCAN

Part B

Week 9-15:

LIST OF EXPERIMENTS

Do the following 7 exercises for any two projects given in the list of sample projects or any other projects:

1. Development of problem statement.
2. Preparation of Software Requirement Specification Document, Design Documents and Testing Phase related documents.
3. Preparation of Software Configuration Management and Risk Management related documents.
4. Study and usage of any Design phase CASE tool
5. Performing the Design by using any Design phase CASE tools.
6. Develop test cases for unit testing and integration testing
7. Develop test cases for various white box and black box testing

Sample Projects:
1. Passport automation System
2. Book Bank
3. Online Exam Registration
4. Stock Maintenance System
5. Online course reservation system
6. E-ticketing
7. Software Personnel Management System
8. Credit Card Processing
9. E-book management System.
10. Recruitment system

Course Outcomes:

- Develop a design of data warehouse and implement OLAP operations.
- Explore WEKA for data mining task such as association rule mining, classification and clustering using a few algorithms from the respective task.
- Explore text mining using WEKA and apply classification using Naive bayes technique.
- Will have experience and/or awareness of testing problems and will be able to develop a simple testing report.

TEXT BOOKS:

1. Data Mining – Concepts and Techniques - Jiawei Han & Micheline Kamber, Morgan Kaufmann Publishers, Elsevier,2nd Edition, 2006.

2. Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson education.
3. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition, Mc Graw Hill International Edition.
4. Software Engineering- Sommerville, 7th edition, Pearson Education.
5. The unified modeling language user guide Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.
6. Ilene Burnstein, "Practical Software Testing", Springer International Edition, 2003.

REFERENCE BOOKS:

1. Data Mining Techniques – Arun K Pujari,2nd edition, Universities Press.
2. Data Warehousing in the Real World – Sam Aanhory & Dennis Murray Pearson Edn Asia.
3. Insight into Data Mining,K.P.Soman,S.Diwakar,V.Ajay,PHI,2008.
4. Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley student Edition.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MC05) LOGICAL REASONING & QUANTITATIVE APTITUDE

B.Tech : VI SEMESTER   **L T P C**
                                               2 0 0 0

Pre-requisites: Mathematical Knowledge at pre-university level
Course Objectives:

The purpose of this course ensure the students

☐ To improve logical thinking with general applications using mathematical concepts like sequences, series, number theory and probability.

☐ It also features students to analyze data interpretation and able of improve their mathematical skills in various general aspects like coding and decoding, Time and Work puzzles solving blood relations etc.

UNIT – I: Logical Reasoning

1. Coding and Decoding
2. Distance and Directions
3. Classifications
4. Odd man out and series
5. Clocks and Calendars etc.

UNIT – II: Logical ability

1. Blood relations
2. Seating Arrangements
3. Figure Analysis
4. Puzzles etc.

UNIT – III: Number systems

1. LCM and HCF
2. Ratio and proportion
3. Simple interest and compound interest
4. Profit and Loss etc.

UNIT – IV: Arithmetic ability

1. Time and work
2. Partnerships
3. Time speed and distance
4. Problems on Trains etc.

UNIT – V: Mathematical ability

1. Sequence and series
2. Permutations and combination
3. General probability etc.

Course Outcomes:

By studying logical reasoning and quantitative aptitude students are able to:

- Apply quantitative reasoning and mathematical analysis methodologies to understand and solve problems.
- Interpret given information correctly, determine which mathematical model best describes the data.

- Correctly apply mathematical language and notation to explain the reasoning underlying their conclusions

- Improve their mathematical skills in various general aspects to solve real world problems.

- Ability to draw conclusions or make decisions based on logical reasoning and mathematical ability.

TEXT BOOKS & REFERENCE BOOKS:

1. A modern approach to verbal and non-verbal reasoning by Dr. R.S. Aggarwal.
2. Quantitative Aptitude by Abhijit Guha Tata Mc Graw-Hill Company Limited.
3. Quantitative Aptitude by P.A. Anand (Wiley)
4. Quantitative Aptitude by Dr. R.S. Agarwal.
5. Objective Arithmetic by S.L. Gulati.

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UNIT – V

Web Security: Web Security Considerations, Secure Socket Layer and Transport Layer Security, Electronic Payment. **Intruders, Virus and Firewalls:** Intruders, Intrusion detection, password management, Virus and related threats, Countermeasures, Firewall design principles, Types of Firewalls. **Case Studies on Cryptography and Security:** Secure Multiparty Calculation, Virtual Elections, Single Sign On, Secure Inter-branch Payment Transactions, Cross site Scripting Vulnerability. (Text Book: Page no: 651-759)

TEXT BOOK:
1. Cryptography and Network Security - Principles and Practice: William Stallings, Pearson Education, 6th Edition.

REFERENCE BOOKS:
1. Cryptography and Network Security: Atul Kahate, Mc Graw Hill, 3rd Edition.
2. Cryptography and Network Security: C K Shyamala, N Harini, Dr T R Padmanabhan, Wiley India, 1st Edition.
3. Cryptography and Network Security: Forouzan Mukhopadhyay, Mc Graw Hill, 3rd Edition.
4. Information Security, Principles, and Practice: Mark Stamp, Wiley India.
5. Principles of Computer Security: WM. Arthur Conklin, Greg White, TMH.
6. Introduction to Network Security: Neal Krawetz, CENGAGE Learning.
7. Network Security and Cryptography: Bernard Menezes, CENGAGE Learning.

Course Outcomes:
After completion of the course, the student will be able to,
- Explain different security attacks, services, mechanisms and encrypt/decrypt the message using various substitution and transposition techniques.
- Apply symmetric and asymmetric key algorithms for encryption and decryption of the message.
- Relate how key is shared, distributed and to provide authentication to the message using various hashing algorithms.
- Summarize Email security, PGP and MIME. And describe different IP Security architecture.
- Understand the SSL, TLS and discuss different intruder detection systems and explain the concepts of Firewall design principles.

UNIT – V

Web Security: Requirements, Secure Socket Layer (SSL) and Transport Layer Security(TLS), Secure Electronic Transaction (SET), Intruders, Firewall Design principles, Trusted Systems, Intrusion Detection Systems(Online Chapters and Appendices: Chapter 22,Chapter 23),Wireless Network Security. (Text Book: Page no: 522-585)

Course Outcomes:

After the completion of this course, the students should be able to

- Identifies various types of vulnerabilities, attacks, mechanisms and security services.
- Compare and contrast symmetric and asymmetric encryption algorithms.
- Implementation of message authentication, hashing algorithms and able to understand kerberos.
- Explore the attacks and controls associated with IP, transport level, web and E-mail security.
- Develop intrusion detection system, solutions for wireless networks and designing of various types of firewalls.

TEXT BOOK:

1. Cryptography and Network Security - Principles and Practice: William Stallings, Pearson Education, 6th Edition

REFERENCE BOOKS:

1. Cryptography and Network Security: C K Shyamala, N Harini, Dr T R Padmanabhan, Wiley India, 1st Edition.
2. Cryptography and Network Security : Forouzan Mukhopadhyay, Mc Graw Hill, 3 rd Edition
3. Information Security, Principles, and Practice: Mark Stamp, Wiley India.
4. Principles of Computer Security: WM. Arthur Conklin, Greg White, TMH
5. Introduction to Network Security: Neal Krawetz, CENGAGE Learning
6. Network Security and Cryptography: Bernard Menezes, CENGAGE Learning

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MB04) MANAGEMENT AND ORGANISATIONAL BEHAVIOR

B.Tech : VII SEMESTER   **L T P C**
                                                                                       3 0 0 3

Pre-requisites: None

Course Objective: To understand the Fundamentals of Management and Behavioral aspects of individual and groups in an organization.

UNIT – I

Introduction to Management: The Management Process, Management Functions, kinds of managers, Managerial roles and skills. Evolution of Management -Theories of Management - Classical, Scientific, Administrative, Behavioral, Management Sciences Theories; Systems and Contingency theory. (T.B-1 page no:8-35).

