

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

Department of Computer Science & Engineering

SYLLABUS FOR 3rd Sem BTech PROGRAMME

Digital Logic & Design (03105201)

Type of Course: BTech

Prerequisite: Basic Electronics

Rationale: This course is design to provide basic ideas of computer architecture. This course also makes help to understand organization and architecture of computer. It will help to develop their logical abilities.

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Credit	Examination Scheme					Total
Lect	Tut	Lab		External		Internal			
				T	P	T	CE	P	
6	0	4	4	60	30	20	40	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	NUMBER SYSTEM: Introduction and type of Number system- Binary, Octal, Decimal and Hexadecimal Number System, Conversion between number system, Arithmetic operations on number system, Signed and unsigned number system.	10%	5
2	FUNDAMENTALS OF DIGITAL TECHNIQUES: Digital signal, logic gates: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR, Boolean algebra, Binary codes: BCD, Excess-3, Gray, EBCDIC, ASCII, Error detection and correction codes	10%	5
3	MINIMIZATION TECHNIQUES: Boolean postulates and laws, De-Morgan's Theorem, Principle of Duality, Boolean expression, Minterm, Maxterm, Sum of Products (SOP), Product of Sums (POS), and K-map Minimization: Don't care conditions, Quine-McCluskey method of minimization. Variable Entered Maps, Realizing Logic Function with Gates.	20%	11
4	COMBINATIONAL DESIGN USING MSI DEVICES: Design procedure – Half adder, Full Adder, Half subtractor, Full subtractor, Parallel binary adder & Subtractor, Fast Adder, Carry Look Ahead adder, Serial Adder/Subtractor, BCD adder; Binary Multiplier, Binary Divider, Multiplexer/ Demultiplexer, decoder, encoder, parity checker, parity generators - code converters - Magnitude Comparator.	15%	8

5	SEQUENTIAL CIRCUITS: Latches, Flip-flops - Characteristic table and equation, Application table, Edge triggering, Level Triggering, Realization of one flip flop using other flip flops; Asynchronous counters, Synchronous counters, Programmable counters, Design of Synchronous counters: state diagram State table, State minimization, State assignment, Excitation table and maps; Circuit implementation, Modulo-n counter, Registers-shift registers - Universal shift registers, Shift register counters, Ring counter, Shift counters, Sequence generators.	20%	11
6	LOGIC FAMILIES: Transistor-Transistor Logic(TTL), Emitter-Coupled Logic(ECL), MOSFET Logic, TTL Gates	10%	4
7	PROGRAMMABLE LOGIC DEVICES: Introduction to Programmable Logic Devices, Read-Only Memory, Programmable Logic Arrays (PLA), Programmable Array Logic (PAL), Combinational PLD-Based State Machines, State Machines on a Chip.	15%	4

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Digital Design
M. Morris Man; Prentice Hall of India Pvt. Ltd; 2003
2. Digital Circuits and Design
S. Salivahanan and S. Arivazhagan; Vikas Publishing House Pvt. Ltd, New Delhi; 2006
3. Digital Design
John F. Wakerly; Pearson/PHI; 2006
4. Digital Logic Applications and Design
John. M Yarbrough; Thomson Learning; 2002
5. Fundamentals of Logic Design
Charles H. Roth; Thomson Learning
6. Digital Principles and Applications
Donald P. Leach and Albert Paul Malvino; TMH; 2003
7. Digital Principles and Design
Donald D. Givone; TMH; 2003

Course Outcome:

After Learning the course the students shall be able to:

1. Explain about digital number systems and logic circuits.
2. Solve logic function minimization.
3. Differentiate between combinational and sequential circuits.
4. Design using FSM. In the laboratory, they should be able to verify the functions of various digital integrated circuits.
5. State the specifications of logic families.

