Annexure 2

# APPLIED MATHEMATICS - III
# (PROBABILITY, STATISTICS AND NUMERICAL METHODS)

**Course Code : MAT 301** **Credit Units: 03**

**Total Hours: 30**

**Course Objective:**

The objective of this course is to familiarize the students with Probability distributions, test of significance and numerical methods. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline.

**Course Contents:**

**Module I: Basic Statistics: (6 Hours)**

Measures of central tendency, Moments, skewness and kurtosis, Correlation and regression, Rank Correlation, Curve fitting by the method of least squares – fitting of straight lines, second degree parabola and more general curve.

**Module II: Basic Probability and expectation: (7 Hours)**

Discrete and Continuous random variables and their properties, Dependent and Independent random variables. Probability spaces, conditional probability, sums of independent random variables, Expectation of Discrete Random Variables;

Probability distributions and probability density function for discrete and continuous variable:

Binomial distribution, Poisson's distribution and Normal distribution and evaluation of its statistical parameters.

**Module III: Test of significance for Small and large samples: (5 Hours)**

Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations.

Test for single mean, difference of means and correlation coefficients, test for ratio of variances - Chi-square test for goodness of fit and independence of attributes.

**Module IV: Numerical Methods: (6 Hours)**

Solution of simultaneous linear equations by numerical techniques; Jacobi's and Gauss-Seidel method. Solution of algebraic and transcendental equations – Bi-section method, Newton-Raphson method and Regula-Falsi method.

Interpolation : Finite differences, Relation between operators, Interpolation using Newton's forward and backward difference formula.

Interpolation for unequal intervals: Newton's divided difference and Lagrange's formulae.

**Module V: Numerical Methods: (6 Hours)**

Numerical differentiation and integration: Picard's method, Trapezoidal rule and Simpson's 1/3rd and 3/8 rules. Solution of Ordinary differential equation : Taylor's series, Euler's and modified Euler's methods, Runge-Kutta method of fourth order, Milne's and Adam's predicator-corrector methods.

## Course Outcomes:

- The objective of this course is to familiarize the students with statistical and numerical techniques. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline.
- The students will learn: The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
- Numerical techniques to solve simultaneous linear equations, interpolation and extrapolation.
- Numerical techniques of differential and integral.
- Solution of ordinary differential equation by numerical techniques.

**Examination Scheme:**

| Components | A | CT | S/V/Q/HA | EE |
|---|---|---|---|---|
| Weightage (%) | 5 | 15 | 10 | 70 |

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance

## Suggested Text/ Reference Books:


- Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
- P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2003(Reprint).
- S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.
- W. Feller, An Introduction to Probability Theory and its Applications, Vol. 1, 3rd Ed.,Wiley, 1968.
- N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2010.
- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition,2000.
- Veerarajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010.

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# DATA STRUCTURES THROUGH C++

**Course Code: CSE 202** **Credit Units: 03**

**Total Hours : 30**

**Course Objective:**

To understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data structures. To understand the notations used to analyze the Performance of algorithms. To understand the behavior of data structures such as stacks, queues, trees, hash tables, search trees, Graphs and their representations. To choose an appropriate data structure for a specified application. To understand and analyze various searching and sorting algorithms. To learn to implement ADTs such as lists, stacks, queues, trees, graphs, search trees in C++ to solve problems.

**Course Contents:**

**Module I: Introduction to C++: (7 Hours)**

C++ Programming Concepts: Review of C, input and output in C++, functions in C++- value parameters, reference parameters, Parameter passing, function overloading, function templates, Exceptions-throwing an exception and handling an exception, arrays, pointers, new and delete operators, class and object, access specifiers , friend functions, constructors and destructor, Operator overloading, class templates, Inheritance and Polymorphism.

Basic Concepts - Data objects and Structures, Algorithm Specification-Introduction, Recursive algorithms, Data Abstraction, Performance analysis- time complexity and space complexity, Asymptotic Notation-Big O, Omega and Theta notations, Complexity Analysis Examples, Introduction to Linear and Non Linear data structures.