UNIT – II

Planning and Decision Making: Planning and goal setting – Organizational planning - Vision, Mission and goals, Types of plans, steps in planning process, Approaches to planning, Planning in Dynamic Environment. Decision making process, types of decisions, decision making styles, Vroom's Participative decision making model. (T.B-1 page no:51-59, T.B-2 page nos:154,241-243,582).

UNIT – III

Organizing and Controlling: Organizational Structure, Principles of Organizing, Authority, Power and Influence, designing organizational structure. Mechanistic and organic structures, contemporary organizational design and its challenges. (T.B-2 page no:305-374).

Controlling: The control process, controlling for organizational performance, types of control, financial controls (T.B-1 page no:137), Balanced Scorecard, Bench Marking, Contemporary issues in controlling. (T.B-4 page no:2.21, 20.21).

UNIT – IV

Organizational Behavior: Individual and Group Behavior: Importance of Organizational Behavior, Culture and diversity, personality theories, perception, formation of group behavior, classification of groups, group properties, group cohesiveness. (T.B-1 page no:186, T.B-3 page no:96,231,255).

UNIT – V

Leadership and Motivation: Leadership traits(T.B-2 page no:635), Leadership styles, Leadership theories, Power and Politics. (T.B-1 page no:417-439).

Motivation: Approaches to Motivation, Maslow's needs hierarchy theory, two factor theory of motivation, McGregor's theory, ERG theory, McClelland's needs theory, Valance Theory. (T.B-2

page no:573-588).

Course Outcomes:

After the completion of this course, the students should be able to

- Evolution of Management and contribution of Management thinkers
- The relevance of environmental scanning, planning and to take decisions.
- Organizing and controlling
- Individual and group Behavior
- Leadership and Motivation.

TEXT BOOKS:

1. P.Subha Rao, Himalaya Publishing House 8th edition.

2. L.M.Prasad, Principles and Practices of management, 6th edition, 2004.

3. V.V.S. Sharma, Organisational Behaviour, 2009.

4. A.R.Aryasri, Management Science, 4th edition,TMC, 2017.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS33) CLOUD COMPUTING
(PROFESSIONAL ELECTIVE-III)

B.Tech : VII SEMESTER   **L T P C**
                                                                                                                     3 0 0 3
Pre-requisites: Mobile computing

Course Objectives:
- Understand the virtualization paradigms.
- To introduce the various levels of services that can be achieved by cloud.
- To describe the security aspects in cloud

UNIT -I
Systems Modeling, Clustering and Virtualization: Distributed System Models and Enabling Technologies. Computer Clusters for Scalable Parallel Computing. Virtual Machines and Virtualization of Clusters and Data centers. (Text Book Page No 1-183)

UNIT –II
Foundations: Introduction to Cloud Computing, Migrating into a Cloud, Enriching the 'Integration as a Service' Paradigm for the Cloud Era. The Enterprise Cloud Computing Paradigm. (Text Book Page No 43-97)

UNIT -III
Infrastructure as a Service (IAAS) & Platform and Software as a Service (PAAS / SAAS):Virtual machines provisioning and Migration services, On the Management of Virtual machines for Cloud Infrastructures, Enhancing Cloud Computing Environments using a cluster as a Service. Secure Distributed Data Storage in Cloud Computing. (Text Book Page No 121-246)

UNIT -IV
Python for Cloud, Python for AWS, and Python for Google cloud Platform, Python web application framework- Django cloud application development in python. (Text Book Page No 169-284)

UNIT -V
Clustering And Applications: Cloud security, cloud computing for health Care, Cloud computing for Energy Systems, Cloud computing for Transportation system, Cloud computing for Manufactures Industry, Cloud computing for Education.(Text Book Page No 391-451)

Course Outcomes:
After the completion of this course, the students should be able to
- Perceive the main concepts, key technologies of virtualization
- Describe the architecture and infrastructure of cloud computing with all services of cloud and deployment models
- Analyze the issues of cloud computing like cloud security. Explain the core issues of cloud computing such as security and privacy
- Identify problems; analyze various cloud computing solutions using python. Write comprehensive case studies by analyzing different cloud computing solutions

    ☐ Perceive the virtualization and cloud computing concepts. Develop scalable applications using AWS.

TEXT BOOKS:
1. Distributed and Cloud Computing. KaI Hwang. Geoffeiy C.Fox. Jack J.Dongarra.E)sevier. 2011.
2. Cloud computing principles and paradigms by rajkumar buyya
3. Cloud Computing: A Hands –on-Approach by Arshdeep Bahga and Vijay Madisetti

REFERENCE BOOKS:

1. Cloud Computing: A Practical Approach. Anthony T.Velte. Toby J.VeFte, Robert Elsenpeter. Tata McGraw Hill. rp2Oll.
2. Enterprise Cloud Computing Gautam Shroif, Cambridge University Press. 2010.
3. Cloud Computing: Implementation, Management and Security, John W. Rittinouse, James F Ransome. CRC Press, rp2012.
4. Cloud Application Architectures: Building Applications and Infrastructure in the Cloud. George Reese, O'RedI SPD, rp2Oll.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS34) INFORMATION SYSTEMS AND AUDITING
(PROFESSIONAL ELECTIVE-III)

B.Tech : VII SEMESTER   **L T P C**
                                                                                           3 0 0 3

Pre-requisite: Software Engineering, Operating Systems
Course Objectives:
- To introduce information systems concepts
- To understand auditing standards
- To provide protective IT security guidelines for various types of Industries

UNIT- I
Overview of Information Systems Auditing- Need for Control and Audit of Computers, Effects of Computers on Internal Controls, Effects of Computers on Auditing, Foundations of Information Systems Auditing.
Conducting an Information Systems Audit- Introduction, Nature of Controls, Dealing with Complexity, Types of Audit Procedures, Overview of Steps in an Audit, Auditing Around or Through the Computer.
Top Management Controls- Introduction, Evaluating the Planning Function, Organizing Function, Leading Function, Controlling Function (Pg no27-114).

UNIT- II
Systems Development Management Controls- Introduction, Approaches to A Muditing Systems Development, Normative Models of the Systems Development Process, Evaluating the Major Phases in the Systems Development Process.
Programming Management Controls- Introduction, The Program Development Life Cycle, Organizing the Programming Team, Managing the System Programming Group.
Data Resource Management Controls- Introduction, Motivations Toward the DA and DBA Roles, Functions of the DA and DBA, Some Organizational Issues, Data Repository Systems, Control over the DA and DBA. (Pg no129-252)

UNIT-III
The Application Control Framework
Boundary Controls- Introduction Cryptographic Controls, Access Controls, Personal Identification Numbers, Digital Signatures.
Input Controls- Introduction, Data Input Methods, Source Document Design, Data entry Screen Design, Data Code Controls, Check Digits, Batch Controls, Validation of Data Input, Instruction Input, Validation of Instruction Input, Audit Trail Controls, Existence controls.(Pg nos-389-480).

UNIT- IV
Evidence Collection
Audit Software- Introduction, Generalized Audit Software, Industry- specific Audit Software, High level Languages, Utility Software, Expert Systems, Neural Network software, Specialised Audit software.

Code Review, Test Data, and Code Comparison- Introduction, Where Do Program Defects Occur? Program Source- code Review, Test Data, Program Code Comparison.
Concurrent Auditing Techniques- Introduction, Basic Nature of Concurrent Auditing Techniques, Need, Types and Implementing Concurrent Auditing Techniques. (Pg no 683-796)

UNIT -V
Evidence Evaluation
Evaluating Asset Safeguarding and Data Integrity- Introduction, Measures of Asset Safeguarding and Data Integrity, Nature of the Global Evaluation Decision, Determinants of Judgment Performance, Audit Technology to Assist the Evaluation Decision, Cost Effectiveness Considerations.
Evaluating System Effectiveness- Overview of the Effectiveness Evaluation Process, A Model of Information System Effectiveness, Evaluating System quality, Information quality, Perceived usefulness, Perceived Ease of Use, Computer Self efficacy, Information System Use, Evaluating Individual Impact, Information System Satisfaction, Organizational impact.
Managing Information Systems Audit Function- Introduction, Planning Function, Organizing Function, Staffing Function, Leading Function, Controlling Function, Toward Information Systems Audit professionalism, Some Futures of information Systems Auditing.
(Pgno 875-934, 989-1013).

