# Syllabus for
## Applied Mathematics- III (IT/CE)
### Scheme (Theory: 4 hrs, Tutorial: 1 hr)

## UNIT - I: LAPLACE TRANSFORM(14 Hrs)

Definition, Properties, Laplace Transform of Derivatives and Integrals, Evaluation of Integrals by Laplace Transform, Inverse Laplace Transform and its Properties, Convolution Theorem(Statement Only), Laplace Transform of Periodic Functions(Statement Only) and Unit Step Function, Applications of Laplace Transform to solve Ordinary Differential Equations, Simultaneous Differential Equations, Integral Equations & Integro-Differential Equations.

## UNIT – II: FOURIER TRANSFORM (06 Hrs)

Definition and Properties(excluding FFT), Fourier Integral Theorem, Relation with Laplace Transform, Applications of Fourier Transform to Solve Integral Equations.

## UNIT – III: Z-TRANSFORM(08 Hrs)

Definition, Convergence of Z-transform and Properties, Inverse Z-transform by Partial Fraction Method, Power Series Expansion, Convolution of two sequences.Solution of Difference Equations with Constant Coefficients by Z-transform method.

## UNIT –IV: MATRICES (12 Hrs)

Linear and Orthogonal Transformations, Linear dependence of vectors, Characteristics equation, Eigen values and Eigen vectors, Statement and Verification of Cayley-Hamilton Theorem [without proof], Reduction to Diagonal form, Reduction of Quadratic form to Canonical form by Orthogonal Transformation, Sylvester's Theorem[without proof], Solution of Second Order Linear Differential Equation with Constant Coefficients by Matrix method. Largest Eigen value and Eigen vector by Iteration method.

## UNIT – V: THEORY OF PROBABILITY (10 Hrs)

Axioms of Probability, Conditional probability, Baye's Rule, Random variables: Discrete and Continuous random variables, Probability function and Distribution function, Joint distributions, Independent Random Variables, Conditional Distributions.

## UNIT – VI: MATHEMATICAL EXPECTATION & STOCHASTIC PROCESS(10 Hrs)

Mathematical Expectation, Variance, Standard Deviation, Moments, Moment generating function, Covariance & Correlation Coefficient, Conditional expectation. Stochastic process: Bernoulli and Poisson process.

**Text Books**

1. Higher Engineering Mathematics by B.S. Grewal, 40$^{th}$ Edition, Khanna Publication.
2. Advanced Engineering Mathematics by Erwin Kreysizig, 8$^{th}$ Edition, Wiley India.
3. Applied Mathematics for Engineers & Physicist by L. A. Pipes and L. R. Harvill.
4. Theory & Problems of Probability and Statistics by M. Spiegel , Schaum's Series, McGraw Hill .
5. Probability and Statistics for Engineers by Miller, Freund and Johnson, 4$^{th}$ ed.PHI.

**Reference Books**

1. A Text Book of applied Mathematics, Volume II , by P.N. Wartikar & J.N. Wartikar, Poona Vidyarthi Griha Prakashan
2. Introductory methods of Numerical Analysis, by S.S. Sastry, PHI
3. Mathematics for Engineers by Chandrika Prasad
4. Probability, Statistics with Reliability, Queuing and Computer Science Applications by K. S. Trivedi.
5. Probability, Statistics and Randam Processes by T. Veerarajan, Mc Graw-Hill .
6. A text book of Engineering Mathematics by N. P. Bali & M. Goyal, Laxmi Publication.

**BECME302T       DIGITAL ELECTRONICS**

**UNIT I:**

Analog V/S, Digital Systems, Transistors as Switch, Boolean Algebra, Boolean identities, Logic problems, Binary, Gray, Octal, Hex, and ASCII Codes, Logic gates, and Truth Tables, D Morgan's Law's , Sum of Product and Product of Sum.
Logic families: TTL, BCL, CMDS etc, Pan-in, Fan-out, propagation delay properties.