List of Practical:

1. **Getting familiar with various digital integrated circuits of different logic families. Study of data sheet of these circuits and see how to test these circuits using Digital IC Tester.**
2. **Digital IC Testers and Logic State Analyzer as well as digital pattern generators should be demonstrated to the students.**

3. **Configure diodes and transistor as logic gates and Digital ICs for verification of truth table of logic gates.**
4. **Configuring NAND and NOR logic gates as universal gates.**
5. **Implementation of Boolean Logic Functions using logic gates and combinational circuits. Measure digital logic gate specifications such as propagation delay, noise margin, fan in and fan out.**
6. **Study and configure of various digital circuits such as adder, subtractor, decoder, encoder, code converters.**
7. **Study and configurations of multiplexer and demultiplexer circuits.**
8. **Study and configure of flip-flop, registers and counters using digital ICs. Design digital system using these circuits.**
9. **Perform an experiment which demonstrates function of 4 bit or 8 bit ALU.**
10. **Introduction to HDL. Use of HDL in simulation of digital circuits studied in previous sessions using integrated circuits. Illustrative examples using FPGA or CPLD boards.**

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS (PROPOSED) FOR 3rd SEM B. TECH. PROGRAMME
OPERATING SYSTEM (03105202)
ACADEMIC YEAR 2016-17

Type of Course: Computer Science & Engineering

Prerequisite: Data Structures and Algorithms, Good working knowledge of C, and Fundamentals of Computer Systems.

Rationale: This course is an introduction to the theory and practice behind modern computer operating systems. Topics will include what an operating system does (and doesn't) do, system calls and interfaces, processes, concurrent programming, resource scheduling and management, virtual memory, deadlocks, and algorithms, programming, and security. We will approach the subject from both a theoretical perspective as well as a practical one.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme					Total
L	T	P		External		Internal			
				TH (E)	PRA(V)	TH (I)	C.E.	PRA. (I)	
3	0	2	4	60	30	20	20	20	150

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; Cr- Credit; E - End Semester Theo. Exam; V - End Semester Viva Exam; M – Mid Semester Exam; P.A.- Progressive Assessment

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1.	System Software: Operating system, I/O manager, Assembler, Compiler, Linker, Loader.	5%	2
2.	Fundamentals of Operating System: OS services and Components, Multitasking, Multiprogramming, Timesharing, Buffering, Spooling, Distributed OS, Real-time OS	10%	4
3.	Process and Thread Management: Concept of process and threads, Process states, Process management, Context switching, CPU Scheduling Algorithms, Interaction between processes and OS, Multithreading.	10%	5
4.	Concurrency Control: Concurrency and Race Conditions, Mutual exclusion requirements, Software and hardware solutions, Semaphores, Monitors, Classical IPC problems and solutions, Deadlock: Characterization, Prevention, Detection, Avoidance and Recovery.	20%	12
5.	Memory Management: Memory partitioning, Swapping, Paging, Segmentation, Virtual Memory Overlays, Demand paging, Performance of Demand paging, Virtual memory concepts, Page replacement algorithms, Allocation algorithms.	15%	8
6.	I/O Systems: Principles of I/O Hardware: I/O devices, Device controllers, And Direct memory access, Principles of I/O Software: Goals of Interrupt handlers, Device drivers, Device independent I/O software, Secondary Storage Structure: Disk structure, Disk scheduling, Disk management, Swap-space management, Disk reliability, Stable storage implementation, introduction to Clock: Clock hardware, Clock software.	15%	6
7.	File Systems: File concept, File support, Access methods, Allocation methods, Directory	15%	6

Sr. No.	Topic	Weightage	Teaching Hrs.
	systems, File protection, Free space management.		
8.	Protection & Security: Protection: Goals of protection, Domain of protection, Access matrix ,Implementation of access matrix ,Revocation of access rights Security: The security problem, Authentication, One-Time passwords, Program threats, System threats, Threat monitoring ,Encryption ,Computer-security classifications	10%	5

Reference Books:

1. Operating System Concepts by Silberschatz and Galvin,Wiley
2. Operating Systems by William Stalling.
3. Operating Systems Design & implementation by Andrew S.Tanenbam, Albert S. Woodhull, Pearson
4. Modern Operating Systems by Andrew S Tanenbaum, Prenticehall Inida.
5. UNIX by Sumitabha Das.
6. Unix Shell Programming by Yashwant Kanetkar, BPB publications.

