S.E. Semester –III

Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-H 2019)

B.E (Information Technology)							**S.E(SEM :** III)		
Course Name : Applied Mathematics-III							**Course Code :BSC- ITC301**		
Teaching Scheme (Program Specific)					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Practical/Oral (25)**	**Term Work (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	-	**TW**	**125**
3	1	-	4	4	25	75	-	25	
IA: In-Semester Assessment - Paper Duration – 1.5 Hours **ESE: End Semester Examination - Paper Duration - 3 Hours** **The weightage of marks for continuous evaluation of Term work/Report:** Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)									
Prerequisite: Basic Mathematics.									

Course Objective: The course intends to deliver the fundamentals of Set theory Function and Relation and enable students to understand and apply the fundamentals to explain the concept of pigeon hole, recurrence relation and generating function, PO set and Boolean, lattice, arithmetic modulo, Laplace transforms and Inverse Laplace transforms.

Course Outcomes: Upon completion of the course students will be able to:

S. No.	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Apply the Set theory, Function and Relation concepts in real life problem solving.	L1, L2
2	Apply pigeon hole, recurrence relation and generating function concepts in technical problem	L1, L2)
3	Apply PO set and Boolean lattice concepts in various applications.	L1, L2, L3
4	Apply arithmetic modulo to design security problems.	L1, L2, L3
5	Apply Laplace transform for analyzing continuous time signals.	L1, L2, L3
6	Apply Inverse Laplace transform to different applications.	L1, L2, L3

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Sets, relations and functions** Basic operations on sets, Cartesian products, disjoint union (sum), and power sets. Different types of relations, their compositions and inverses. Different types of functions, their compositions and inverses.	7	L1, L2
2	**Introduction to Counting:** Basic counting techniques – inclusion and exclusion, pigeon-hole principle, permutation, combination, Introduction to recurrence relation and generating functions.	7	L1, L2

3	**Partially ordered sets:**	6	L1, L2, L3
	Complete partial ordering (Hasse Diagram), chain, and lattice, complete, distributive, modular and complemented lattices. Boolean and pseudo Boolean lattices.		
4	**Modular Arithmetic:**	9	L1, L2, L3
	Modulo, Congruence, Primes and the Sieve of Eratosthenes, Testing for primes,Prime Number Theorem, Euler's theorem, Fermat's little theorems, Chinese remainder theorem.		
5	**Transform Calculus-I**	8	L1, L2, L3
	Laplace Transform, Properties of Laplace Transform, Laplace transform of periodic functions, Evaluation of integrals by Laplace transform.		
6	**Transform Calculus-II**	8	L1, L2, L3
	Inverse Laplace transform by different methods, convolution theorem, Solving ODEs and PDEs by Laplace Transform method.		
	Total Hrs.	45	

Books and References:

S.No.	Title	Authors	Publisher	Edition	Year
1	Introductory methods of numerical analysis	S.S. Sastry	PHI	4th Edition	2005
2	Advanced Engineering Mathematics	Erwin kreyszig	John Wiley & Sons	9th Edition	2006
3	Engineering Mathematics for first year	Veerarajan T	Tata McGraw-Hill, New Delhi	3rd Edition	2008
4	Higher Engineering Mathematics	Ramana B.V	Tata McGraw Hill, New Delhi	11th Edition	2010
5	Higher Engineering Mathematics	B.S. Grewal	Khanna Publishers	36th Edition	2010
6	A text book of Engineering Mathematics	N.P. Bali and Manish Goyal	Laxmi Publications	9th Edition	2008
7	Elements of Discrete Mathematics	C. L. Liu	Tata McGraw-Hill	2nd Edition	2000
8	Discrete Mathematics: Proof Techniques and Mathematical Structures	R. C. Penner	World Scientific	-	1999
9	Discrete Mathematics and its Applications	K. H. Rosen	Tata McGraw-Hill	6th Edition	2007

Online References:

S. No.	Website Name	URL	Modules Covered
1.	www.nptel.ac.in	https://nptel.ac.in/courses/111106086/Lecture2.pdf	M1, M2,M3
2.	www.cousera.org	https://www.coursera.org/	M4,M5,M6
3.	www.wikipedia.org	https://www.wikipedia.org/	M1, M2,M3 , M4,M5,M6
4.	www.nptel.ac.in	https://nptel.ac.in/courses/111106086/Lecture2.pdf	M1, M2,M3

S.E. Semester –III
Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS- H 2019)

B.E (Information Technology)							**S.E (SEM :** III)		
Course Name : Data Structure and Algorithm							**Course Code :PCC-ITC302**		
Teaching Scheme (Program Specific)					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Practical/Oral (25)**	**Term Work (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	**PR**	**TW**	**150**
3	--	2	5	4	25	75	25	25	
IA: In-Semester Assessment - Paper Duration – 1.5 Hours **ESE: End Semester Examination - Paper Duration - 3 Hours** **The weightage of marks for continuous evaluation of Term work/Report:** Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)									
Prerequisite: C Programming Language									

Course Objective: : The course intends to deliver the fundamentals of data structures and analysis of various algorithms by providing a platform to learn, compare and apply different data structures in real world scenario.

Course Outcomes: Upon completion of the course students will be able to:

S. No.	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Evaluate and analyze algorithms and data structures in terms of time and memory complexity of basic operations.	L1, L2
2	Appropriate sorting and searching technique to specified problem definition.	L1, L2, L3
3	Implement various linked operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures to solve problems	L1, L2, L3,L4
4	Develop the stack and queue based programs to understand working principles of compiler and Operating system	L1, L2, L3
5	Solve problems computationally through the application of Trees and graph	L1, L2, L3,L4
6	Formulate new solutions for programming problems or improve existing code using various optimization algorithms and data structures,	L1, L2, L3,L4

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
01	**Introduction to Data Structure and Algorithms.** Need of Data structures, Types of data structure, Introduction to Analysis of Algorithms: Algorithms development, Complexity analysis techniques, Asymptotic Notations, Recursion	4	L1, L2