**UNIT II:**

Combinational logic – concepts, SSI, MSI & VLSI circuits Classification standard TTL, CMGS characteristics, Decoders, Encoders. Multiplexers, Demultiplexers, code converters, characteristics of display devices, standard configuration of gates as SSI/MSI/LSI circuits.

**UNIT III:**

K- Map, simplification of sum of products and products of sum, solution to problems using K-Map; conversion of Decoders / MUX into one another Use of MUX as function generator.

**UNIT VI:**

Introduction to Flip Flop, Loathers, concept of clock, Memories organization with Flip Flop as basic cell, Ram, RCM, EPROM & one type to another type Flop Flops.

**UNIT V:**

Excitation tables & introduction to sequential circuits counters-synchronous / asynchronous. Different modular counters with rest / clear facility Design of counters of arbitrary module with K-Maps, Lock free counters.

**UNIT IV:**

Arithmetic Circuits – Adders, sub tractors, (Half & Full). BCD adder / sub tractor concept of ALU and its design. Integrated circuits version of multivilnators and their design parameters.

**Text Books :**
1. Modern Digital Electronics by R. P. Jain , TMH Publication
2. Digital Electronics and Computer Design by M. Morris Mano, Pearson Edu.

**Reference Books:**
1. Digital Integrated Electronics – Herbert Taub Mc Graw Hill.
2. Introduction to Electronics by Earl Gates, 6th edition , Cengage Learning
3. Palmer: Introduction to Digital Introduction to Digital System (Tata Mc Graw Hill).
4. Ryan:  Digital Electronics (Mc Graw Hill) Practical based on above syllabus.
5. Digital circuits and Microprocessor: Herbert Taub, Mc Graw Hill.

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**BECME302P               DIGITAL ELECTRONICS**

**Practical based on syllabus.**

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**BECME303T       CONCEPTS IN COMPUTER ENGINEERING**

**UNIT I:       INPUT/OUTPUT UNITS AND COMPUTER MEMORY**
Description of computer input units, other input methods, computer output units. Memory cell, memory organization, read only memory, serial access memory, physical devices used to construct memory, Magnetic hard disk, floppy disk drive, compact disk read only memory (CDROM), magnetic tape drives, DVD.

**UNIT II:       COMPUTER GENERATIONS AND PROCESSOR**
First generation computers, second generation computers, third generation computers, fourth generation computers, fifth generation computers, Moor's law, classification of computers, parallel computers, distributed computing system. Structure of instructions, description of a processor, a machine language program

**UNIT III:       COMPUTER LANGUAGES**
Algorithms, Flowchart, Why programming languages,  Generation of Programming languages, Characteristics of good programming languages, Machine level language, assembly language, middle level language-C, high level programming languages. Factors affecting the choice of languages,  developing a program Introduction to HTML, Python Programming and compilation.

**UNIT IV:       COMPUTER SOFTWARES**
Introduction, Types of Computer Software, System Management Programs, System Development Programs, Unique Application Programs, Problem Solving, Structuring the logic, using the Computer,

**UNIT V:       OPERATING SYSTEMS  & OPEN SOURCE TECHNOLOGY**
Need of operating system, Definition of  operating system, types of operating systems. Introduction to Various operating systems-UNIX, MAC OS, LINUX (UBUNTU, FEDORA) and WINDOWS. Open source:  history and Open source software development, Free software, Free software license provider, Proprietary Vs. Open source Licensing model,  FOSS, GNU project.