Course Outcome:

After learning the course the students shall be able to:

1. Distinguish different styles of operating system design.
2. Understand device and I/O management functions in operating systems as part of a uniform device abstraction.
3. Have an understanding of disk organisation and file system structure
4. Give the rationale for virtual memory abstractions in operating systems.
5. Understand the main principles and techniques used to implement processes and threads as well as the different algorithms for process scheduling.
6. Understand the main mechanisms used for inter-process communication.
7. Understand the main problems related to concurrency and the different synchronization mechanisms available.
8. Have the ability to evaluate security risks in operating systems and understand the role operating systems can and should play in establishing security.

List of Practical:

Note: Perform all practicals on LINUX/ UNIX operating system.

1. Study of Basic commands of Linux.
2. Write a Shell script to print given numbers sum of all digits.
3. Write a shell script to validate the entered date. (eg. Date format is: dd-mm-yyyy).
4. Write a shell script to check entered string is palindrome or not.
5. Write a Shell script to say Good morning/Afternoon/Evening as you log in to system.
6. Write a C program to create a child process.
7. Finding out biggest number from given three numbers supplied as command line arguments.
8. Printing the patterns using for loop.
9. Shell script to determine whether given file exist or not.
10. Write a program for process creation using C. (Use of gcc compiler).
11. Implementation of FCFS Algorithm.
12. Implementation of Round Robin Algorithm.
13. Implementation of Banker's Algorithm.

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS (PROPOSED) FOR 3rd SEM B. TECH. PROGRAMME
Data Structures (03105203)
ACADEMIC YEAR 2016-17

Type of Course: Computer Science & Engineering

Prerequisite: Fundamentals of Knowledge of Programming & C Language

Rationale: This course is design to provide fundamentals of data structures. This subject provides basic knowledge of performance analysis and measurements and implementation of different data structure using programming language.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme					Total
L	T	P		External		Internal			
				TH (E)	PRA(V)	Mid Exam (M)	C.E.	PRA (I)	
3	0	2	4	60	30	20	20	20	150

L- Lectures; **T-** Tutorial/Teacher Guided Student Activity; **P- Practical**; **Cr-** Credit; **E -** End Semester Theo. Exam; **V -** End Semester Viva Exam; **M –** Mid Semester Exam; **P.A.-** Progressive Assessment

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1.	Introduction: Data types, Types of Data Structure, Abstract Data Types.	5%	3
2.	Array: Array Representation, Array as an Abstract Data Type, Programing Array in C, Sparse Matrices, Sparse Representations and its Advantages.	10%	4
3.	Searching and Sorting: Linear Search, Binary Search, Bubble Sort, Insertion Sort, Selection Sort, radix sort.	10%	4
4.	Stack and Queue: Stack Definition and concepts, Operation on stack, Programing Stack using Array in C, Prefix and Postfix Notations and their Compilation, Recursion, Tower of Hanoi, Representation of Queue, Operation on Queue, Programing Queue using Array in C. Types of Queue, Application of Queue.	20%	10
5.	Linked List: Dynamic Memory Allocation, Structure in C, Singly Linked List, Doubly Linked List, circular linked list, Linked implementation of Stack, Linked implementation of Queue, Applications of linked list.	15%	8
6.	Trees and Graphs: Graph Definition, Concepts and Representation, Types of Graphs, Tree Definition, concepts and Representation. Binary Tree, Binary Tree Traversals, conversion from general to binary Tree. Threaded Binary Tree, Heap, Binary Search Tree. Tree for Huffman coding, 2-3 Tree, AVL tree, Breadth First Search, Depth First Search, Spanning Tree, Kruskal's and Prim's Minimum Cost Spanning Tree Algorithms, Dijkstra's Shortest Path Algorithm.	25%	12
7.	Hashing: The Symbol Table Abstract Data Types, Hash Tables, Hashing Functions, Hash collision Resolution Technique.	10%	4
8.	File Structure: Concepts of fields, records and files, Sequential, Indexed and Relative/Random File Organization.	5%	3

Reference Books:

1. An Introduction to Data Structures with Applications. by Jean-Paul Tremblay & Paul G. Sorenson Publisher- Tata McGraw Hill
2. Data Structures using C & C++ -By Tanenbaum Publisher – Prentice-Hall International.
3. Fundamentals of Computer Algorithms by Horowitz, Sahni, Galgotia Pub. 2001 ed.
4. Fundamentals of Data Structures in C++-By Sartaj Sahani
5. Data Structures: A Pseudo-code approach with C -By Gilberg & Forouzan Publisher-Thomson Learning.