02	**Sorting and Searching Techniques** Introduction to Sorting: Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Radix sort. Analysis of Sorting Techniques. Introduction to Searching: Linear search, Binary search, Hashing techniques and Collision resolution techniques	**7**	L1, L2, L3,L4
03	**Linked List** Basic concept of Linked List, Memory Allocation & De-allocation of Linked list, Singly Linked list, Doubly Linked list, Circular linked list, Application of linked list.	**7**	L1, L2, L3
04	**Stack and Queue** Introduction to Stack, Stack as ADT, Stack implementation using array and Linked List, Operations on stack, Polish notations, Applications of stack. Introduction to Queue, Queue as ADT, Operations on Queue, Queue implementation using array and Linked List, Linear Queue and Circular queue, Priority Queue, De-queue, Application of Queues	**13**	L1, L2, L3,L4
05	**Tree and Graph** Tree: Introduction to Trees, Types of Trees, Binary tree representation, Operations on binary tree, Traversal of binary tree, Binary search tree. AVL tree. Graph: Introduction to Graph, Graph Representation, Graph traversal: Depth first search(DFS) and Breadth First search(BFS), Minimum Spanning Tree: Prim's & Kruskal's, Application of Trees and Graphs	**10**	L1, L2, L3
06	**Text Processing Algorithms** Pattern-Matching Algorithms- The Brute Force algorithm, The Boyer-Moore Algorithm, The Knuth-Morris-Pratt Algorithm, Tries: Standard Tries, compressed Tries, Suffix Tries, Search Engine Indexing	**04**	L1, L2, L3,L4
	Total Hrs.	45	

Books and References:

S. No	Title	Authors	Publisher	Edition	Year
1	Data structures using C	Tenenbaum, Langsam, Augenstein	Pearson	Second	2015
2	Data Structures using C	Reema Thareja	Oxford	Second	2015
3	C and Data structures	P. S. Deshpande , O. G. Kakde	Dreamtech press.	Third	2010
4	ALGORITHMS Design and Analysis	Harsh Bhasin	OXFORD	First	2015
5	Computer Algorithms	Ellis Horowitz and Sartaj Sahni,	Universities Press	First	2008
6	Data Structures and Algorithms in C++	Roberto Tamassia, Michael T. Goodrich	Wiley	Second	2011

Online References:

S. No.	Website Name	URL	Modules Covered
1.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/computer_logical_organization/digital_number_system	M1
2.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/digital_circuits/digital_circuits_k_map_method	M2
3.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/computer_logical_organization/combinational_circuits.htm	M3
4.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/computer_logical_organization/sequential_circuits.htm	M4
5.	https://www.electronics-tutorial.net	https://www.electronics-tutorial.net/digital-logic-families/	M5
6.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/digital_circuits/digital_circuits_programmable_logic_devices.htm	M6

List of Practicals/Experiments:

S. No.	Type of Experiment	Title of Experiment	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Basic Experiments**	Selection and insertion sort.	2	L1, L2, L3
2		Merge sort and Quick Sort	2	L1, L2, L3
3		Linear and Binary Search Technique	2	L1, L2, L3
4	**Design Experiments**	Singly Linked List	2	L1, L2, L3
5		Implementation of Doubly Linked list.	2	L1, L2, L3
6		Implementation of Stack using array and Linked List.	2	L1, L2, L3,L4
7		Implementation of Linear Queue using array and Linked List.	2	L1, L2, L3,L4
8		Implementation of Circular and Priority Queue.	2	L1, L2, L3,L4
9	**Advanced Experiments**	Implementation of Binary Search Tree with insertion, deletion and Traversal operations.	2	L1, L2, L3,L4
10		Implementation of Graph Traversal Techniques: DFS & BFS	2	L1, L2, L3,L4
11		Implementation of Text Processing Algorithms	2	L1, L2, L3,L4
12	**Mini/Minor Projects/ Seminar/ Case Studies**	**Mini Project:** Develop the code of syntax analyzer for C programming language using stack based operation	6	L1, L2, L3,L4
		Mini Project: Develop the code for job scheduling using Queue based operation		
13		**Case study**: NP**,** NP-Complete **and** NP-Hard	2	L1, L2, L3,L4
		Total Hrs.	30	

S.E. Semester –III
Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-H 2019)

B.E. (Information Technology)							**S.E. (SEM :** III)		
Course Name : Digital Circuit Design							**Course Code : ESC-ITC303**		
Teaching Scheme (Program Specific)					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Practical/Oral -**	**Term Work (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	**OR**	**TW**	**150**
3	1	2	6	5	25	75	25	25	
IA: In-Semester Assessment - Paper Duration – 1.5 Hours **ESE: End Semester Examination - Paper Duration - 3 Hours**									
The weightage of marks for continuous evaluation of Term work/Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)									
Prerequisite: Fundamentals of BJT and Logic signal levels.									

Course Objective: The course intends to deliver the fundamental knowledge of Digital logic, number system, conversions and Boolean algebra, apply and analyze the concept to create and troubleshoot a broad range of combinational circuits using digital ICs, flip-flops, counters, and registers. To prepare students to perform the analysis and design of various digital electronic circuits.

Course Outcomes: Upon completion of the course students will be able to:

S. No	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Understand and develop a digital logic and apply it to solve real life problems.	L1,L2
2	Understand and use of K-Map and Tabular method for simplification of logical expression.	L1, L2, L3,L4
3	Using several methods to minimize the Boolean expression using Boolean algebra and design it using logic gates.	L1, L2, L3
4	Analysis and design of combinational circuit.	L1, L2, L3,L4
5	Sequential circuits design and development.	L1, L2, L3,L4
6	Understand the characteristics of digital ICs and various design examples for PLDs.	L1, L2

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
0	**Prerequisite**	**02**	L1,L2
	Introduction to bipolar junction transistor and configurations, Representation of analog signal level in to digital signals through basic TTL circuits.		