Course Outcomes:
After the completion of this course, the students should be able to
- Recognize the propensity of errors and remedies in processes involving Information Technology.
- A consummate knowledge of risks and controls in IT operations in Industry.
- Apply the information systems auditing methodology. Identify and manage the security controls.
- Provide protective IT security guidelines for various types of Industries. Analyze the current issues in auditing
- The necessary wherewithal to become an IS Auditor and/or Security specialist eventually. Evaluate asset safeguarding and data integrity, system effectiveness and system efficiency.

TEXT BOOK:

1. Ron Weber, Information Systems Control and Audit, Pearson Education, 2002.

REFERENCE BOOKS:
1. M.Revathy Sriram, Systems Audit, TMH, New Delhi, 2001.

2. David L Cannon, Timothy S Beigmann, Brandy Pamplin, Certified Information System,

   Auditor study guide, Wiley Publications, 2011.

3. JamesA.Hall, Information Technology Auditing and Assurance, Fourth Edition, South

   Western College Pub, 2015.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS35) ARTIFICIAL INTELLIGENCE
(PROFESSIONAL ELECTIVE-III)

B.Tech : VII SEMESTER   **L T P C**
                                                                                                                   3 0 0 3

Pre requisites: Basics of Programming, Basics of probability theory
Course Objectives:

1. To Understand Problem State space and Search Techniques.
2. To analyze Issues related to Knowledge and its representation.
3. To analyze various structures of data.
4. To Understand the Natural language processing.
5. To understand working of Expert Systems.

UNIT - I:
Introduction to Artificial Intelligence: The AI problem domains, The underlying assumption, An AI technique, The level of the model, Criteria for success.

Problems, Problem Spaces and Search: Defining the problem as a state space search, Production systems, Problem characteristics, Production system characteristics, Issues in the design of search programs, Additional problems.

Heuristic Search Techniques: Generate-and-Test, Hill climbing, Best-first-search, Problem reduction, Constraint satisfaction, Means-Ends Analysis. (Text Book-1, chapter:1,2,3 page no: 1-72)

UNIT - II:
Knowledge Representation Issues: Knowledge representations and mappings, Approaches to knowledge representation, Issues in knowledge representation, The Frame problem.

Using Predicate Logic: Propositional Calculus, First order predicate calculus(FOPC), Syntax and symantics of FOPC **,** Representing simple facts in logic, Representing Instance and Is-a-relationships, Computable functions , Resolution, Natural Deduction.

Representing Knowledge Using Rules: Procedural versus Declarative knowledge, Forward versus Backward Reasoning. (Text Book-1, chapter: 4,5,6 page no: 79-134)

UNIT - III:
Weak slot and filler structures: Semantic nets, Frames.

Strong slot and filler structures: Conceptual Dependencies, Scripts, CYC.

Game Playing: The Minimax Search procedure, Adding Alpha-Beta Cutoffs, Additional Refinements, Iterative Deepening. (Text Book-1, chapter: 9,10,12 page no: 188-220, 231-243)

UNIT - IV:
Reasoning in Uncertain Situations: Introduction, Logic-Based Abductive Inference, Abduction Alternative to Logic.
Understanding Natural Language: Role of Knowledge in Language Understanding, Deconstructing Language - A Symbolic Analysis, Syntax, Combining Syntax and Semantic Knowledge with ATN Parsers, Natural Language Applications. (Text Book-2, chapter: 9,15 page no: 333-362, 619-630)

UNIT - V:

Strong Method Problem Solving: Overview of Expert System Technology, Rule-Based Expert Systems, Model-Based, Case Based and Hybrid Systems, Planning. Parallel and Distributed Reasoning Systems

Introduction to Prolog-The Natural Language of Artificial Intelligence(Text Book-2, chapter:8 page no: 277-313)

Course Outcomes:
After the completion of this course, the students should be able to
- Remember various AI concepts like the AI technique, level of model, there underlying assumptions etc
- Perceive the concepts of AI search techniques. Solve various problems by applying search methods.
- Apply knowledge Representation techniques. Analyze different structures of representation
- Evaluate AI search techniques. Analyze different Planning Techniques
- Create Expert systems.

TEXT BOOKS:

1. Elaine rich, Kevin knight, Shivashanker B Nair "Artificial Intelligence", 3rd Edition, Tata McGraw-Hill, ISBN No: 9780070087705, 0070087709, 2012.
2. George F Luger, "Artificial Intelligence", Fifth Edition, Pearson Education Asia., ISBN No: 9788131723272, 2012.

REFERENCE BOOKS:

1. Rajendra Akerkar, "Introduction to Artificial Intelligence", Second Edition 2014, PHI Learning, ISBN No: 978-81-203-4997-1.
2. R.B. Mishra " Artificial Intelligence", PHI Learning , ISBN No: 978-81-203-3849-4, 2010.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS36) SOFT COMPUTING

(PROFESSIONAL ELECTIVE-IV)

B.Tech : VII SEMESTER   **L T P C**
                                                                                   3 0 0 3

Pre-requisites: Design Analysis of Algorithms, Neural Networks, Artificial Intelligence, Data warehousing and Data Mining

Course Objectives:

1. Soft computing introduces concepts such as neural networks, supervised learning, unsupervised learning techniques, concepts of neural network basics and the features of fuzzy sets.
2. It familiarizes the applications of neural networks and fuzzy logic member function features with the real time applications of internet search techniques.

UNIT I: INTRODUCTION: Introduction: Neural Networks, Fuzzy Logic, Genetic Algorithms, Hybrid Systems, Soft Computing, Soft Computing Constituents, Soft Computing Characteristics. Artificial Neural Networks: Introduction, Fundamental Concept, Evolution of Neural Networks, Basic models of ANN, Important Terminologies**. (Text Book, Pg No. 1-27)**

UNIT II: Supervised Learning Networks: Introduction, Perceptron Networks, Adaptive Linear Neuron, Multiple Adaptive Linear Neuron, Back propagation Network. Associative Memory Networks: Introduction, Training Algorithms for pattern association and Hopfield Networks**.(Text Book, Pg No. 49-116)**

UNIT III: Unsupervised Learning Networks: Introduction, Fixed Weight Competitive Nets, Kohonen Self-Organizing Feature Maps, Counter Propagation Networks. , Special Networks: Cascade Correlation Network, Cognitron, NeoCognitron, Spatio - Temporal Connectionist Neural Networks Cellular, Optical Neural Networks **(Text Book, Pg No. 291- 309)**, Network Fuzzy Sets: Introduction, Classical Sets, Fuzzy Sets, Classical Relations, Fuzzy Relations **(Text Book, Pg No. 147- 286)**

UNIT IV: Membership functions- Features, Fuzzification, Membership value assignments, Defuzzification Methods, Fuzzy Arithmetic, Fuzzy Measures, Fuzzy Inference Systems, and Fuzzy Logic Control Systems. **(Text Book, Pg No. 295-377)**

UNIT V: Genetic Algorithms- Introduction, Basic operators and terminology, Traditional, Algorithm vs Genetic Algorithm, Simple GA, General GA, Classification of GA, Genetic Programming, Applications of GA **(Text Book, Pg No. 385-462)** ,Applications of Soft Computing **:(Text Book, Pg No. 511-681)**

Course Outcomes:
After the completion of this course, the students should be able to
- Learn basics of artificial neural network and soft computing techniques.
- Perceive various supervised learning networks and training algorithms of various Associative memory networks
- Perceive the algorithms for pattern association unsupervised learning networks, Special networks.