Course Outcome:

After learning the course the students shall be able to:

1. Differentiate primitive and non-primitive structures
2. Design and apply appropriate data structures for solving computing problems.
3. Implement different data structure.
4. Apply sorting and searching algorithms to the small and large data sets.
5. Analyze algorithms for specific problems.

List of Practical:

1. Introduction to pointers.
(a) Call by Value (write a function that return max of two passed value)
(b) Call by reference.(write a function to swap value of two variable)
2. Introduction to Dynamic Memory Allocation. DMA functions malloc(), calloc(), free() etc.
(a) W.A.P. to create dynamic int array using malloc() and free()
(b) W.A.P. to create dynamic char array using calloc() and free()
3. Write a program to implement structure in c.
4. Write a program to implement 1) linear Search 2) Binary Search
5. Write a program to implement 1) Bubble Sort 2) Insertion Sort 3) Selection Sort
6. Implement a program for stack that performs following operations using array.
(a) PUSH (b) POP (c) PEEP (d) CHANGE (e) DISPLAY
7. Implement a program to convert infix notation to postfix notation using stack.
8. Implement a program evaluate postfix notation.
9. Write a program to implement QUEUE using arrays that performs following operations
(a) INSERT (b) DELETE (c) DISPLAY
10. Write a menu driven program to implement following operations on the singly linked list.
(a) Insert a node at the front of the linked list.
(b) Insert a node at the end of the linked list.
(c) Insert a node such that linked list is in ascending order.(according to info. Field)
(d) Delete a first node of the linked list.
(e) Delete a node before specified position.
(f) Delete a node after specified position.
11. Write a program to implement following operations on the doubly linked list.
(a) Insert a node at the front of the linked list.
(b) Insert a node at the end of the linked list.
(c) Delete a last node of the linked list.
(d) Delete a node before specified position.
12. Write a program to implement following operations on the circular linked list.
(a) Insert a node at the end of the linked list.
(b) Insert a node before specified position.
(c) Delete a first node of the linked list.
(d) Delete a node after specified position.
13. Write program to create binary Tree.
14. Write program to create binary Tree Traversal

List of Tools:

1. Any C Compiler.

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

Department of Computer Science & Engineering

SYLLABUS FOR 3rd Sem BTech PROGRAMME

Object Oriented Programming with C++ (03105204)

Type of Course: BTech

Prerequisite: Basic knowledge of C

Rationale: Object orientation is a new approach to understand the complexities of the real world. In contrast to the earlier approaches like procedural, object orientation helps to formulate the problems in a better way giving high reliability, adaptability and extensibility to the applications. The students are already familiar with the concept of programming in C which is the basic for C++. This course offers the modern programming language C++ that shall help the students to implement the various concept of object orientation practically. The students will be able to programme in the object oriented technology with the usage of C++.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	Introduction:: Procedure Oriented Programming, Object Oriented Programming, Purpose of object oriented Programming, Procedural Vs Object Oriented Programming, and Principles of object-oriented programming. Benefits and Applications of OOP. Procedure Oriented Programming, Object Oriented Programming, Purpose of object oriented Programming, Procedural Vs Object Oriented Programming, and Principles of object-oriented programming. Benefits and Applications of OOP.	7%	5
2	C++ Basics: Overview of C++, Program structure, namespace, identifiers, Data types in C++, variables, constants, operators, typecasting, control structures.	10%	6
3	Functions in C++: Basics of functions, Parameter Passing Mechanism, Inline function, Macro, Macro Vs Inline function, Function Overloading, Default Arguments.	8%	6
4	Objects and Classes: Object and Class in C++, Access Specifiers, Static data member and static member function, constructors and their types, destructors, friend function, operator overloading, type conversion	25%	9