**UNIT VI:       MULTIMEDIA DATA ACQUIAION AND PROCESSING**
Representation of an Image, Capturing a moving image with camera, Compression of video data, MPEG Compression standard, Acquiring and storing audio signals, Compression of audio signals, Audio signal processing, speech processing

**Textbook:**
1) Fundamentals of Computers, V. Rajaraman, IV edition, PHI
2) Fundamentals of Computers by  E. Balagurusamy, Tata-Mc-Graw Hill Publications

**Reference books:**
1) Operating system  by Achyut Godbole and Atul Kahate , 3rd edition, Tata-Mc-Graw Publications
2) Open source technology by Kailash Vadera and Bhawesh Gandhi, Laxmi Publications

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## BECME304T    PROGRAMMING METHODOLOGY AND DATA STRUCTURES

**UNIT I : Introduction and Arrays using C**
Taxonomy and history of Computer Programming Program Execution basics. Problem solving and programming strategies, programming paradigms. Algorithm and flowchart design, Principles of Structured programming C Language Fundamentals,Loop control statements, Arrays One dimensional & Two-dimensional array.Functions – Definition, call, prototypes, block structure, external variables, Recursion

**UNIT II : Structure using C**
Storage Classes – extern declaration and information hiding. Pointers – Address and indirection operators, Pointer arithmetic – Functions and pointers – Arrays and pointers –
Strings and pointers – Multi-dimensional arrays and pointers – Pointer arrays – Pointers to functions – Dynamic memory management.Structures – Variables, Accessing members, Assignment and nesting – Pointers to Structures – Structures and functions – Structures and arrays – Structures containing pointers – Unions

**UNIT III : Searching and Sorting**
Introduction to data structures, Searching and sorting techniques- Linear search, Binary search, Indexed search, Insertion sort, selection sort, Bubble Sort, radix Sort, Merge Sort, Hashing, Collision resolution policies.

**UNIT IV : Stack and Queue**
Stack and queue - Array representation of stacks, Queues and Dequeue, Circular queue, Polish notation, Implementation of stack using arrays, Application of stack & queue: Conversion from Infix to Postfix , Evaluation of postfix expressions, Priority Queues
Linked list- Singly linked list: Operations on linked list, Searching, Insertion, Deletion

**UNIT V : Linked List**
Linked list- Singly linked list: Operations on linked list, Searching, Insertion, Deletion,
Doubly linked list, Operations on doubly linked list, Sorted Linked List, circular list, , sparse matrix storage using linked list

**UNIT VI : Trees and Graph**
Trees- Definition, Binary Trees, Binary tree Traversal, Pre-order , Inorder , Post Order ,
Expression trees , Balanced Binary Trees . Different tree traversal algorithms,
Graphs - Mathematical Properties, Degree, Connectedness, Directed Graphs, Directed Acyclic Graph, Representation of Graphs and Applications: Adjacency matrix, path matrix, Linked Representation of a graph, Graph traversal - DFS & BFS, Shortest path,

**Text Books :-**
1) Let us C ,Yashavant Kanetkar,– BPB Publications. 2002 Fundamentals of Data Structure by Horowitz and Sahani (CBS Publications)
2) Introduction to Data Structure in C by Ashok  N. Kamthane, Pearson Education
**Reference Books:-**
1) Data Structures using C by Tenenbaum (Pearson Education)
2) An Introduction to DS with applications by Trembley  and sorenson(Mc Graw Hill)
3) Data Structure and Programme Design in C by Kruse, Leung and Tondo,(PHI)
4) Data structure and Algorithm by Lafore(BPB)
5) Schaum's outline: Date Structures by Seymour Lipschutz (Tata Mc Graw Hill)

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**BECME304P        PROGRAMMING METHODOLOGY AND DATA STRUCTURES   LAB**