01	**Number Systems and codes**	**06**	L1, L2, L3,L4
	Representation of signed numbers: fixed and floating point numbers, Introduction to Number systems, Binary Number systems, Signed, Binary Numbers, Binary, Octal, Decimal and Hexadecimal number, Systems and their conversion, Binary arithmetic using compliments, Gray Code, BCD Code, Excess-3 code, ASCII Code. inter-conversion of codes		
02	**Logic Design and Minimization Techniques**	**06**	L1, L2, L3,L4
	Introduction to basic logic gates, Operations on NAND and NOR gates, XOR and X - NOR operations, understanding Boolean Algebra and its Standard representation of logic functions- SOP and POS forms. Min term and Max term. Don't care conditions. Simplification of logic functions-using Karnaugh Map (K- Map) for 2, 3 and 4 variables. Quine-McCluskey tabular method -four variables.		
03	**Combinational logic Circuit and design**	**06**	L1, L2, L3
	Half- Adder, Full Adder, Half Subtractor or Full Sub tractor, BCD adder using and subtractor using IC 7483, Multiplexers (MUX): Working of MUX, Implementation of expression using MUX (IC 74153, Demultiplexers IC 74151). Demultiplexers (DEMUX):- Implementation of expression using DEMUX, Decoder (IC 74138)		
04	**Sequential logic Circuits and design**	**11**	L1, L2, L3,L4
	Flip-Flops: SR, J-K, T and D types flip flops. Preset and clear inputs. Counters : Types of counters- Asynchronous and Synchronous .Up, Down and Up-Down Counters Asynchronous Counter-2,3 and 4 Bit Up ,down and Up/Down Counters. Synchronous Counter-2, 3 and 4 Bit Up, down and Up-Down Counters. Registers-SISO, SIPO, PISO AND PIPO 4 –BIT REGISTER. Shift Register-Right shift, left shift and Bidirectional Register. Application of shift Register-Ring and Twisted Ring Counter.		
05	**Logic Families**	**06**	L1, L2
	Characteristics of digital ICs: Speed of operation, figure of merit, Fan out, current and voltage parameters, noise immunity. Logic operations and load considerations for RTL, DTL, TTL and ECL.		
06	**Programmable Logic Devices**	**08**	L1, L2, L3,L4
	Programmable Logic Devices: PLD: PLA- Input, Output Buffers, AND, OR, Invert/ Non-Invert Matrix. Design Example- Any 4 Variables SOP function using PLDs. Study of basic architecture of FPGA CPLD. Case Study		
	Total Hrs.	45	

Books and References:

Title	Authors	Publishers	Edition	Year
Modern Digital Electronics	R. P. Jain	Tata McGraw Hill	4th	2009
Digital Logic and computer Design	M. Morris Mano	Pearson education India	4th	2016
Fundamentals of Digital Circuits	A Anand Kumar	Prentice Hall India	2nd	2009
Digital Electronics	Subrata Ghosal	Cengage Learning	1st	2012
Digital Electronics Principles and Integrated Circuits	Anil K. Maini	Wiley India	1st	2007

Online References:

S. No.	Website Name	URL	Modules Covered
1.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/computer_logical_organization/digital_number_system	M1
2.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/digital_circuits/digital_circuits_k_map_method	M2
3.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/computer_logical_organization/combinational_circuits.htm	M3
4.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/computer_logical_organization/sequential_circuits.htm	M4
5.	https://www.electronics-tutorial.net	https://www.electronics-tutorial.net/digital-logic-families/	M5
6.	https://www.tutorialspoint.com/	https://www.tutorialspoint.com/digital_circuits/digital_circuits_programmable_logic_devices.htm	M6

List of Practicals/Experiments:

S.No.	Type of Experiment	Title of Experiment	Total Hours	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Basic Experiments**	Verify the truth table of logic gates (Basic and Universal Gates)	2	L1, L2
2		Realization of Boolean algebra using gates	2	L1, L2, L3
3	**Design Experiments**	Design (truth table, K map) and implement 4 bit Code converter. Binary to gray and vice versa. ii. BCD to Excess-3 and vice versa	2	L1, L2, L3
4		Design of Half Adder and Subtractor.	2	L1, L2, L3,L4
5		Realization of Boolean expression using multiplexer IC 4151/74153.	2	L1, L2, L3
6		To verify and observe the operation of JK and T flip-flops	2	L1, L2, L3
7		Implementation of Encoder and Decoder using Gates	2	L1, L2, L3,L4
8		Verify the operation of 4- bit magnitude comparator	2	L1, L2, L3
09	**Advanced Experiments**	To design SISO or SIPO shift registers	2	L1, L2, L3,L4
10		Design and implement 2-bit up counter.	2	L1, L2, L3,L4
11	**Mini/Minor Projects/ Seminar/ Case Studies**	Case study: Study of various logic families such as TTL, RTL.	2	L1, L2, L3,L4
12		Case study: To study Programmable logic devices (PLD)	2	
13		Case study: Evaluating and observing Boolean expression using PALs and PLAs.	2	
14		Project: 1. To design automated system for washing machine. 2. To design control system for lift	4	
		Total Hrs.	30	

S.E. Semester –III

Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-H 2019)

B.E (Information Technology)							**S.E (SEM :** III)		
Course Name : Database Management System							**Course Code :PCC-ITC304**		
Teaching Scheme (Program Specific)					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Practical/Oral -**	**Term Work (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	**PR**	**TW**	**150**
3	-	2	5	4	25	75	25	25	

IA: In-Semester Assessment - Paper Duration – 1.5 Hours

ESE: End Semester Examination - Paper Duration - 3 Hours

The weightage of marks for continuous evaluation of Term work/Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)

Prerequisite: Any Programming Language

Course Objective: The course intends to deliver the fundamentals of database management systems, understand & create Entity Relationship Model with application of Relational Algebra and basic SQL. Create systematic database and logical design through normalization, recovery techniques and analyze query processing and optimizer.