 ☐ Apply functional mappings in fuzzy sets. Interpret the Scope of Membership functions and perceive defuzzification methods and discussions on concepts of fuzzy sets
 ☐ Analyze and comprehends the concepts and applications of genetic algorithms, various soft computing techniques for problem solving

TEXT BOOK:

1. Principles of Soft Computing- S N Sivanandam, S N Deepa, Wiley India, 2007

REFERENCE BOOKS:

1. Artificial Intelligence and Soft Computing- Behavioral and Cognitive Modeling of the Human Brain- Amit Konar, CRC press, Taylor and Francis Group.
2. Soft Computing and Intelligent System Design -Fakhreddine O Karray, Clarence D Silva,. Pearson Edition, 2004.
3. Artificial Intelligence – Patric Henry Winston – Third Edition, Pearson Education.
4. Fuzzy Sets and Fuzzy Logic Theory and Applications – George J.Klir, Bo Yuan
5. Genetic Algorithms in Search, Optimization and Machine Learning – David E.Goldberg Addison-Wesley.
6. An Introduction to Genetic Algorithms – Melanie Mitchell, MIT Press
7. Neuro-Fuzzy and Soft Computing A Computational Approach to Learning and Machine Intelligence – J.S.R.Jang, C.T.Sun, E.Mizutani, PHI

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS37) BUSINESS INTELLIGENCE AND BIG DATA
(PROFESSIONAL ELECTIVE-IV)

B.Tech : VII SEMESTER   **L T P C**

                                                           3 0 0 3

Prerequisites: Database Management System, Data Warehousing and Data Mining, Object Oriented Programming Through Java.

Course Objectives:

This course provides key technologies such as manipulating, storing, and analyzing big data. The students understand details of Hadoop. Tools that provide SQL-like access to unstructured data. It introduces the tools required to manage and analyze big data like Hadoop, NoSql Map-Reduce, principles in achieving big data analytics with scalability and streaming capability. It enable student to have skills that helps them to solve complex real-world problems in for decision support.

UNIT -I

Types of Digital Data: Classification of Digital Data, Characteristics, of data Evolution, Definition of Big Data Challenges, with Big Data What is Big Data? A Typical Data Warehouse Environment A Typical Hadoop Environment What is New Today? What is Changing in the Realms of Big Data? **(Text Book 1 Page No. 2 to 29)**

UNIT-II

Big Data Analytics: classification of analytics greatest challenges that prevent business from capitalising on big data top challenges facing big data why is Big Data analytics important what kind of technologies are we looking forward to help meet the challenges posed by big data data science data scientist your new best friend terminologies used in Big Data environments basically available soft state eventual consistency bass few top analytics tools The Big Data Technology Landscape: NoSQL (Not only SQL). **(Text Book 1 Page No 35 to 64)**

UNIT-III

Hadoop: Introduction to Hadoop introducing Hadoop why Hadoop why not RDBMS RDBMS versus Hadoop distributed computing challenges history of Hadoop Hadoop overview use case of Hadoop Hadoop distributors HDFS (Hadoop Distributed File System) processing data with Hadoop managing resources and applications with Hadoop YARN (Yet Another Resource Negotiator) interacting with Hadoop ecosystem. **(Text Book 1 Page No 65 to 98)**

UNIT-IV

Introduction to MAPREDUCE programming: Introduction, Mapper, Reducer, Combiner, Partitioner, Searching, Sorting, Compression. **(Test book 1 Page No 215 to 227)**

UNIT-V

Security & Software for Big Data Environments, The importance of Bigdata to Business: Analyzing Data in Motion. A Real-World View, Improving Business Processes with Big Data Analytics: A Real-World View Data. **(Text Book 2 Page No 237 to 262)**

Course Outcomes:

After the completion of this course, the students should be able to

- Explain the foundations, definitions and capabilities of Bigdata.

- List the definitions, concepts, architectures and challenges in Big data environment. Outline the definitions, concepts, and enabling technologies of big data analytics.

- Understand concepts on Handoop Ecosystem in Big data.

- Analyze the Map reduce programming in Big data Analytics.

- Apply Security big data technologies in business intelligence using geospatial data, location-based analytics, social networking, Web 2.0, reality mining, and cloud computing.

TEXT BOOKS:

1. Big Data and Analytics, Seema Acharya, Subhasinin Chellappan, Wiley publications.

2. Big Data For Dummies By Judith Hurwitz, Alan Nugent, Fern Halper , Marcia Kaufman , John Wiley & Sons.

REFERENCE BOOKS:

1. Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses (Wiley CIO) By Michael Minelli, Michele Chambers, Ambiga Dhiraj John Wiley & Sons

2. Hadoop: The Definitive Guide, 3rd Edition , By Tom White , O'reilly Media
3. Big Data Now: 2012 Edition Publisher: O'Reilly Media.

4. Too Big to Ignore: The Business Case for Big Data (Wiley and SAS Business Series) By Phil Simon, Wiley .

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS38) SOFTWARE PROJECT MANAGEMENT
(PROFESSIONAL ELECTIVE-IV)

B.Tech : VII SEMESTER   **L T P C**
                                                            3 0 0 3

Pre-requisites: Software Engineering

Course Objectives:
The Objective is to provide graduates with knowledge of engineering to creatively, innovatively solve difficult computer systems problems, regularly engage in exploring, learning and applying state-of-the-art of hardware & software technologies. The solution of computer systems problems is effective software development team member that contributes innovative software design solutions to the resolution of business, scientific or government computer systems problems. It ables to communicate effectively, successfully, both individually and within multi-disciplinary teams.

UNIT - I
Conventional Software Management: The waterfall model, conventional software Management performance.
Evolution of Software Economics: Software Economics, pragmatic software cost estimation.
(Text Book: Pg No. 5-26)

UNIT - II
Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.
The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process. **(Text Book: Pg No. 31-66)**

UNIT - III
Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.
Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.
Model based software architectures: A Management perspective and technical perspective. **(Text Book, Pg No. 73-111)**

UNIT- IV
Work Flows of the process: Software process workflows, Iteration workflows.
Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments. Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.
Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.
Process Automation: Automation Building blocks, The Project Environment **(Text Book, Pg. No. 117-184)**

UNIT- V
Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.
Tailoring the Process: Process discriminate.
Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.
Case Study: The command Center Processing and Display system- Replacement (CCPDS-R)
(Text Book, Pg. No. 187-390).

Course Outcomes:

   After the completion of this course, the students should be able to

- Gain knowledge of software economics, phases in the life cycle of software development, project organization, and project control and process instrumentation.
- Summarize software economics, software development life cycle, artifacts of the process, workflows, checkpoints, project organization and responsibilities, project control and process instrumentation.
- Choose the right software development approach. Compare various project organizations and responsibilities.
- Analyze the major and minor milestones, artifacts and metrics for management and technical perspective.
- Design software product using conventional and modern principles of software project management.

TEXT BOOK:

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

REFERENCE BOOKS:

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18ME25) NANO TECHNOLOGY
(OPEN ELECTIVE-III)

B.Tech : VII SEMESTER   **L T P C**
                                                                                   3 0 0 3

Pre-requisites: None

Course Objectives:

- ☐ Understand the fundamentals of Nano theory, necessary background for applications in various industries.
- ☐ Learn the components of Nano materials in detail, and its working in different applications
- ☐ Understand the general scientific concepts required for technology, Apply the concepts in solving engineering problems,
- ☐ Explain scientifically the new developments in engineering and technology, and Get
- ☐ familiarized with the concepts, theories, and technological applications

UNIT-1:

Introduction to Nano technology: Importance of nano scale, Nanostructure types, electronic, magnetic, optical Properties of Nano materials, top-down and bottom – up approach to nanostructures.

Quantum Mechanical phenomenon in Nanostructures: Quantum confinement of electrons in semiconductor Nano structures, one dimensional confinement (Quantum Wires), two dimensional confinements (Quantum Wells), three dimensional confinements (Quantum dots).

UNIT-II:

Carbon Nano Structures: Carbon Nanotubes (CNTs), Fullerenes, C60, C80 and C240 Nanostructures, properties (mechanical, optical and electrical) and applications.

UNIT-III:

Fabrication of Nano materials: Physical Methods: Inert gas condensation, Arc discharge, RF plasma, plasma arc technique, lon sputtering, Laser ablation, Laser pyrolysis, Molecular beam eqitaxy, Chemical vapour deposition method.

Nano Scale characterization techniques: Scanning probe techniques (AFM, MFM, STM, SEM, TEM), XRD.

UNIT-IV:

Nano devices and Nano medicine: Lab on chip for bioanalysis, Core/shell Nanoparticles in drug delivery systems (site specific and targeted drug delivery), cancer treatment, and bone tissue treatment.