5	Inheritance: Concept of Inheritance, Types of inheritance: single, multiple, multilevel, hierarchical, hybrid, multipath, function overriding, virtual base class.	20%	8
6	Polymorphism Virtual Functions and Templates: Pointers in C++, Pointers and Objects, this pointer, virtual and pure virtual functions, Run time polymorphism, Templates- function templates and class templates.	20%	8
7	I/O and File Management: Concept of streams, cin and cout objects, C++ stream classes, Unformatted and formatted I/O, manipulators, File stream, C++ File stream classes, File management functions, File modes.	10%	6

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Object Oriented Programming With C++ (TextBook)
E Balagurusamy; TMH
2. The Complete Reference C++, (TextBook)
by Herbert Schildt; TMH
3. Object Oriented Programming with ANSI and Turbo C++
Ashok Kamthane; Pearson

Course Outcome:

After Learning the course the students shall be able to:

1. Develop confidence for self education and ability for life-long learning needed for Computer language.
2. Critically think about basic problems and develop algorithms to solve with computing systems.
3. Write, compile and debug programs with C++ compiler.

List of Practical:

1. 1. WAP to display basic details of a User like Name, Roll no, Division and Address. 2. WAP to Convert no. of Days into No. of Months and days. 3. WAP to convert temperature from Celsius to Fahrenheit. 4. WAP to convert distance from C.M. into meter, KM. , feet, inches
2. 1. WAP to find whether the no. is even or odd. 2. WAP to find the largest among three numbers 3. WAP using switch case to perform basic arithmetic operations. 4. WAP to take input from user and calculate sum of its digit. 5. WAP which generates table of a given no. 6. WAP to calculates the sum and average of given no. using Do-While
3. 1. WAP to swap two numbers using call by value. 2. WAP to swap two numbers using call by reference. 3. WAP to swap two numbers using call by address. 4. WAP to calculate factorial of a no. using recursion.
4. 1. WAP to take input in an array and print it's sum. 2. WAP to read string and print total no. of characters. 3. WAP which initializes a structure and copy that to another.
5. 1. WAP to create a Class of Student Data and it's objects. 2. WAP to count no of objects using static variable.

6. **1. WAP to demonstrate the use of Constructors and Destructors. 2. WAP which reads the complex no., copy that into other using copy constructors. 3. WAP to implement function Overloading for geometric area. 4. WAP to implement increment and decrement operator overloading. 5. WAP to overload addition operator using friend function.**

7. **1. WAP to implement Single Inheritance. 2. WAP to implement Multiple Inheritance. 3. WAP to create File with constructor Function. 4. WAP to demonstrate the use of Template.**

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS (PROPOSED) FOR 3rd SEM B. TECH. PROGRAMME
PROBLEM DIAGNOSIS & PRACTICES (03105205)
ACADEMIC YEAR 2016-17

Type of Course: Computer Science & Engineering

Prerequisite: Requires Basic Knowledge of Computer

Rationale: This course is design to provide to develop enhance capability to grasp the problem and finding the solution by exhaustive survey of topic concern. It will help to develop their logical abilities.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme					Total
L	T	P		External		Internal			
				TH (E)	PRA(V)	Mid Exam (M)	C.E.	PRA (I)	
0	0	2	1	00	50	0	25	25	100

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- **Practical**; Cr- Credit; E - End Semester Theo. Exam; V - End Semester Viva Exam; M – Mid Semester Exam; P.A.- Progressive Assessment

General Guidelines:

- The course project is a chance for you to apply your programming knowledge to solve a larger problem by developing programs to solve the problem
- Accepts Open ended Projects
- What is to be done is not necessarily well defined
- Team work will be most important
- Efforts MUST be made by each individual member

Topic Selection

- Topic might be suggest by the respective faculties
- Student's ideas would be accepted after thorough review by faculties.
- Innovating solution to any existing problem, function of general computer ideas.
- Ideas should be related to inter-domain problem, concrete solution, pragmatic ideas, Understanding of some business model, exhaustive research of computer technology chronology etc.
- Topic would address any technical problem, Understanding of any complex system, hands-on any mini programming task.
- Research or Technology Development project.
- Introduction to services and business planning.