Course Outcomes: Upon completion of the course students will be able to:

S. No.	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Explain the features of database management systems and Relational database	L1, L2
2	Design conceptual models of a database using ER modeling for real life applications.	L1, L2, L3,L4
3	Construct queries in Relational Algebra and create a RDBMS for a real life application, with constraints and keys, using SQL.	L1, L2, L3
4	Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database.	L1, L2, L3
5	Explain and understand the concept of a transaction and how ACID properties are maintained when concurrent transaction occurs in a database	L1, L2, L3
6	Measure query costs and design alternate efficient paths for query execution	L1, L2, L3,L4

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
01	**Prerequisite**		
	Basic knowledge of operating systems and file systems, Any programming Language	**01**	L1, L2,
02	Introduction to Database Concepts	**03**	L1, L2,
	Introduction, Characteristics of databases, File system V/s Database system, Users of a Database System, Data Models, Schemas, and Instances, Three-Tier Architecture and Data Independence, Database Administrator (DBA), Role of a DBA		

03	**Entity– Relationship Data Model**	**05**	L1, L2, L3,L4
	Conceptual Modeling of a database, The Entity-Relationship (ER) Model, Entity Types, EntitySets, Attributes, and Keys, Relationship Types, Relationship Sets, Weak Entity Types Generalization, Specialization and Aggregation, Extended EntityRelationship (EER) Model.		
04	**Relational Model And SQL Overview**	**09**	L1, L2, L3
	Relational model concepts, Constraints Relational Algebra: Unary, Binary and Set theory relational operations SQL: Data definition commands, attribute constraints, SET operations, Aggregate functions, Null Values, Nested subqueries, complex queries, Views, Data control commands, Data manipulation commands: Insert, Update, Delete, Select Defining Stored Procedures, Jobs and Scheduling. Indexes and partitioning of data files.		
05	**Relational Database Design**	**07**	L1, L2, L3
	Design guidelines for relational schema, Functional Dependencies, Definition of Normal Forms- 1NF,2NF, 3NF, BCNF, Converting Relational Schema to higher normalforms.		
06	**Transactions Management Concurrency and Recovery**	**12**	L1, L2, L3
	Transaction Concepts, Transaction state, ACID properties,concurrent executions, Serializability,Recovery, Characterizing Schedules Basedon Serializabilityand Recoverability , Transaction Support in SQL , Concurrency control: Lock based , Timestamp based, validation based protocol, Deadlock Handling, Recovery system: Failure classification, Recovery and Atomicity, Log based recovery, Shadow paging , ARIES Recovery Algorithm		
07	**Query Processing and Optimization**	**08**	L1, L2, L3,L4
	Query processing: Steps involved in query processing, measures of query cost, algorithms for SELECT and PROJECT operations Query Optimization: Overview, Transformation of relational expressions, Estimating statistics, Choice of evaluation plan, Application & Case study		
	Total hrs.	**45**	

Books and References:

S. No.	Title	Authors	Publisher	Edition	Year
1	Database System Concepts	Korth,Slberchatz, Sudarshan	McGraw – Hill	6th Edition	2012
2	Fundamentals of Database Systems	Elmasri and Navathe	Pearson Education	6th Edition	2014
3	Database Management Systems	G. K. Gupta	McGraw – Hill	6th Edition	2011
4	An Introduction To Database Systems	C. J. Date, A. Kannan, S. Swamynathan	Pearson Education	8th Edition	2007

Online References:

S. No.	Website Name	URL	Modules Covered
1.	https://beginnersbook.com	https://beginnersbook.com/2015/04/dbms-introduction/	M1
2.	https://beginnersbook.com	https://beginnersbook.com/2015/04/data-models-in-dbms/	M2
3.	https://beginnersbook.com	https://beginnersbook.com/2015/04/relational-model-in-dbms/	M3
4.	https://beginnersbook.com	https://beginnersbook.com/2015/05/normalization-in-dbms/	M4
5.	https://beginnersbook.com	https://beginnersbook.com/2017/09/transaction-management-in-dbms/	M5
6.	https://www.tutorialspoint.com	https://www.tutorialspoint.com/distributed_dbms/distributed_dbms_relational_algebra_query_optimization.htm	M6

List of Practicals/Experiments:

Practical Number	Type of Experiment	Practical/ Experiment Topic	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Basic Experiments**	Study of Query Processing and Optimization.	2	L1, L2
2		Study of Normalization.	2	L1, L2
3	**Design Experiments**	Construct an ER and EER diagram for given case study	2	L1, L2, L3
4		Implementation of Data Definition Commands with Constraints.	4	L1, L2, L3
5		Implementation of Data Manipulation Commands.	4	L1, L2, L3
6		Implementation of DCL.	2	L1, L2, L3
7		Implementation of Nested Queries & Join Queries	4	L1, L2, L3
8		Implementation of Views	2	L1, L2, L3
9	**Advanced Experiments**	Implementation of Stored Procedure and Trigger	2	L1, L2, L3
10		Implementation of Database Transaction	2	L1, L2, L3
11	**Mini/Minor Projects/ Seminar/ Case Studies**	Mini Project Design a Mini Project	4	L1, L2, L3,L4
		Total Hrs.	**30**	

S.E. Semester –III

Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-H 2019)

B.E. (Information Technology)							**S.E (SEM :** III)		
Course Name : Programming Skill I (Java)							**Course Code : PCC- ITC305**		
Teaching Scheme (Program Specific)					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Practical/Oral (25)**	**Term Work (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	**PR**	**TW**	**150**
3	--	2	5	4	25	75	25	25	

IA: In-Semester Assessment - Paper Duration – 1.5 Hours

ESE: End Semester Examination - Paper Duration - 3 Hours

The weightage of marks for continuous evaluation of Term work/Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)

Prerequisite: Computer Basics, Problem Solving and Logic building skills using any programming language

Course Objective: The course intends to deliver the fundamentals of object oriented programming features, building blocks along with constructors, and to learn the principles of inheritance, interface and exception handling Mechanisms, multithreading and GUI Programming.