**Module II: Introduction to DS: (6 Hours)**

Representation of single, two dimensional arrays, sparse matrices-array and linked representations.

Linear list ADT-array representation and linked representation, Singly Linked Lists- Operations-Insertion, Deletion, Circularly linked lists-Operations for Circularly linked lists, Doubly Linked Lists- Operations-Insertion, Deletion.

Stack ADT, definition, array and linked implementations, applications-infix to postfix conversion, Postfix expression evaluation, recursion implementation, Queue ADT, definition, array and linked Implementations, Circular queues-Insertion and deletion operations.

**Module III: TREES: (6 Hours)**

Trees – definition, terminology, Binary trees-definition, Properties of Binary Trees, Binary Tree ADT, representation of Binary Trees-array and linked representations, Binary Tree traversals, Threaded binary trees, Priority Queues –Definition and applications, Max Priority Queue ADT-implementation-Max Heap-Definition, Insertion into a Max Heap, Deletion from a Max Heap.

Minimum Spanning Tree: Prim’s and Kruskal’s Algorithm, Shortest Path Algorithms.

**Module IV: SEARCHING & SORTING: (5 Hours)**

Searching - Linear Search, Binary Search, Hashing-Introduction, hash tables, hash functions, Overflow Handling, Comparison of Searching methods.

Sorting-Insertion Sort, Selection Sort, Radix Sort, Quick sort, Heap Sort, Merge sort, Comparison of Sorting methods.

**Module V: GRAPHS: (6 Hours)**

Graphs–Definitions, Terminology, Applications and more definitions, Properties, Graph ADT, Graph Representations- Adjacency matrix, Adjacency lists, Graph Search methods - DFS and BFS, Complexity analysis,

Search Trees-Binary Search Tree ADT, Definition, Operations- Searching, Insertion and Deletion, Balanced search trees-AVL Trees-Definition and Examples only, B-Trees- Definition and Examples only, Red-Black Trees-Definitions and Examples only, Comparison of Search Trees.

## Course Outcomes:

- Ability to choose appropriate data structures to represent data items in real world problems.
- Ability to analyze the time and space complexities of algorithms.
- Ability to design programs using a variety of data structures such as stacks, queues, hash tables, binary trees, search trees, heaps, graphs, and B-trees.
- Able to analyze and implement various kinds of searching and sorting techniques.

**Examination Scheme:**

| Components | A | CT | S/V/Q/HA | ESE |
|---|---|---|---|---|
| Weightage (%) | 5 | 15 | 10 | 70 |

A: Attendance, CT: Class Test, S/V/Q/HA: Seminar/Viva/Quiz/ Home Assignment, ESE: End Semester Examination;

## *Text & References:*

**Text:**

- Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press, Pvt. Ltd.
- Data structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
- Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and .Mount, Wiley student edition, John Wiley and Sons.

**Reference:**

- Data structures and algorithms in C++, 3rd Edition, Adam Drozdek, Thomson
- Data structures using C and C++, Langsam, Augenstein and Tanenbaum, PHI.
- Problem solving with C++, The OOP, Fourth edition, W.Savitch, Pearson education.

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# PYTHON PROGRAMMING

**Course Code: CSE 302** **Credit Units: 03**
**Total Hours: 30**

**Course Objective:**
To understand the basic concepts such as lists, tuples and dictionary Data structures. To understand concepts like networking and website development using frameworks of python. To understand working third party libraries in python. To understand Scientific programming paradigm.

**Course Contents:**

**Module I: Introduction of Python: (8 Hours)**
History of Python, Features of Python Programming, Applications of Python, Use of python, install and Run Python in Windows/Linux, Keyword and Identifier, Statements and Comments, Python Variables, Python Data types, Python Type Conversion, Python I/O and Import, Python Operators, Python Namespace.
Python If-else statements, Python for Loop, while loop, break and continue, String manipulation, List Tuple, dictionaries, pass statement, looping technique, functions, function arguments, recursion, anonymous function, python global, local and Nonlocal.

**Module II: Object and Class: (5 Hours)**
Python modules, python package, File operation, Python directory, Python exception, Exception Handling, User-Define Exception, Python OOP, class, inheritance, multiple inheritance, operator overloading.