Evaluation Criteria: Two stage process

Stage 1

- Problem definition Identification of tentative solution/Understanding of model
- Analysis and design of the feasibility.
- Drafting the solutions, logics, flows of work

Stage 2

- Materialize the ideas with chart, report & tools
- Complete implementation/final documentation

Project Team

- A lab-batch will divide itself into multiple teams
- A team should ordinarily have 3 students, at most 4
- Each team to elect a team leader
- Regular meetings and discussions amongst members of a team
- Lab attendance is COMPULSORY
- At least one additional meeting per week for each Team

Continuous Evaluation

It consists of assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Course Outcome:

After learning the course the students shall be able to:

- Basic principles of project management paradigm
- Document /report preparation ,analyzing problem
- To work together in groups, towards a common goal
- To discuss, design, document, review
- To take decisions, to meet deadlines

PARUL UNIVERSITY - FACULTY OF ENGINEERING
DEPARTMENT OF APPLIED SCIENCES
SYLLABUS FOR 2nd Year B. TECH. PROGRAMME (CSE, IT)
Discrete Mathematics (3rd Sem.) (03191202)
ACADEMIC YEAR 2016-17

Type of Course: Engineering Mathematics

Prerequisite: Basic Knowledge of set theory and Graphs

Rationale: To acquire fundamental knowledge and apply in Engineering discipline

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Scheme					Total Marks
L	P	T		External		Internal			
				Theory	Practical	Theory	*C.E.	Practical	
3	0	2	5	60	-	20	20	-	100

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C.E-Continuous Evaluation

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1	Logic, Proofs and counting: Propositional Logic and Propositional Equivalence, Predicates and Quantifiers, Introduction to proofs, Proof Methods , Mathematical Induction, Permutations and combinations	21%	10
2	Relations: Relations and their properties, Difference between relation and function, Representing relation by graph and matrix , Closures of relations, Equivalence relation, Partial Ordering relation	10%	05
3	Group Theory: Binary and n-ary operations, Algebraic System: Definition and Properties, Semi-groups and Monoids, Sub semi-groups and Sub-monoids, Group, Order of a Group, Order of an element, Properties of Group, Permutation Group, Dihedral Group, Cyclic Group, Subgroups	19%	9
4	Graph Theory and its Application: Basic Terminologies of Directed and Undirected Graphs, Matrix Representation of Graphs (Adjacency matrix and Incidence matrix), Graphs Invariants and Isomorphism, Walk, Path, Circuit, Connectedness in Undirected Graphs, Euler and Hamiltonian path and Circuit, Shortest Path in graph: Dijkstra's Algorithm	22%	11
5	Tree and its Algorithm: Definition, Properties of Tree, Distance and Center in a tree, Rooted Tree, Height of a Vertex, Height of a tree, descendent and children of a vertex, leaf, internal vertex, Binary Tree, Properties of Binary Tree, Spanning Tree, Minimum Spanning Tree, Prim's and Kruskal's Algorithms.	18%	08
6	Boolean Algebra: Boolean Functions, Representation Of Boolean Function, Logic Gates, Minimization of Circuit	10%	05

***Continuous Evaluation: Distribution of PA (Progressive Assessment)**

Parameter	Marks	Marks After Conversion
2 Weekly Test (each of 10 marks)	20	10
1 Mid semester examination	50	20
Tutorial and Assignments	5	5
Attendance	5	5
Total	100	40

Tutorial No.	Topic	Teaching Hours
1 (a)	Mathematical Logic & Proof Methods	4
1 (b)	Permutations and combinations	2
2	Relation	4
3	Group Theory	4
4	Graph theory & Its Application	6
5	Tree and Its Algorithms	6
6	Boolean Algebra	4

Text Book:

Discrete Mathematics and its Applications with Combinatory and Graph Theory by Kenneth H Rosen, 6th Edition, Tata McGraw Hill Publishing Company Ltd.