## Practical based on syllabus (Not restricted to following list)

1) Menu driven program for Selection Sort, Bubble Sort for n elements.
1) Menu driven program for Sort, Insertion Sort, Quick sort, Merge sort for n elements.
2) Program to implement Binary Search for n elements using Recursion.
2) Program to implement Linear Search for n elements using Recursion.
3) Program to convert Infix to postfix expression.
3) Program to convert Infix to prefix expression.
4) Menu driven program to perform PUSH, POP and Traversal on a Stack.
4) Menu driven program to perform INSERT, DELETE and Traversal on a Queue.
5) Program to implement Circular Queue.
5) Program to implement D-Queue.
6) Program to perform different operations on Singly Link List.
6) Program to perform different operations on Circular Link List.
7) Menu driven program to perform Inorder, Preorder & Postorder traversal on Binary Tree
8) Program To create a Binary Search Tree and perform Addition of a node, Deletion of a node and display.
9) Program to implement Depth First Search on a graph.
10) Program to implement Breath First Search on a graph.

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## BECME305T INTRODUCTION TO COMPUTER NETWORK

**UNIT 1:** **Introduction**
Data and Signal, Bandwidth, Data Communication – Components, Data Representation, Data Flow, Networks – Network Criteria, Physical Structure ( Types of Connection, Physical Topology), Categories of Network (LAN, WAN, MAN), Interconnection of Network – Internet, Protocols and Standards, Network Model – Layered Tasks, The OSI Reference Model, Introduction to TCP/IP Protocol Suite, Addressing – Physical, Logical, Port, Specific

**UNIT 2:** **Physical Layer**
Physical Layer Objectives, Transmission Media – Wired and Wireless, Switching – Circuit switching Network, Datagram Network, Virtual Circuit Network, Digital Transmission (Digital to Digital Conversion, Analog to Digital Conversion), Analog Transmission (Digital to Analog Conversion, Analog To Analog Conversion), Modem.

**UNIT 3:** **Data Link Layer**
Design Issues of Data Link Layer, Framing, Logical Link Control – Protocols for Noiseless Channel (Simplest, Stop-and-Wait), Protocols for Noisy Channel (Stop-and-Wait ARQ, Go-Back-N ARQ, Selective Repeat ARQ), Multiple Access Control – Random Access Protocols (ALOHA, CSMA, CSMA/CD, CSMA/CA), IEEE Standard 802 for LAN – 802.3, 802.4, 802.5

**UNIT 4:** **Network Layer**
Need for Network Layer, Internet as a Datagram Network, Logical Addressing – Classfull Addressing  in IPv4, Routing – Routing Algorithm (Distance Vector Routing, Link State Routing), Congestion and Congestion Control – (Open Loop, Closed Loop)

**UNIT 5:** **Transport Layer**
Objectives of Transport Layer, Process to Process Delivery, Addressing – (IANA Ranges, Socket Addresses), Multiplexing and De – multiplexing, Reliable and Unreliable Services, Quality of Service - Traffic Shaping policies

**UNIT 6:** **User Support Layers – Session, Presentation, Application**
Session Layer – Introduction, Presentation Layer – Data Compression, Network Security and Privacy – Introduction to Cryptography (Symmetric and Asymmetric), Digital Signature, Authentication (Message and Entity), Application Layer – Domain Name System, Electronic Mail, Architecture of Browser

**Textbook:**
1. Data Communications and Networking, Behrouz A Forouzan,  Fourth Edition, (McGraw Hill)

**References Books:**
1. Computer Communication Network design and analysis by Schwartz.
2. Computer Networks (PHI) by Andrew S. Tanenbaum.
3. Data and Computer Communication by William Stallings.
4. Computer Networks : A Top-Down Approach by Behrouz A Forouzan, Firouz Mosharraf, Mc-Graw Hill.

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**BECME306T**  **ENVIRONMENTAL ENGINEERING –I**
(Audit Course)

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**BECME307P          COMPUTER LAB – I**

**Practicals based on Web Technologies**

Introduction to web design: Web page & web site, Web Publishing. Introduction to HTML: Structure tags: <html>,<head>, <title>, <body> Block level tags: Headings, Paragraph, Comments, Breaks, Center, Division, Preformatted, Text alignment and font size. Text level tags: Bold, Italic, Underlined, Strike-through, superscript, subscript. Horizontal Rules Colors' in web page: Background color, Text color, Link color. Lists: Ordered Lists, Unordered Lists, Definition List, Nesting lists. Linking HTML Documents.URLs Types of URLs: Absolute URLs, Relative URLs. Linking HTML Documents: The Anchor tag, linking to document in same folder, Linking to document in Different folder, Linking to document on the web, Linking to specific location within document.