Nano and molecular electronics: Resonant-Tunneling Structures, single electron tunneling, Single Electron transistors, coulomb blockade, glant magneto resistance, tunneling magneto resistance.

UNIT-V:

Nanolithography and Nano manipulation: e-beam lithography and SEM based Nanolithography and Nano manipulation, Ion beam lithography, oxidation and metallization Mask and its application. Deep UV lithography, x-ray based lithography.

Course Outcomes:
After the completion of this course, the students should be able to
- Know the importance of nano scale ,types and their properties.
- Identify quantum mechanical phenomenon in two and three dimensional confinements.
- Understand the applications of carbon nano structures.
- Differentiate nano scale characterization techniques.
- Categorize nano devices and other devices.

TEXT BOOKS:

1. Charies.P.pode, introduction to nanotechnology, springer publications.
2. Springer Handbook of Nanotechnology-Bharat Bhusan.
3. Phani Kumar, principles of nanotechnology, scitech publications.

REFERENCES BOOKS:

1. David Ferry "Transport in Nano structures" Cambridge University press 2000.
2. Nano biotechnology; ed, C.M.Niemeyer, C.A. Mirkin.
3. Nanofabrication towards biomedical application: Techniques, tools, Application and impact-Ed. Challa S., S.R.Kumar, J.H.Carola.
4. Encyclopedia of Nanotechnology-Hari Singh Nalwa
5. Carbon Nanotubes: Properties and Applications- Michael J.O'Connell.
6. S.Dutta "Electron Transport in Mesoscopic systems" Cambridge University press.
7. H.Grabert and M.Devoret "Single charge Tunneling" Plenum press 1992.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MB03) ENTREPRENEURSHIP DEVELOPMENT
(OPEN ELECTIVE-III)

B.Tech : VII SEMESTER   **L   T   P   C**
                                                                          3   0   0   3

Prerequisites: None

Course Objective: The objective of the course is to make students understand the nature of entrepreneurship, and to motivate the student to start his/her own enterprise. The objective of the course is to enlighten with the fragrance of Corporate Good Governance and Business Ethics, so that they would become the best entrepreneurs / managers of the corporate world.

Learning Outcome: By the end of this course the students should be able to understand the mindset of the entrepreneurs, identity ventures for launching, develop an idea on the legal framework and also understand strategic perspectives in entrepreneurship.

UNIT – I
Nature of Entrepreneurship; Characteristics – Qualities and skills of an Entrepreneur – Functions of entrepreneur – Entrepreneur scenario in India and Abroad. Forms of Entrepreneurship: Small Business – Importance in Indian Economy – Types of ownership – Sole trading – Partnership – Joint stock company and other forms. First – Mover disadvantages, Risk Reduction strategies, Market scope strategy, Imitation strategies and Managing Newness (T.B. page no: 14- 32)

UNIT – II
Aspects of Promotion: Generation of new entry opportunity, SWOT Analysis, Technological Competitiveness, legal regulatory systems, patents and trademarks, Intellectual Property Rights-Project Planning and Feasibility Studies- Major steps in product development. Financial Aspects: Sources of raising Capital, Debt-Equity, Financing by Commercial Banks, Government Grants and Subsidies, Entrepreneurship Promotion Schemes of Department of Industries (DIC), KVIC, SIDBI,NABARD, NSIC, APSFC, IFCI and IDBI. New Financial Instruments. (T.B. page no: 35-88)

UNIT - III
Introduction to Business Ethics: Necessity for Business Ethics-Need for Ethical guideline – Salient Issues in Ethics and Commerce- Ethics as a Luxury – Earlier attempts at Ethics in Industry – Justification for Ethics – Effect of Migration of National Character – Shadow Economy – Basic Principles in Ethics – Corporate Climate and corporate climate audits – Political Issues – Nature and theory of Ethics – The Naturalistic fallacy - G.E. Moore's Philosophy. (T.B. page no: 93 - 156)

UNIT– IV
Understanding Corporate Governance: Corporate Governance- Capitalism at crossroads – Historical perspective of Corporate Governance – Issues of Corporate Governance – Theoretical basis of Corporate Governance – Corporate Governance mechanisms – Indian Model of Governance – Good Corporate Governance – Corporate Governance committees – OECD Principles – Indian Committee and guidelines – The confederation of Indian Industry's initiative. Corporate Governance Models, Corporate Social Responsibility. (T.B. page no: 162-225)

UNIT – V

Corporate Social Responsibility: System Concept of Business Society – Social Responsibility – Social Responsibility tools – approaches to Ethics – Corporate Social Accountability - Business in a Social World – Ethics and Social Responsibility – professional ethics – Ethics of practicing company secretaries- Ethical investing. (T.B. page no: 227- 263)

Course Outcomes:
After the completion of this course, the students should be able to
- Define the nature and Qualities of Entrepreneur and relate to types of ownership.
- What are risk Reduction, market scope and Imitation strategies.
- Explain the legal regulations system and IPRs and summarize the source of finance from different institutions.
- Identify the needs of business ethics and develop the principles.
- Evaluate the issues of corporate governance and interpret the guidelines. Elaborate the concept of social responsibility and improve professional ethics

TEXT BOOK:

1. C.S.V. Murthy: Entrepreneurship & Good Governance, Himalaya, 2009.

REFERENCE BOOKS:
1. Bholanath Dutta: Entrepreneurship Text and Cases, Excel, 2009
2. David Martin: Corporate Governance, Viva, 2009
3. H. Nandan: Fundamentals of Entrepreneurship, PHI, 2009.
4. Barringer: Entrepreneurship, Pearson,2009.
5. Ronald D Francis & Mukti Mishra: Business Ethics, TMH, 2009
6. RK Mishra,Gitarani: Corporate Governance, Excel,2009
7. A.C.Frenando: Corporate Governance, Pearson, 2006
8. V.Balachandran & V.Chandrasekaran: Corporate Governance & Social Responsibility, PHI, 2009
9. A.C.Fernando: Business Ethics, Pearson, 2009
10. Laura P Hartman & Abha Chatterjee: Business Ethics, TMH, 2009
11. Tripat Kaur: Values and Ethics in Management, 2/e, Paragon International,2009.

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VAAGDEVI COLLEGE OF ENGINEERING
AUTONOMOUS

(B18EC31) EMBEDDED SYSTEMS
(OPEN ELECTIVE-III)

B.Tech : VII SEMESTER

L T P C
3 0 0 3

Pre Requisites: Microprocessors & Microcontrollers

Course Objectives
For embedded systems, the course will enable the students to:
- Understand the basics of an embedded system
- Program an embedded system
- To learn the method of designing an Embedded System for any type of applications.
- Design, implement and test an embedded system.

UNIT -I
ARM 32 Bit MCU's
Introduction to 16/32 Bit processors, ARM architecture and organization, ARM / Thumb programming model, ARM / Thumb instruction set and programming. SHAR Processor architecture and organization instruction and programming.

UNIT II
I/O Devices and Networks
I/O Devices[Timers, Counters, Interrupt Controllers, DMA Controllers, A/D and D/A Converters, Displays, Keyboards, Infrared devices], Memory Interfacing, I/O Device Interfacing [GPIB, FIREWIRE, USB, IRDA], Networks for Embedded systems (CAN, I2C, SPI, USB, RS485, RS 232), Wireless Applications [Bluetooth, Zigbee].

UNIT-III
Introduction to Embedded Systems: Definition of Embedded System, Embedded Systems Vs General Computing Systems, History of Embedded Systems, Classification, Major Application Areas, Purpose of Embedded Systems, Characteristics and Quality Attributes of Embedded Systems.

UNIT-IV
Typical Embedded System: Core of the Embedded System: General Purpose and Domain Specific Processors, ASICs, PLDs, Commercial Off- The-Shelf Components (COTS), Memory: ROM, RAM, Memory according to the type of Interface, Memory Shadowing, Memory selection for Embedded Systems, Sensors and Actuators, Communication Interface: Onboard and External Communication Interfaces.

UNIT -V
Embedded Firmware: Reset Circuit, Brown-out Protection Circuit, Oscillator Unit, Real Time Clock, Watchdog Timer, Embedded Firmware Design Approaches and Development Languages.