Reference Books:

1. Graph Theory with Applications to Engineering and Computer Science, by Narsingh Deo, PHI
2. Discrete Mathematics with Graph Theory and Combinatorics, T. Veerarajan, The McGraw Hill Company
3. Discrete Mathematics, Swapan Kumar and Bikash Sarkar, Oxford University Press

Course Outcome:

After learning the course the students will be able to:

1. Understand the difference between Relation and function
2. Correlate the concept of Graph theory and Trees with Data Structures in I.T. field
3. Identify the use of Group Theory in Computer Vision/Graphics and Biomedical Image Analysis
4. Minimize circuit using Boolean Algebra
5. Apply the concept of Tree structure in Computer Directory Structure.
6. Apply shortest path Algorithm to real phenomena

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

Department of CDC

SYLLABUS FOR 3rd Sem BTech PROGRAMME

Professional Communication and Life Skills (03193201)

Type of Course: BTech

Prerequisite: Knowledge of English Language studied till 2nd semester

Rationale: Knowledge and application of English is crucial for Organizational Communication.

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Credit	Examination Scheme					Total
Lect	Tut	Lab		External		Internal			
				T	P	T	CE	P	
0	2	0	2	60	0	20	20	0	100

Lect - Lecture, Tut - Tutorial, Lab - Lab, T - Theory, P - Practical, CE - CE, T - Theory, P - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	Email and letter writing: <ul style="list-style-type: none"> Trains students on detailed email and letter writing etiquette. Giving practice and feedback on the same. 	15%	2
2	Listening to workplace communication: <ul style="list-style-type: none"> Provides practice on understanding accents and workplace related conversations. Listening to English conversations of professional context. 	0%	2
3	Reading -- Understanding the theme of a passage and Reading Comprehension: <ul style="list-style-type: none"> Developing ability to understand the theme of a passage. Trains students on reading skill through practice passages. exposing students to jargons and words used in the workplace environment. 	15%	2
4	Idioms and Phrasal Verbs: <ul style="list-style-type: none"> To understand meanings and origin of idioms through illustrative examples. Training of how to use phrasal verbs in different sentences. 	5%	2
5	Speaking - Participating in discussions: <ul style="list-style-type: none"> Encourages to step on to the stage. To discuss various workplace scenarios in groups. 	5%	2
6	Vocabulary: Words that describe all kinds and sorts of people, including: <ul style="list-style-type: none"> Trains terms for self-interest, reactions to the world, attitudes to others, skill and awkwardness, marital states, hatred of man, of woman and of marriage. Provides knowledge about root words and related words. 	15%	4
7	Collocations, Gerund and Infinitives: <ul style="list-style-type: none"> Trains to use various drills and activities. Trains to understand and to use verbs and basic tenses. Tenets of proper English communication and sentence construction. 	5%	2

8	Tenses: <ul style="list-style-type: none"> Forming sentences of different tenses, converting from one form to another, and also their meanings. Trains to use tenses using simple examples. 	5%	2
9	Forms, Speech and Voice: <ul style="list-style-type: none"> Basics of Active-Passive Voice and Direct-Indirect Speech will be discussed through practical demonstrations and examples. Letting students to build a strong base for aptitude based verbal topics. 	5%	2
10	Movie Review writing and speaking: <ul style="list-style-type: none"> Provides training of writing movie review by showing film. To develop speaking skills using presentation of movie review. 	10%	3
11	Classification of sentences and Punctuations: <ul style="list-style-type: none"> To provide knowledge of different types of sentences and their usages in day to day communication. To get knowledge of transforming sentences. 	5%	2
12	Life Skills: <ul style="list-style-type: none"> It discusses about: <ul style="list-style-type: none"> Self – esteem Motivation Creativity Self-management Emotional Intelligence & Stress. 	15%	5

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Technical Communication : Principles And Practice
Sangeetha Sharma, Meenakshi Raman
2. Word Power Made Easy
Norman Lewis
3. Oxford Practice Grammar,
John Eastwood; Oxford University Press

Course Outcome:

After Learning the course the students shall be able to:

1. Write, read and understand workplace English
2. Speak and participate in oral organizational communication