Inserting E-mail links Including Images: Image formats Linking HTML Documents: The Anchor tag, Linking to document in same folder, Linking to document in Different folder, Linking to document on the web, Linking to specific location Within document. Inserting E-mail links tables, Forms, Frames: Tables: Creating Tables, Editing of rows and columns of table, rowspan, colspan, formatting tables using attributes border, Border colour, back ground, align, width, cell spacing, cell height. Forms: Creating Forms, Forms controls: text controls, Password fields, Radio Buttons, Check boxes, Reset and Submit buttons. The <TEXTAREA>, <SELECT> and <OPTION> tags. Frames: Introduction to frames, Advantages and disadvantages of frames, creating basic frames Frame targeting. Style sheets: Adding style sheet to document: Linking to a Style sheet, Embedding style sheet, Using inline Style

sheet Building a small web site   Text Book: HTML,XHTML,CSS & XML By Example Teodoru Gugoiu, Firewall Media

**Reference Books:**
1.  Castro, HTML 4 for World Wide Web, 3rd ed. Pearson education.
2.  Barrett, Essential JavaScript for web professionals, Pearson Education.

Group 1:  HTML Tags
1.  Develop and demonstrate a HTML document that illustrates
    a) the use of Formatting  Text.
    b)  Headings tags(H1,H2,H3,H4,H5,H6)
    c)  Font Details (Font Size,Style, Type, Color)
    d)  Setting Color(BG Color)

Group 2: Table & Lists
2.  Develop and demonstrate a HTML document that illustrates
    a)  Unordered List(UL)
    b)  Ordered List(OL) and Definition list (DL)
    c)  Table Alignment (Cell Spacing, Cell Padding ,Height ,Width, Border, Rowspan , colspan)
    d)  Setting Different Table Attributes(Color, Image)

Group 3: Image & Link
3.  Develop and demonstrate a HTML document that illustrates
    a)  Image as a background
    b)  Hyperlink using an image
    c)  Hyperlink with another web page(A, Base, Href)
    d)  Link to email address, FTP Websites

Group 4: Forms and Frames
    a)  Develop and demonstrate a HTML document that illustrates
    b)  Create  "Website Login Form" which consists of following details UserName , Password  Address, Phno, Sex, Hobbies, Date Of Birth ,Country , along with submit and Reset Button.
    c)  Create a Web page having Main Frame  along with three Sub Frames(Windows)
    d)  Create a Frame which will consider as a Main Frame along with other Sub Frame. when the particular link gets selected from the main frame it will displayed the output on target frame.
    e)  Create a login form as above which will use the post method by sending  data on another form.

Group 5 :Multimedia
    a)  Develop a web page  to  play audio file using <a> Tag.
    b)  Develop a web page  to  play video file  using <Embed> Tag.

Group 6  DHTML
   a)  Create a CSS document on Internal style sheet
   b)  Create a CSS document on External style sheet
   c)  Create a CSS document on Inline style sheet
   d)  Create a CSS document on placing Images at different  position

From above practical list perform at least two practical from each group.

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SYLLABUS FOR
# DISCRETE MATHEMATICS AND GRAPH THEORY
## BE IV Semester (CS/CT/CE/IT)
# Scheme (Theory: 4 hrs. & Tutorial:1 hr.)

## UNIT-I: Mathematical Logic and Set Theory (08 Hrs)
Propositions and Logical Operations, Quantifiers, Conditional Statements and Tautologies, Methods of Proof, Principle of Mathematical Induction. Basic concepts of set theory, Operations on Sets, The power set.