Course Outcomes:
After the completion of this course, the students should be able to
- Explain the different embedded system design techniques and the metrics or challenges

in designing them.
- Understand the complete architecture of 8051 and Advanced Processor.
- Demonstrate Software programming in Assembly language and High Level Language.
- Classify the different Real Time Operating System (RTOS), RTOS Vx Works, Windows CE.
- Understand the Embedded Software Development Process and Tools and Perform testing on Testing on Host Machine, Simulators, Laboratory Tools

TEXT BOOKS:

1. Introduction to Embedded Systems – Shibu K.V, Mc Graw Hill.
2. Computer as component by wyne wolf, Morgan Kaufhann

REFERENCE BOOKS :

1. Embedded Systems Raj Kamal, TMH.
2. Embedded System Design – Frank Vahid, Tony Givargis, John Wiley.
3. Embedded Systems — Lyla, Pearson, 2013
4. An Embedded Software Primer – David E. Simon, Pearson Education.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CS46) MINI PROJECT & INTERNSHIP

B.Tech : VII SEMESTER **L T P C**
0 0 0 2

 Prerequisites: None

Course Outcomes:
After the completion of this course, the students should be able to

- Perceive, plan and execute a mini project as an individual or in a team in development of mini project

- Prepare a technical report based on the Mini project.

- As a team student can organize, record and compile their work done throughout the project in an efficient manner.

- Develop effective communication skills for presentation of mini project related activities

- Demonstrate technical seminar based on the Mini Project work carried out.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS39) NETWORK SECURITY & CRYPTOGRAPHY LAB

B.Tech : VII SEMESTER   **L T P C**
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Pre requisites: Data Communications and Computer Networks

Course Objective:

To clearly understand the security issues of computer networking and to simulate the network security algorithms implemented in C/C++/JAVA.

Week – 1:   Write a program to implement connection between two computers to exchange simple message.

Week – 2:   Write a program to implement Ceaser Cipher.

Week – 3: a. Write a program to calculate modular arithmetic inverse Matrix.

      b. Write a program to implement Hill Cipher.

Week – 4:   Write a program to implement Playfair Cipher.

Week – 5:   Write a program to implement Verman Cipher / One time pad.

Week – 6:   Write a program to implement Vignere Cipher.

Week – 7: a. Write a program to generate subs keys from given 56-bit key.

      b. Write a program to perform XOR operation between two 32-bit words.

      c. Write a program to implement single round function of DES algorithm.

      d. Write a program to implement (Encryption and Decryption) DES algorithm.

Week – 8: a. Write a program to check whether the given no is prime number or not .

      b. Write a program to implement RSA algorithm.

Week – 9: a. Write a program to calculate primitive roots of given prime number.

      b. Write a program to implement Deffine - Hellman key exchange.

Week – 10:   Write a program to implement MD5 and compare the massage digest in receiver computer with different inputs.

Course Outcomes:
After the completion of this course, the students should be able to

- Implement the cipher techniques.
- Apply the mathematical foundation required for various cryptographic algorithms.
- Develop the various security algorithms.
- Use different open source tools for network security and analysis.

TEXT BOOK:

1. Cryptography and Network Security - Principles and Practice: William Stallings, Pearson Education, 6th Edition

REFERENCE BOOKS:

1. Cryptography and Network Security: C K Shyamala, N Harini, Dr T R Padmanabhan, Wiley India, 1st Edition.
2. Cryptography and Network Security : Forouzan Mukhopadhyay, Mc Graw Hill, 3 rd Edition.
3. Information Security, Principles, and Practice: Mark Stamp, Wiley India.
4. Principles of Computer Security: WM. Arthur Conklin, Greg White, TMH.
5. Introduction to Network Security: Neal Krawetz, CENGAGE Learning.
6. Network Security and Cryptography: Bernard Menezes, CENGAGE Learning.

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)
(B18CS47) MAJOR PROJECT PHASE - I

B.Tech : VII SEMESTER   **L   T   P   C**
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Prerequisites: None

Course Outcomes:
After the completion of this course, the students should be able to

- Uses fundamental knowledge and skills in engineering and apply it effectively on a project.

- Apply knowledge of the 'real world' situations that a professional engineer can encounter.

- Apply critical and creative thinking in the design of software, Hardware and Networking projects.

- As a team student can organise, record and compile their work done throughout the project in an efficient manner.

- Manage any disputes and conflicts within and outside their team.

- Demonstrate a sound technical knowledge of their selected project topic.

- Demonstrate the knowledge, skills and attitudes of a professional engineer.

- Summarize an appropriate list of literature review, analyse previous work and relate them to current project.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MC09) HUMAN VALUES AND PROFESSIONAL ETHICS

B.Tech : VII SEMESTER   **L T P C**
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Pre-requisites: NONE

Course Objectives:

☐ To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.

☐ To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Value based living in a natural way.

☐ To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behaviour and mutually enriching interaction with Nature.

UNIT I Human Values: Morals, values, ethics – integrity – work ethics – service learning – civic virtue – respect for others – living peacefully – Caring – sharing – honesty – courage – valuing time – cooperation – commitment – empathy – self-confidence – spirituality – character.

UNIT II Professional Ethics: Profession and professionalism – Two models of professionalism – Professional etiquette – Three types of Ethics or morality Responsibility in Engineering standards – Engineering Ethics – Positive and Negative faces.

UNIT III Professional Responsibilities: Ethical standards Vs Professional Conduct – Zero Tolerance for Culpable Mistakes – Hazards and Risks- Risk benefit analysis-congeniality, collegiality and loyalty. Respect for authority – conflicts of interest – occupational crime.

UNIT IV Professional Rights: Professional rights and employee rights communicating risk and public policy – Whistle blowing – Collective bargaining. Professionals /engineers as managers, advisors, experts, witnesses and consultants – moral leadership-

UNIT V Ethics in global context: Global issues in MNCs-Problems of bribery, extortion, and grease payments – Problem of nepotism, excessive gifts.

Course Outcomes:
After the completion of this course, the students should be able to
    ☐ Perceive the importance of ethics and values in life and society.
    ☐ Develop moral responsibility and mould them as best professionals.
    ☐ Create ethical vision and achieve harmony in life.
    ☐ Provide a critical perspective on the socialization of men and women.
    ☐ Perceive the important issues related to gender in contemporary India.

TEXT BOOK:

1. Aryasri, *Human Values and Professional Ethics*, Maruthi Publications.

REFERENCE BOOKS:

1. S B George, *Human Values and Professional Ethics*, Vikas Publishing.
2. KR Govindam & Saenthil Kumar *Professional Ethics and Human Values*, Anuradha Publications.
3. S K Chakraborthy & D Chakraborthy: *Human Values and Ethics*, Himalaya.
4. M. Govindarajan, S. Natarajan, & V.S. Senthilkumar: *Engineering Ethics (Includes Human Values)*, HI Learning Pvt. Ltd., New Delhi -110001.

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- Learn how the IoT data can be stored, computed, analyzed and presented in cloud in the form of web services.
- Design and develop simple IoT applications.

TEXT BOOKS:
1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759.

REFERENCE BOOKS:
1. Make sensors: Tero Karvinen, Kimmo Karvinen, Villee Valtokari, Maker Media, 2014, ISBN: 9789350239681

- Perceive the application areas of IoT. Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
- Determine the Market perspective of IoT. Develop Python web applications and cloud servers for IoT.

TEXT BOOKS:

1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759

REFERENCE BOOK:

1. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, StamatisKarnouskos, David Boyle, "From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence", 1 st Edition, Academic Press, 2014.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS41) ADVANCED OPERATING SYSTEMS
(PROFESSIONAL ELECTIVE-V)

B.Tech : VIII SEMESTER   **L T P C**
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Pre-Requisites: Operating Systems, Computer Organization & Architecture.