Course Outcomes: Upon completion of the course students will be able to:

S.No.	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Describe object oriented features	L1
2	Define Constructor and its types to instantiate an object	L1, L2
3	Recognize type of inheritance/interface and apply to solve problem definition	L1, L2, L3
4	Use inbuilt exception classes and demonstrate new need based exceptions w.r.t problem definition	L1, L2, L3
5	Create multiple threads and demonstrate multitasking	L1, L2, L3 ,L4
6	Design GUI and handle events w.r.t problem definition	L1, L2, L3 ,L4

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Fundamentals of Object Oriented features** Difference between procedures oriented & object oriented programming. Features of Java programming. Introduction to Class, Objects, Abstraction, Encapsulation, Inheritance and Polymorphism. Keywords, Data types, Variables, Operators, Expressions, Types of variables and methods. Control Statements: If Statement, If-else, Nested if, switch Statement, break, continue. Iteration Statements: for loop, while loop, and do-while loop.	6	L1, L2, L3

2	**Constructor, Arrays, String and String Buffer, Vector** Defining an Array, Initializing & Accessing Array, Multi –Dimensional Array, Operation on String, Mutable & Immutable String, Using Collection Bases Loop for String, Tokenizing a String, Creating Strings using String Buffer. Defining vector & performing vector operations.	6	L1, L2, L3
3	**Inheritance and Interface** Use and Benefits of Inheritance in OOP, Types of Inheritance in Java, Inheriting Data members and Methods , Role of Constructors in inheritance , Overriding Super Class Methods ,Use of "super", Polymorphism in inheritance, Type Compatibility and Conversion. Inner classes. Implementing interfaces.	6	L1, L2, L3
4	**Packages and Exception Handling** Organizing Classes and Interfaces in Packages , Package as Access Protection , Defining Package , Import and Static Import Naming Convention For Packages Exception Handling: The Idea behind Exception ,Exceptions & Errors ,Types of Exception ,Control Flow In Exceptions, JVM reaction to Exceptions ,Use of try, catch, finally, throw, throws in Exception Handling ,In-built and User Defined Exceptions, Checked and Un-Checked Exceptions.	7	L1, L2, L3
5	**Multithreading & Applet** Understanding Threads, Needs of Multi-Threaded Programming, Thread Life-Cycle, Thread Priorities, Synchronizing Threads, Inter Communication of Threads, Applet fundamentals, Applet lifecycle, Creating applet, paint method Applet tag, Applet class methods, , Event handling using Event Listeners	9	L1, L2, L3,L4
6	**GUI Programming & JDBC** Introducing Swing: AWT vs Swings, Components and Containers, Swing Packages, A Simple Swing Application, Painting in Swing, Designing Swing GUI Application using Buttons, Labels, Checkboxes, Radio Buttons, JScrollPane, JList, JComboBox, Trees, Tables Scroll pane Menus and Toolbars Introduction to JDBC, Introduction to JSP and Servlet.	11	L1, L2, L3 L1, L1,L2, L3,L4
Total Hrs.		45	

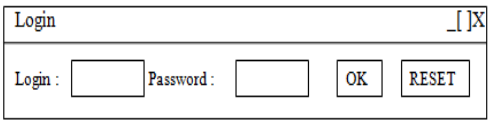
Books and References:

S. No	Title	Authors	Publisher	Edition	Year
1	Programming with java A primer	E. Balgurusamy	Tata McGraw Hill Publication	Fifth edition	2015
2	Computer Programming in Java	Dr.G.T.Thampi, Junaid Khateeb	Wiley Publication.	First Edition	2011
3	Java-The Complete Reference	Herbert Schildt	Tata McGraw Hill Publication	Seventh Edition	2011
4	Head First Java	Bert Bates, Kathy Sierra	Sierra Publisher: O'Reilly Media	Second Edition	2005

Online References:

S. No.	Website Name	URL	Modules Covered
1.	https://www.programiz.com https://www.javatpoint.com	https://www.programiz.com/java-programming https://www.javatpoint.com/java-programs https://www.javatpoint.com/java-oops-concepts	M1
2.	https://www.javatpoint.com	https://www.javatpoint.com/java-constructor https://www.javatpoint.com/array-in-java https://www.javatpoint.com/java-string	M2
3.	https://www.javatpoint.com	https://www.javatpoint.com/inheritance-in-java https://www.javatpoint.com/interface-in-java	M3
4.	https://www.javatpoint.com	https://www.javatpoint.com/exception-handling-in-java	M4
5.	https://www.javatpoint.com	https://www.javatpoint.com/multithreading-in-java https://www.javatpoint.com/java-applet	M5
6.	https://www.javatpoint.com	https://www.javatpoint.com/java-awt https://www.javatpoint.com/java-swing https://www.javatpoint.com/java-networking	M6

List of Practicals/Experiments:

Practical No.	Type of Experiment	Practical/Experiment topic	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Basic experiment**	A) Write a Java program to display the default value of all primitive data types in Java. B) Write a Java program that prints all real solutions to the quadratic equation ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminate b2-4ac is negative, display a message stating that there are no real solutions.	2	L1, L2, L3
2		A) Write a java program to demonstrate String Functions B) Write a java program to count number of alphabets, digits, special symbols, blank spaces and words from the given sentence.	2	L1, L2, L3
3		A)Write a java program to demonstrate Constructors, Parameterized Constructors and Constructor Overloading B) Write a java programs to add n strings in a vector array. Input new string and check whether it is present in the vector. If it is present delete it otherwise add it to the vector.	2	L1, L2, L3
4	**Design Experiments**	A) Design following methods to implement menu driven for following tasks. a) To find Factorial of a number b) To find X^Y c) To print n Fibonacci numbers d) To find reverse of number	2	L1, L2, L3
5		Design and implement Java Program which organize information of TCET using interface and inheritance	2	L1, L2, L3 ,L4
6		A) Write a Java Program to calculate the Result. Result should consist of name, seat no, date, center number and marks of semester three exam. Create a User Defined Exception class Marks Out Of Bounds Exception, If Entered marks of any subject is greater than 100 or less than 0, and then program should create a user defined Exception of type Marks Out Of Bounds Exception and must have a provision to handle it. B) Write java program to create a user defined Exception class known as Pay Out Of Bounds Exception. Organization does not offer basic salary less than 8000. If entered salary is less than 8000 then program should create an Exception of Type Pay Out Of Bounds Exception. Program should calculate gross salary by considering salary parameters such as DA, HRA, CA, TA, Professional tax, TDS, PF..etc	2	L1, L2, L3 ,L4
7		A) Write a java program to print first 20 prime numbers and 15 Fibonacci numbers by creating two child threads and also print the total time taken by each thread for the execution. B) Write java program to implement the concept of Thread Synchronization	2	L1, L2, L3 ,L4
8	**Advanced Experiments**	On Applet: Take a Login and Password from the user and display it on the third Text Field which appears only on clicking OK button and clear both the Text Fields on clicking RESET button Perform same using AWT and Swings as well 	2	L1, L2, L3 ,L4