## UNIT-II: Relations and Functions(12 Hrs)
**Relations**: Ordered pairs and n-tuples, Product Sets and Partitions, Relations and Digraphs, Matrix of Relation, Paths in Relations and Digraphs, Properties of Relations, Equivalence Relations & Partitions, Compatible Relation, Manipulation of Relations, Composition of Relations, Transitive Closure of a relation, Partial order relation, Partially ordered set, Hasse Diagrams.
**Functions**: Definition, Composition of functions, Types of Functions, Invertible Function, Permutation Function, Characteristics function of a set with Theorems.

## UNIT-III: Group Theory (12 Hrs)
Binary Operations, Properties, Semigroups, Monoids,Subsemigroup,Submonoid, Isomorphism & Homomorphism, , Groups(only definitions and examples) Subgroups and Homomorphism, Cosets and Lagrange's Theorem, Normal subgroups.

## Unit- IV:Rings, Lattices & Boolean Algebra(10 Hrs)

Rings, Fields, Integral Domain, Ring Homomorphism (definitions & examples), Lattices: Properties, Types of Lattices, Sub lattices, Isomorphic Lattices, Complemented & Modular Lattices (definitions & examples), Boolean Algebra: Definition, Properties, Simplification of Switching Circuits.

## Unit-V: Graph Theory (12 Hrs)

Basic concepts of Graph Theory, Digraphs, Basic definitions, Paths and Circuits, Reachability and Connectedness, Matrix representation of graphs, Subgraphs & Quotient Graphs, Isomorphic digraphs & Transitive Closure digraph, Euler's Path & Circuit (only definitions and examples). Trees, Binary Tree, Labeled Trees, Undirected Trees, Spanning Trees of Connected Relations, Prim's Algorithm to construct Spanning Trees, Weighted Graphs, Minimal Spanning Trees by Prim's Algorithm & Kruskal's Algorithm.

**Unit-VI: Combinatorics(06Hrs)**

Generating Functions, Recurrence Relations, Counting: Permutations & Combinations, Pigeonhole Principle with Simple Applications.

**Text Books**

1. Discrete Mathematical Structures(3$^{rd}$ Edition) by Kolman, Busby & Ross PHI.
2. Discrete Mathematical Structures with Applications to Computer Science byTremblay &Manohar, Tata McGraw- Hill.
3. Combinatorial Mathematics, C.L.Liu (McGraw Hill)

**Reference Books**

1. Discrete Maths for Computer Scientists & Mathematicians by Mott, Kandel, Baker.
2. Elements of Discrete Mathematics by C. L. Liu.
3. Discrete Mathematics by Lipschutz.
4. Discrete Mathematics by R.Johnsonbaugh.
5. Higher Engineering Mathematics by B.S. Grewal, 40$^{th}$ Edition, Khanna Publication

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## BECME402T          FILE STRUCTURE AND DATA PROCESSING

**UNIT I :**
Introduction: File structure design, File processing operations :open, close, read, write, seek. Unix directory structure. Secondary storage devices: disks, tapes, CD-ROM. Buffer management. I/O in Unix.

**UNIT II :**
File Structure Concepts: Field & record organization, Using classes to manipulate buffers, Record access, Record structures, file access & file organization, Abstract data models for file access. Metadata. Extensibility, Portability & standardization.

**UNIT III:**
Data Compression, Reclaiming spaces in files, Introduction to internal sorting and Binary searching. Keysorting. Indexing concepts. Object I/O. Multiple keys indexing. Inverted lists, Selective indexes, Binding.