Course Objectives:
□   To learn the fundamentals of Operating Systems
□   To gain knowledge on Distributed operating system concepts that includes
   architecture, Mutual exclusion algorithms, Deadlock detection algorithms and
   agreement protocols
□   To gain insight on to the distributed resource management components viz. the
   algorithms for implementation of distributed shared memory, recovery and commit protocols
□   To know the components and management aspects of Real time, Mobile operating systems

UNIT I
FUNDAMENTALS OF OPERATING SYSTEMS
Overview – Synchronization Mechanisms – Processes and Threads - Process Scheduling –
Deadlocks: Detection, Prevention and Recovery – Models of Resources – Memory Management
Techniques.(Text Book 1, page no:13-69)

UNIT II
DISTRIBUTED OPERATING SYSTEMS
Issues in Distributed Operating System – Architecture – Communication Primitives –
Lamport's Logical clocks – Causal Ordering of Messages – Distributed Mutual Exclusion
Algorithms – Centralized and Distributed Deadlock Detection Algorithms – Agreement
Protocols. (Text Book 1, page no: 74-178)

UNIT III
DISTRIBUTED RESOURCE MANAGEMENT
Distributed File Systems – Design Issues - Distributed Shared Memory – Algorithms for
Implementing Distributed Shared memory–Issues in Load Distributing – Scheduling
Algorithms – Synchronous and Asynchronous Check Pointing and Recovery – Fault
Tolerance – Two-Phase Commit Protocol – Nonblocking Commit Protocol – Security and
Protection. (Text Book 1, page no: 199-335)

UNIT IV
REAL TIME AND MOBILE OPERATING SYSTEMS
Basic Model of Real Time Systems - Characteristics- Applications of Real Time Systems –
Real Time Task Scheduling - Handling Resource Sharing - Mobile Operating Systems –
Micro Kernel Design - Client Server Resource Access – Processes and Threads - Memory

Management - File system. (Ref Book 2, page no: 8-85)

UNIT V: CASE STUDIES

Linux System: Design Principles - Kernel Modules - Process Management Scheduling - Memory Management - Input-Output Management - File System – Inter process Communication. iOS and Android: Architecture and SDK Framework - Media Layer - Services Layer - Core OS Layer - File System. (Text Book 2, page no: 806-837)

Course Outcomes:

After the completion of this course, the students should be able to

- Discuss the various synchronization, scheduling and memory management issues demonstrate the Mutual exclusion.
- Deadlock detection and agreement protocols of Distributed operating system
- Discuss the various resource management techniques for distributed systems
- Identify the different features of real time and mobile operating systems
- Install and use available open source kernel. Modify existing open source kernels in terms of functionality or features used

TEXT BOOKS:

1. Mukesh Singhal and Niranjan G. Shivaratri, "Advanced Concepts in Operating Systems – Distributed, Database, and Multiprocessor Operating Systems", Tata McGraw-Hill, 2001.

2. Abraham Silberschatz; Peter Baer Galvin; Greg Gagne, "Operating System Concepts", 8th Edition, John Wiley & Sons.

REFERENCE BOOKS:

1. Daniel P Bovet and Marco Cesati, "Understanding the Linux kernel", 3rd edition, O'Reilly, 2005.

2. Rajib Mall, "Real-Time Systems: Theory and Practice", Pearson Education India, 2006.

3. Neil Smyth, "iPhone iOS 4 Development Essentials – Xcode", Fourth Edition, Payload media, 2011.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS42) PYTHON PROGRAMMING
(PROFESSIONAL ELECTIVE-V)

B.Tech : VIII SEMESTER

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Pre-Requisites: None

Course Objectives:
The purpose of the course is to make students
- To develop Python programs with conditionals and loops.
- To define Python functions and call them.
- To use Python data structures – lists, tuples, dictionaries.
- To do input/output with files in Python.
- To get exposure to various problems solving approaches of computer science

UNIT - I

Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.

UNIT - II

Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass.

UNIT - III

Data Structures Lists - Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences. Comprehensions.

UNIT - IV

Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful
Functions (Function Returning Values), Scope of the Variables in a Function - Global and Local Variables.
Modules: Creating modules, import statement, from. Import statement, name spacing,
Python packages, Introduction to PIP, Installing Packages via PIP, Using Python Packages

UNIT – V

Object Oriented Programming OOP in Python: Classes, 'self variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data hiding.
Error and Exceptions: Difference between an error and Exception, Handling Exception, try except block, Raising Exceptions, User Defined Exceptions

Brief Tour of the Standard Library - Operating System Interface - String Pattern Matching, Mathematics, Internet Access, Dates and Times, Data Compression, Multithreading, GUI Programming, Turtle Graphics.

Course Outcomes:
After the completion of this course, the students should be able to
- Read, write, execute by hand simple Python programs.
- Structure simple Python programs and decomposing program into functions.
- Represent compound data using Python lists, tuples, dictionaries,
- Read and write data from/to files in Python Programs.
- To build software for real needs.

TEXT BOOKS:

1) Python Programming: A Modern Approach, Vamsi Kurama, Pearson.
2) Learning Python, Mark Lutz, Orielly.

REFERENCE BOOKS:

1) Think Python, Allen Downey, Green Tea Press
2) Core Python Programming, W.Chun, Pearson.
3) Introduction to Python, Kenneth A. Lambert, Cengage

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS43) CYBER SECURITY& HACKING
(PROFESSIONAL ELECTIVE-VI)

B.Tech : VIII SEMESTER   **L T P C**
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Prerequisites: Operating System, Data Communications and Computer Networks, Network Security and Cryptography.

Course Objectives:
- To introduce the methodologies and framework of ethical hacking for enhancing the security.
- To learn about cybercrimes and how they are planned.
- To learn the vulnerabilities of mobile and wireless devices.
- To learn about the cyber Law and legal perspectives.

UNIT – I
Introduction to Cybercrime: Introduction, Cybercrime and Information Security, Who are Cybercriminals, Classifications of Cybercrimes, Cyber-crime: The legal Perspectives and Indian Perspective, Cybercrime and the Indian ITA 2000, A Global Perspective on Cybercrimes.
(Text Book : Page no : 1 – 39)

UNIT – II
Cyber Offenses: How Criminals Plan Them: Introduction, How Criminals plan the Attacks, Social Engineering, Cyber stalking, Cyber cafe and Cybercrimes, Botnets: The Fuel for Cybercrime, Attack Vector, Cloud Computing.(Text Book : Page no : 45 – 78)

UNIT – III
Cybercrime: Mobile and Wireless Devices: Introduction, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by Mobile Devices, Registry Settings for Mobile Devices, Authentication service Security, Attacks on Mobile/Cell Phones, Mobile Devices: Security Implications for Organizations, Organizational Measures for Handling Mobile, Organizational Security Policies an Measures in Mobile Computing Era, Laptops.(Text Book : Page no : 81-119)

UNIT – IV
Tools and Methods Used in Cybercrime: Introduction, Proxy Servers and Anonymizers, Phishing, Password Cracking, Key loggers and Spywares, Virus and Worms, Trojan Horse and Backdoors, Steganography, DoS and DDoS attacks, SQL Injection, Buffer Overflow.
(Text Book : Page no :125-170)

UNIT – V

Cyber Security: Organizational Implications, Introduction, Cost of Cybercrimes and IPR issues, Web threats for Organizations, Security and Privacy Implications, Social media marketing: Security Risks and Perils for Organizations, Social Computing and the associated challenges for Organizations.(Text Book : Page no :495-522)

Course Outcomes:

After the completion of this course, the students should be able to

- Outline key terms and concepts in cyber law, intellectual property and cybercrimes.
- Explore the vulnerabilities, threats and cybercrimes posed by criminals.
- Identify various security challenges phased by mobile devices.
- Identify various types of tools and methods used in cybercrime, develops the secure counter methods to maintain security protection.
- Analyze the cyber security risk management policies in order to adequately protect an organization's critical information and assets.

TEXT BOOK:

1. **Cyber Security:** Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, Nina Godbole and Sunil Belapure, Wiley INDIA.

REFERENCE BOOKS:

1.Cyber Security Essentials, James Graham, Richard Howard and Ryan Otson, CRC Press.

2.Introduction to Cyber Security, Chwan-Hwa (john) Wu, J. David Irwin. CRC Press T&F Group

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CS44) SERVICE ORIENTED ARCHITECTURE
(PROFESSIONAL ELECTIVE-VI)

B.Tech : VIII SEMESTER   **L T P C**

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Prerequisites: web services

Course Objectives:

- The course should enable the student Understand SOA and evolution of SOA.
- Understand web services and primitive, contemporary SOA.
- Understand various service layers.
- Understand service-oriented analysis and design based on guidelines.