Practical No.	Type of Experiment	Practical/Experiment topic	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
9		Write a program to create a window with four text fields for the name, street, city and pincode with suitable labels. Also windows contain a button MyInfo. When the user types the name, his street, city and pincode and then clicks the button, the types details must appear in Arial Font with Size 32, Italics.	2	L1, L2, L3 ,L4
10		Write a program to implement Java Database connectivity	2	L1, L2, L3 ,L4
11		Implementation of Servlet and JSP	2	L1, L2, L3 ,L4
12		**Case Study On:Socket Programming**	2	L1, L2, L3 ,L4)
13	**Mini Project**	Subject to students own ideas for implementations (GUI is mandatory)	6	L1, L2, L3 ,L4
Total Hrs.			30	

S.E. Semester –III

Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS- H 2019)

B.E (Information Technology)							**S.E (SEM :** III)		
Course Name : Seminar/Workshop/Professional Training							**Course Code :SI 301**		
Teaching Scheme (Program Specific)					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Practical/Oral (25)**	**Term Work (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	**--**	**TW**	25
--	--	2	2	1	--	--	--	25	

IA: In-Semester Assessment

ESE: End Semester Examination

The weightage of marks for continuous evaluation of Term work/Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)

Prerequisite: Basics of Computer

Course Objective: The course intends to deliver the fundamental knowledge of recent trends in various IT domain like software programming, machine learning, web technology, information communication technology and database design.

Course Outcomes: Upon completion of the course students will be able to:

S. No.	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Gain knowledge about different programming languages & automated-semi automated tools used for Developing software.	L4,L5
2	Analyzes and applies security in computer and networking infrastructures while detecting any legal and ethical breaches, classify various attacks and identify various tool for cyber security	L4,L5
3	To realize the area of computer science which involves teaching computers to do things naturally through experience.	L4,L5
4	Design dynamic website using advanced web technologies and tools	L4,L5,L6
5	Design Database application with current tools and Technology	L4,L5,L6

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Software Programming & Development**	6	L4,L5,L6
	• Seminar on Emerging technologies used in the Industry • Hands on workshop on Industry special skill • Industry Connect/ Alumni Connect Seminar		
2	**Information & Communication Technology**	6	L4,L5
	• Seminar on Emerging technologies used in the Industry • Hands on workshop on Industry special skill • Industry Connect/ Alumni Connect Seminar		
3	**Machine Learning & Artificial Intelligence**	6	L4,L5,L6

	• Seminar on Emerging technologies used in the Industry • Hands on workshop on Industry special skill • Industry Connect/ Alumni Connect Seminar		
4	**Web Technology & E Commerce**	6	L4,L5,L6
	• Seminar on Emerging technologies used in the Industry • Hands on workshop on Industry special skill • Industry Connect/ Alumni Connect Seminar		
5	**Database Technology**	6	L4,L5,L6
	• Seminar on Emerging technologies used in the Industry • Hands on workshop on Industry special skill • Industry Connect/ Alumni Connect Seminar		
	Total Hrs.	**30**	

Books and References:

S. No	Title	Authors	Publisher	Edition	Year
1.	Cryptography and network security	William Stallings	Prentice Hall	5th	2011
2.	Machine Learning	Anuradha Srinisaragahven Vincy Joseph	Wiely	1st	2017
3.	The Complete Reference HTML & CSS	Thomas A Powel	McGraw Hill Professional	5th	2010

Online References:

S. No.	Website Name	URL	Modules Covered
1.	https://nptel.ac.in	https://nptel.ac.in/courses/106105031/	M2
2.	Coursera.org	Coursera.org/learn/machine learning	M3
3.	W3schools.com	W3schools.com/html	M4

S.E. Semester –III

Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-H 2019)

B.E (Information Technology)							**S.E (SEM :** III)		
Course Name : Environmental Science							**Course Code : MC301**		
Teaching Scheme (Program Specific)					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Presentation (25)**	**Report (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	**AC**	**AC**	**25**
1	-	-	1	Non credit	--	--	--	**25**	

IA: In-Semester Assessment

ESE: End Semester Examination

The weightage of marks for continuous evaluation of Term work/Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)

Prerequisite: Basic Sciences

Course Objective: The course intends to deliver the fundamentals of multidisciplinary nature of environmental studies, importance and usage of natural resources, ecosystem, Bio-diversity at global, national, local levels. Also to analyze the causes, effects and control measures in environmental pollution, correlation between Social issues and environment.

Course Outcomes: Upon completion of the course students will be able to:

SN	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Describe the impact of human population on environment.	L1, L2
2	Describe the Role of an individual in conservation of natural resources	L1, L2
3	Describe classification of Biodiversity in India	L1, L2
4	Understand different budgeting for planning and controlling cost	L1, L2 ,L3
5	Analyze impact of environmental pollution on all living and non-living beings	L1, L2, L3,L4
6	Understand the impact of sustainable development, environmental ethics and climate change	L1, L2, L3,L4

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**The Multidisciplinary nature of environmental studies and Human population & the environment**	**2**	L1, L2
	The Multidisciplinary nature of environmental studies: Definition, scope and importance. Need for public awareness **Human population and the environment:** • Population growth, variation among nations • Population Explosion- family welfare program • Environment and human health • Women and child welfare Case study on Role of information technology in environment and human health		