**UNIT IV :**
Cosequential processing : Object-Oriented model, its application. Internal sorting: a second look. File Merging : Sorting of large files on disks. Sorting files on tapes. Sort merge packages. Sorting and Cosequential processing in Unix. 08 Hrs

**UNIT V:**
Multilevel indexing : Indexing using Binary Search trees. OOP based B-trees. B-tree methods Search, Insert and others. Deletion, merging & redistribution. B*trees. Virtual B-trees. VL records & keys. Indexed sequential file access and Prefix B+trees.

**UNIT VI:**
Hashing : Introduction, a simple hashing algorithm. Hashing functions and record distributions. Collision resolution. Buckets. Making deletions. Pattern of record access. External hashing. Implementation. Deletion. Performance. Alternative approaches.

**Text Book:**
Michael J.Folk, Bill Zoellick, Greg Riccard :File Structures : An
Object-Oriented Approach using C++. (Addison-Wesley) (LPE)
**Reference Books:**
1. M, Loomis: "Data Management & File Processing" (PHI)
2. O.Hanson: "Design of Computer Data Files" McGraw-Hill (IE)
3. D. E. Knuth: " The Art of Computer Programming", Volume 3, (Addison
Wesley).
4. James Bradly: " Files and Database Techniques", (Mc Graw Hill).

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**BECME403T          MICROPROCESSOR**

**UNIT I:**
8086 architecture and pin configuration, Software model of 8086 microprocessor. Memory addresses space and data organization. Data types. Segment registers, memory segmentation. IP & Data registers, Pointer, Index registers. Memory addresses generation.

**UNIT II:**
8086 Instruction set overview, addressing modes. 8086 instruction formats. 8086 programming : Integer instructions and computations: Data transfer instructions, Arithmetic instructions and their use in 8086 programming.

**UNIT III:**
8086 programming: logical instructions. Shift and rotate instructions and their use in 8086 programming. 8086 flag register and Flag control instructions, compare instruction, control flow and jump instructions, Loops & loop handling instructions. 8086 programming using these instructions.

**UNIT IV:**
The 8086 stack segment and stack related instructions. 8086 I/O Address space. Subroutines and related instructions, Parameter passing, Concept of Macros, Status saving on stack. Concept of recursion at assembly program level. 8086 Programming using subroutines, recursion and macros.

**UNIT V:**
8086 I/O: Types of input output, isolated I/O interface, input output data transfers, I/O instructions and bus cycles. Programmable Peripheral Interface 8255 PPI: pin diagram, internal organization, modes of operation. 8086 I/O programming using 8255.

**UNIT VI:**
8086 Interrupts types, priority and instructions. Interrupt vector table, External hardware-interrupt interface signals & interrupts sequence. Software interrupts. Non-maskable interrupts. Programmable Interrupt Controller 8259: pin diagram, internal organization, modes of operation. 8086 Interrupt-driven programming using 8259.

**TEXT BOOKS:**

1. W. A. Triebel & Avatar Singh: The 8088/8086 Microprocessors (4e) (PHI /Pearson Education)
2. Liu & Gibson: The 8088/8086 Microprocessor (2/e) (PHI)

**REFERENCES:**

1. Barry B. Brey : The Intel Microprocessor Architecture, Programming & Interfacing (6/e)(PHI)
2. Ray & Bhurchandi: Advanced Microprocessors & Peripherals (TMH).
3. John P Uffenbeck, "8086/8088 Families: Designing, Programming and Interfacing". Prentice Hall .
4. 8086 Microprocessor and its applications by Nagoor Kani 2$^{nd}$ edition, Mc Graw Hill

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**BECME403P          MICROPROCESSOR  LAB**

**Practical based on syllabus.**

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## BECME404T      NUMERICAL COMPUTATION TECHNIQUES

**Unit 1:**
Problem solving & computers, Numerical methods for roots of equations, polynomial, transcendental, quadratic equations. Bisection, False Position, Newton-Raphson & Direct substitution methods.

**Unit 2:**
Solution of Simultaneous Equations: Gauss Elimination, Gauss Seidel, Gauss- Jordan Methods. Matrix methods & Inversion Interpolation : Linear & polynomial.