UNIT-I

Introducing SOA: Fundamental SOA, Common Characteristics of Contemporary SOA, Common Tangible Benefits of SOA, and Common Pitfalls of Adopting SOA. The Evolution of SOA: An SOA Timeline, the Continuing Evolution of SOA, the Roots of SOA. (32-107)

UNIT-II

Web Services and Primitive SOA: The Web Services Frame Work, Services, Service Descriptions (with WSDL), Messaging (with SOAP). Web Services and Contemporary SOA (Part I-Activity management and Composition): Message Exchange Patterns, Service Activity, Coordination, Atomic Transactions, Orchestration, Choreography. Web Services and Contemporary SOA (Part-II-Advanced Messaging, Metadata and Security): Addressing, Reliable Messaging, Correlation, Policies, Metadata exchange, Security. (109-265)

UNIT-III

Principles of Service-Orientation: Service–Orientation and the Enterprise, Anatomy of SOA, Common Principles of Service–Orientation, Interrelation between Principles of Service Orientation, Service Orientation and Object Orientation, Native Web Services Support for Principles of Service-Orientation. Service Layers: Service-Orientation and Contemporary SOA, Service Layer abstraction, Application Service Layer, Business Service Layer, Orchestration Service Layer, Agnostic Services. (279-346)

UNIT-IV

SOA Delivery Strategies: SOA Delivery Lifecycle Phases, The Top-Down Strategy, The Bottom-up Strategy, The Agile Strategy.
Service Oriented Analysis (Part I-Introduction): Introduction to Service Oriented Analysis, Benefits of a Business Centric SOA, Deriving Business Services. (w.e.f 2015-2016)
Service Oriented Analysis (Part-II-Service Modelling): Service Modelling, Service Modelling Guidelines, Classifying Service Model Logic, Contrasting Service Modelling Approaches. Service Oriented Design (Part I-Introduction): Introduction to Service-Oriented Design, WSDL Related XML Schema Language Basics, WSDL Language Basics, Service

Interface Design Tools.

Service Oriented Design (Part II-SOA Composition Guidelines): SOA Composing Steps, Considerations for Choosing Service Layers, Considerations for Positioning Core SOA Standards, Considerations for Choosing SOA Extensions. (357-492)

UNIT-V

Service Oriented Design (Part III- Service Design): Service Design Overview, Entity-Centric Business Service Design, Application Service Design, Task-Centric Business Service Design, Service Design Guidelines.
Service Oriented Design (Part IV-Business Process Design): WS-BPEL Language Basics, WS-Coordination Overview, Service Oriented Business Process Design. (495-586)

Course Outcomes:

After the completion of this course, the students should be able to

- Design various service layers
- Model service candidate derived from existing business documentation.
- Design the composition of SOA.
- Design application services for technology abstraction.
- Principles of Service-Orientation.

TEXT BOOK:

1. Service-Oriented Architecture-Concepts, Technology, and Design, Thomas Erl, Pearson Education.

REFERENCE BOOKS:

1. Understanding SOA with Web Services, Eric Newcomer, Greg Lomow, Pearson Education.
2. The Definitive guide to SOA, Jeff Davies & others, Apress, Dreamtech.
3. Java SOA Cook book, E.Hewitt, SPD.
4. SOA in Practice, N.M.Josuttis, SPD.
5. Applied SOA, M.Rosen and others, Wiley India pvt. Ltd.
6. Java Web Services Architecture, J.Mc Govern, and others, Morgan Kaufmann Publishers, Elsevier.
7. SOA for Enterprise Applications, Shankar.K, Wiley India Edition.
8. SOA-Based Enterprise Integration, W.Roshen, TMH.SOA Security, K.Rama Rao, C.Prasad, dreamtech press. (w.e.f 2015-2016) .

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CS45) INFORMATION RETRIEVAL SYSTEMS
(PROFESSIONAL ELECTIVE-VI)

B.Tech : VIII SEMESTER   **L T P C**

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Prerequisites: DBMS

Course Objectives:

- Students of this course will be exposed to text informational retrieval and it's past, present and future research directions.
- They would understand the processes, techniques and the evaluation methods presently used in the IR modeling.
- The languages used in IR and use these to write queries in IR.
- They would be adequately exposed to human computer interaction for IR and for application of IR in searching the web.

UNIT I
Retrieval Strategies: Vector Space Model: (page no:11 to 15) Example of similarity coefficient(page no:15 to 18) Similarity measures(page no:18 to 21) Probabilistic Retrieval Strategies: (page no:21) Simple Term Weights, (page no:21 to 32) Non-Binary Independence Model, (page no:33 to 45) Language models (page no:45 to 56)

UNIT II
Retrieval Utilities: Relevance Feedback (page no:94 to 105) Clustering (page no:105 to 113) N-grams (page no:115 to 119) Regression Analysis (page no:119 to 122).Thesauri (page no:112 to 132)

UNIT III
Retrieval Utilities: Semantic networks (page no: 132 to 139) Parsing (page no:139 to 144) Cross-language Information Retrieval: Introduction (page no:149to 151) Crossing the language barrier (page no:151 to 157)

UNIT IV
Efficiency: I Inverted index (page no: 182 to 195)Query processing (page no:195 to 199) Signature files (page no:199 to 203) Duplicate document detection (page no:203 to 207)

UNIT V
Integrating Structured Data and Text: A Historical progression (page no: 222 to 227) Information retrieval as a relational application (page no: 228 to 245) Semi-structured search using a relational schema (page no:245 to 249) Distributed Information Retrieval: A Theoretical model of distributed retrieval (page no:275 to 280) Web search (page no:281 to 284)

Course Outcomes:
After the completion of this course, the students should be able to

- Define Vector space model, understand various similarity coefficient and measures.
- Develop an Understanding on Relevance feedback, Clustering, Regression Analysis, Thesauri.

- Apply various Retrieval Utilities for Information Retrieval.
- Develop an Understanding about Signature files, Duplicate document detection.
- Apply IR principles to locate relevant information large collection of data.

TEXT BOOK:

1. Information Retrieval: Algorithms and Heuristics By David A Grossman and Ophir Frieder, 2 nd Edition, Springer.

REFERENCE BOOKS:

1. Modern Information Retrieval Algorithms and Heuristics By David A. Grossman, Ophir Frieder, 2007.
2. Information Storage and Retrieval Systems: Theory and Implementation By Kowalski, Gerald, Mark T Maybury , Springer.
3. Natural Language Processing and Information Retrieval, T.Siddiqui and U.S.Tiwary, Oxford Univ. Press.

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)
(B18CS48) TECHNICAL SEMINAR

B.Tech : VIII SEMESTER   **L T P C**
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 Prerequisites: None

Course Outcomes:
After the completion of this course, the students should be able to

- Identifies, understand and discuss current, real -world issues.

- Explain the role of self-efficacy, personal goals, and motivation in improving academic life

- Describe the behaviors and characteristics of an effective learner. Gain knowledge of fast and rapidly changing by self learning

- Practice finding relevant course material on the Internet and incorporate them in their courses. Develop articles and presentation skills

- Develop the interpersonal skills, soft skills and creativity. Present features of the developed project to the targeted group through written and oral communication.

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)
(B18CS49) MAJOR PROJECT PHASE – II

B.Tech : VIII SEMESTER   **L   T   P   C**
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 Prerequisites: Major Project Phase – I

Course Outcomes:
After the completion of this course, the students should be able to

- Uses fundamental knowledge and skills in engineering and apply it effectively on a project.

- Apply knowledge of the 'real world' situations that a professional engineer can encounter.

- Apply critical and creative thinking in the design of software, Hardware and Networking projects.

- As a team student can organize, record and compile their work done throughout the project in an efficient manner.

- Manage any disputes and conflicts within and outside their team.

- Demonstrate a sound technical knowledge of their selected project topic.

- Demonstrate the knowledge, skills and attitudes of a professional engineer.

- Summarize an appropriate list of literature review, analyze previous work and relate them to current project.

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