2	**Natural resources**	**3**	L1, L2
	Natural resources: Renewable and non-renewable resources **Natural resources & associated problems:** a. Forest resources: b. Water resources: c. Mineral resources: d. Food resources: e. Energy resources: **Role of an individual in conservation of natural resources:** Equitable use of resources for sustainable lifestyles.		
3	**Ecosystems**	**2**	L1, L2
	Ecosystems: • Concepts of an ecosystem. • Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries) Case study on various ecosystems in India.		
4	**Biodiversity and its conservation**	**2**	L1, L2, L3
	Biodiversity and its conservation: • Introduction-Definition: genetic species and ecosystem diversity • Bio-geographical classification of India • Value of biodiversity : Consumptive use, productive use, social, ethical, aesthetic and option values • Bio-diversity at global, national, local levels • India as a mega diversity nation Case study on Bio diversity in India.		
5	**Environmental Pollution**	**3**	L1, L2, L3,L4
	Environmental Pollution : • Causes, effects and control measures of: a. Air pollution b. Water pollution c. Soil pollution • Solid waste management: Causes, effect and control measures of urban and industrial wastes • Role of an individual in prevention of pollution • Pollution case studies • Disaster management: floods, earthquake, cyclone and land slides • Case study on Carbon Credits for pollution prevention		
6	**Social issues and environment**	**3**	L1, L2, L3,L4
	Social issues and environment: • From unsustainable to sustainable development • Urban problems related to energy • Water conservation, rain water harvesting, watershed management • Environmental ethics: issues and possible solution Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. • Consumerism and waste products • Environment protection act • Introduction to Green IT Case study on Environmental Ethics		
	Total Hrs.	**15**	

Books and References

Sr. No	Title	Authors	Publisher	Edition	Year
1	Text book of environmental studies	Erach Bharucha	Universities Press/Orient Blackswan	Second Edition	2011
2	Environmental Studies	D L Manjunath	Pearson	Second Edition	2009
3	Environmental Studies	Benny Joseph	Tata McGRAW HILL	Second Edition	2009
4	Environmental Studies	Anindita Basak	Pearson	Second Edition	2009

Online References:

Sr. No.	Website Name	URL	Modules Covered
1.	www.edx.com	https://www.edx.org/course/environmental-protection-and-sustainability-3	M1
2.	www.study.com	https://study.com/academy/lesson/conservationists-vs-preservationists-definition-differences.html	M2
3.	www.biodiversityfinance.net	https://www.biodiversityfinance.net/news-and-media/investment-environment-ensure-sustainable-development-chilel	M3
4.	www.toppr.com	https://www.toppr.com/guides/biology/environmental-issues/types-of-environmental-issues/	M4
5.	www.khanacademy.com	https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-human-impact-on-ecosystems/v/conservation-and-the-race-to-save-biodiversity	M5
6.	www.fern.org	https://www.fern.org/climate/carbon-trading/	M6

S.E. Semester –III

Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-H 2019)

B.E (Information Technology)							**S.E. (SEM : III)**		
Course Name : Professional Skills III (Basic Technology Skills-SQL/PLSQL)							**Course Code : HSD-ITPS301**		
Teaching Scheme (Holistic Student Development– HSD					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Presentation (50)**	**Report (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	**AC**	**AC**	
1	--	2	3	2	--	--	50	25	**75**
AC- Activity Evaluation **Total weightage of marks for continuous evaluation of Term work/Report:** Formative (40%), Timely Completion of Practical (40%) and Attendance/Learning Attitude (20%).									
Prerequisite: Database and Programming Language									

Course Objective: The course intends to deliver the fundamentals of PL/SQL and helps them understand the benefits of programming language. Students will learn to create PL/SQL blocks of application code, apply PL/SQL programming constructs with conditional control statements ,procedures and functions .

Course Outcomes: Upon completion of the course students will be able to:

S.No.	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	Configure PL/SQL environment and differentiate between SQL and PL-SQL.	L1,L2
2	Write a simple PL/SQL program and execute it	L1, L2, L3,L4
3	Implement PL/SQL program with conditional constructs	L1, L2, L3
4	Design a User Defined Exception, Stored Procedures, Functions and packages	L1, L2, L3,L4
5	Develop PL/SQL subprograms and triggers	L1, L2, L3
6	Design a simple User Interface to read input from file and display it on screen	L1, L2, L3,L4

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
01	**Introduction** Review of Basic SQL, Difference between SQL and PL/SQL, Features of PL/SQL,PL/SQL - Environment Setup ,PL/SQL Block Anonymous Block Structure, Named Block Structure, Executing Blocks ,Calling PL/SQL Functions, Executing PL/SQL Blocks and Functions	02	L1, L2, L3
02	**PL/SQL Data Types** Declaring PL/SQL Variables, Writing Executable Statements, Interacting with Oracle Database Server, SQL Statements in PL/SQL Programs	02	L1, L2, L3,L4

03	**Control Structure & Loops** Control Structures-If-Then , CASE Statement, Basic Loop Statement The Loop Control Statements Working with Composite Data Types	03	L1, L2, L3
04	**Procedures & Functions** Parts of a PL/SQL Subprogram ,Creating and deleting standalone Procedure Parameter Modes Methods for Passing Parameters ,Creating and Calling a Function	03	L1, L2, L3,L4
05	**Trigger & Exception Handling** DML,DDL Triggers ,Event Database Triggers ,understand Exception, handling exception with PL/SQL	03	L1, L2, L3,L4
06	**Packages** Oracle-Supplied Packages in Application Development, Dynamic SQL	02	L1, L2, L3,L4
	Total Hrs.	**15**	

Books and References:

S. No	Title	Authors	Publisher	Edition	Year
1	Oracle PL/SQL Programming	Steven Feuerstein, Bill Pribyl	Steven Feuerstein, Bill Pribyl	6th Edition	2006.
2	Oracle PL/SQL by Example	Benjamin Rosenzweig; Elena Rakhimov	Prentice Hall	4th Edition	2009

Online References:

S. No.	Website Name	URL	Modules Covered
1	www.tutorialspoint.com	https://www.tutorialspoint.com/plsql/	M1-M6
2	www.javatpoint.com	https://www.javatpoint.com/pl-sql-tutorial	M1,M3, M6
3	www.oracletutorial.com	https://www.oracletutorial.com/plsql-tutorial	M1- M6

List of Practicals/Experiments:

S. No.	Type of Experiment	Practical/ Experiment Topic	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Basic Experiments**	To generate SQL queries using Data Definition Language (DDL) statements and Data Manipulation Language (DML) statements..	2	L1, L2, L3
2		Creating and executing a simple PL/SQL block	2	L1, L2, L3
3	**Design Experiments**	Write a PL/SQL block to describe the usage of Various control structures .	4	L1, L2, L3
4		Write a PL/SQL block to describe the usage of Various SQL statements	4	L1, L2, L3
5		Create Procedures and Functions	4	L1, L2, L3
6	**Advanced Experiments**	Create cursors and triggers	4	L1, L2, L3
7		Write a PL/SQL program with exception handling mechanisms	2	L1, L2, L3
8		Create a package by the name of Payroll_calc. The package should contain separate procedures for DA, HRA, Gross, Tax and Net calculation.	4	L1, L2, L3
9	**Mini/Minor Projects/ Seminar/ Case Studies**	Design a Mini Project	4	L1, L2, L3,L4
		Total Hours	**30**	

S.E. Semester –III

Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-H 2019)

B.E (Information Technology)							**S.E(SEM :** III)		
Course Name : Project Based Learning-I							**Course Code : HSD-ITPBL301**		
Teaching Scheme (Holistic Student Development-HSD)					**Examination Scheme (Formative/ Summative)**				
Modes of Teaching / Learning / Weightage					**Modes of Continuous Assessment / Evaluation**				
Hours Per Week					**Theory (100)**		**Presentation (25)**	**Report (25)**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**IA**	**ESE**	**AC**	**AC**	**25**
-	-	2	2	1	-	-	25	-	
AC- Activity Evaluation **The weightage of marks for continuous evaluation of Term work/Report:** Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)									
Prerequisite: Computer Fundamentals & knowledge of Programming Languages									

Course Objectives: The course intends to deliver the fundamentals knowledge of basic real time problems, study existing solutions, prepare literature survey, and apply basic computing & mathematics fundamentals and fundamental concepts of Programming such as C/C++ and Java to solve Basic real time problems.

Course Outcomes: Upon completion of the course students will be able to:

S. No.	Course Outcomes	Cognitive levels of attainment as per Bloom's Taxonomy
1	To identify & analyze the basic real time problems and prepare literature survey.	L1, L2, L3,L4
2	Identify & apply appropriate technologies & programming constructs to solve problems.	L1, L2, L3
3	Presenting & Documenting results obtained.	L1, L2, L3,L4

Projects Listing:

S. No.	Project Title
1.	Efficient, easy and integrated billing system
2.	Development of TCET forum and travel forum
3.	Railway reservation system
4.	Inventory Management system
5.	Placement Management System.
6.	Personal management assistant
7.	Common mobility application
8.	Integrated system for HOC cell, placement cell and EDC cell on NBA perspective
9.	Sustainable tourism management
10.	Crowd sourcing model for preparing large question banks
11.	Hospital Management System
12.	Library Management System
13.	Improving appointment scheduling in hospitals
14.	Yoga healthcare management system
15.	Development of TCET forum for students to solve doubts and to share information

S.E. Semester –III
Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS-H 2019)

B.E. (Information Technology)					**S.E. (SEM :** III)		
Course Name : Activity Based Learning III					**Course Code:** HSD-ITABL301		
Teaching scheme (Holistic Student Development - HSD)					**Examination Scheme (Formative/ Summative)**		
Modes of Teaching / Learning / Weightage					**Assessment / Evaluation Scheme**		
Hours Per Week					**Presentation**	**Report**	**Total**
Theory	**Tutorial**	**Practical**	**Contact Hours**	**Credits**	**AC**	**AC**	**50**
-	-	2	2	1	25	25	
AC- Activity Evaluation							
#2 hours to be taken as either lab or tutorial based on subject requirement							
The weightage of marks for continuous evaluation of Term work/Report: Formative (40%), Timely completion of practical (40%) and Attendance/Learning Attitude (20%)							
Prerequisite: Basics of Computer Programming, General knowledge, Social awareness							

Course Objective:

The course intends to give an understanding of social issues prevalent in society. The course aims to encourage students to apply critical thinking and work beyond textual knowledge. The course also aims to create a healthy competition among students through activities that include programming and knowledge sharing

Course Outcomes: Upon completion of the course students will be able to:

S.No.	Course Outcome	Cognitive levels of attainment as per Bloom's Taxonomy
1	Outline the procedures for debate and demonstrate parliamentary debate and policy debate styles and learn on multidisciplinary subjects.	L1, L2, L3
2	Figure out the various benefits of quiz competitions and work as a team	L1, L2, L3
3	Apply coding skills in problem solving.	L1, L2, L3, L4, L5, L6
4	Make the society aware of traffic hazards.	L1, L2, L3

Detailed Syllabus:

Module No.	Topics	Hrs.	Cognitive levels of attainment as per Bloom's Taxonomy
1	**Debate**	6	L1, L2, L3, L4
	Introduction to debate, Definition and types of Debate Brainstorming session among students, Use the skills of researching, organizing, and presenting information in a compelling fashion. Strengthen Team spirit Debate competition on Academic or Parliamentary, Financial, International affairs Debate competition on technology trends, Technical or philosophical issues will be offered. **Evaluation by judges will be in every round of debate process.**		

2	**Quiz** Introduction to Quiz, Definition, Types of quiz, Rules of quiz, quiz rounds. Quiz competition on Technical topic Quiz competition on non technical. **Evaluation based on team performances in each round.**	6	L1, L2, L3, L4
3	**Coding** Introduction to programming skills, competitive programming, benefits, Tips for good programming performance, logic development (using C)(Problem Solving strategies, loops) Mock Evaluation/Experience sharing by good coders **Coding competition and evaluation**	6	L1, L2, L3, L4, L5, L6
4	**Extension activities** Introduction to Street play, types of Street play. Presentation about Street play (Theme 1: Awareness about traffic rules) Theme 2:Medical emergency, Theme 3: Human safety **Evaluation will be based presentation**	8	L1, L2, L3, L4, L5, L6
	Total Hours	**26**	

Books and References:

S.No.	Title	Authors
1	Competitive Debate	Richard Earl
2	Times Quiz book by Times Mind Games	OLovBjortomt
3	Cracking the coding	GayleLaakmann

Online References:

S. No.	Website Name	URL
1	18 Best Idea Generation Techniques	https://www.cleverism.com/18-best-idea-generation-techniques/
2	The Better India	https://www.thebetterindia.com/111/teaching-street-children-a-thing-or-two/