**Unit 3:**
Numerical differentiation by polynomial fit, Numerical integration by Trapezoidal Rule, Simpson Rule, Gaussion Quadratre.

**Unit 4:**
Sampling frequency distribution, measures of central tendency, dispersion moments. Discrete probability distributions. Probability, Various types of distributions.

**Unit 5:**
Regression : Linear LS fit, Nonlinear fit. Polynomial function. Correlation : Coefficient, Properties of correlation coefficient. Multiple, Partial and Rank correlation.

**Unit 6:**
Test of significance: Introduction, The $\chi 2$-test. The t-test, the F-test .

**Text Books:**
1. V Rajaraman : Computer Oriented Numerical Methods (PHI)
2. J.N. Kapoor : Mathematical Statistics (MCG)
**Reference :**
1. Sastry: Numerical Computation Methods(PHI)
2. M.R. Spiegal: Statistics (McGraw Hill)

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## BECME405T          OBJECT ORIENTED METHODOLOGY

**UNIT I:**

Introduction ,object oriented development ,object oriented Terms, object module, object & classes link and associations,generalization,grouping constructs, a sample object module ,advanced object modeling, aggregation, abstract classes, multiple inheritance,metadata,candidate keys, constraints

**UNIT II:**

Dynamic modeling events & states, nested state diagrams, concurrency advanced dynamic modeling concepts, a sample dynamic module, relation of objects & dynamic module, functional models, data flow diagrams,specufying operations,constraints,a sample functional module.

**UNIT III:**

Design methodology, overview of analysis, problem statement, TM network, object modeling, various phases, dynamic modeling, various phases, adding operations, refining the object model,

**UNIT IV:**

system design, overview ,sub systems, allocating subsystems, management of data stores,choosing software control,implementation,handling boundary conditions, trade offs.

**UNIT V:**

Object design, overview ,designing algorithms, design optimization ,optimization of control, adjustment of inheritance, design of associations, object representations, physical packaging,documenting,design decisions.

**UNIT VI:**

Comparison of methodologies ,information modeling ,notations, implementations ,programming languages ,data base systems ,object oriented reusability ,extensibility ,robustness

**Text Books:**

1.Object oriented modeling and design by James Rumbaugh, Michal Blaha, Williams premeriani, frwderick Eddy,William Lorenson FHL1997.

**Reference Books:**

1. Fundamentals of Object oriented design in UML by Meilir Page jones Addison-Wesley Professional, 2000
2. Object Oriented Modelling and design with UML, 2nd edition by Blaha, Pearson Education, India

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## BECME405P          OBJECT ORIENTED METHODOLOGY  LAB

### Practical based on syllabus.

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**BECME406P          COMPUTER LAB-II**

GROUP I :
1. Study of working of various storage media.
2. Study of COBOL coding sheet.
3. Write a program to demonstrate the use of different editing characters.
4. Write a menu driven program to accept two numbers from keyboard and
perform its addition, subtraction, multiplication and division based on choice.

GROUP II :

5. Write a program to demonstrate STRING and UNSTRING verb.
6. Write a program to single and multidimensional table handling in COBOL.
7. Write a program to demonstrate various conditions in COBOL.
8. Write a program to demonstrate various table sorting methods.

GROUP III :

9.   Write a program to create sequential file and display all the records.
10. Write a program to create indexed sequential file and display all the records.
11. Write a program to create relative file and display all the records.
12. Write a program to demonstrate Master and Transaction file working together
13. Write a program to demonstrate addition and deletion of records in a file

GROUP IV :

14. Write a program to demonstrate sorting of a file.
15. Write a program to demonstrate merging of files.
16. Write a program to design output layout and generation of report.
17. Write a program to demonstrate hashing algorithm

Minimum 8-10 practicals must be conducted compulsorily selecting min. 2 from each group

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