**Module III: Regular Expression, CGI and Database: (8 Hours)**
Match function, Search function, matching vs. searching, modifier, pattern, Introduction of CGI,CGI Architecture, CGI environment Variable, GET/POST Method, Cookies,File upload, Introduction of Database, connections, Executing queries, transactions, handling errors.

**Module IV: GUI Programming: (9 Hours)**
Tkinter Programming, Tkinter widgets, Standard Attributes, CGI Programming, Introduction to Web Framework: - Django, Application Lifecycle, creating a Django Project, Creating Admin Interface, Creating Views, URL Mapping, Template System, Creating Database Models, Interfacing database: - PostgreSQL with the Django Project, Page Redirection, Form Processing.

## Course Outcomes:

- Ability to create client-server application for real world problems.
- Ability to apply Regular Expression, CGI and Database.
- Ability to apply GUI Programming in real world problems.

**Examination Scheme:**

| Components | A | CT | S/V/Q/HA | ESE |
|---|---|---|---|---|
| Weightage (%) | 5 | 15 | 10 | 70 |

A: Attendance, CT: Class Test, S/V/Q/HA: Seminar/Viva/Quiz/ Home Assignment, ESE: End Semester Examination;

## *Text & References:*

**Text:**

- Core Python Programming , Wesley J. Chun, Publisher: Prentice Hall PTR, First Edition.
- Django Unleashed, Andrew Pinkham, SAMS, second edition
- OpenCV 4, Roy Shilkrot, Packt Pub, third edition
- Elegant Scipy, Juan Nunez, O'Reilly, third edition.

**Reference:**

- Learning Python, Mark Lutz, O'Reilly. Ltd., Second Edition.
- Python CookBook, Alex Martelli, O'Reilly. Ltd., Third Edition.

Annexure 2

# DATABASE MANAGEMENT SYSTEMS

**Course Code: CSE 304** **Credit Units: 03**
**Total Hours: 30**

**Course Objective:**
The objective of this course is to get students familiar with Databases and their use. They can identify different types of available database model, concurrency techniques and new applications of the DBMS.

**Course Contents:**

**Module I: Introduction: (6 Hours)**
Concept and goals of DBMS, Database Languages, Database Users, Database Abstraction.
Basic Concepts of ER Model, Relationship sets, Keys, Mapping, Design of ER Model ,Concept of Generalization, Aggregation and Specialization. transforming ER diagram into the tables. Various other data models object oriented data Model, Network data model, and Relational data model.

**Module II: Relational Data models: (6 Hours)**
Domains, Tuples, Attributes, Relations, Characteristics of relations, Keys, Key attributes of relation, Relational database, Schemas, Integrity constraints. Referential integrity, Intension and Extension, Relational Query languages: SQL-DDL, DML, integrity constraints, Complex queries, various joins, indexing, triggers ,Relational algebra and relational calculus, Relational algebra operations like select, Project, Join, Division, outer union. Tuple relational calculus.

**Module III: Data Base Design: (6 Hours)**
Data Base Design: Introduction to normalization, Normal forms, Functional dependency, Decomposition, Dependency preservation and lossless join, problems with null valued and dangling tuples, multivalued dependencies.

**Module IV: Transaction Processing Concepts: (6 Hours)**
Transaction System, Testing of Serilizability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures. Log based recovery. Checkpoints deadlock handling. Concurrency Control Techniques: – Concurrency Control, locking Techniques for concurrency control, time stamping protocols for concurrency control, validation-based protocol, multiple granularity. Multi version schemes, Recovery with concurrent transaction.

**Module V: Relational Database Management Systems: (6 Hours)**
Study of Relational Database Management Systems through Oracle/Postgres SQL/MySQL: Architecture, physical files, memory structures, background process. Concept of table spaces, segments, extents and block. Dedicated server, multi-threaded server, distributed database. Introduction of ANSI SQL. Usage of like, any, all, exists, views and other commands, Special operators. Hierarchical queries, inline queries, flashback queries

## Course Outcomes:

The student will learn

- Describe DBMS architecture, physical and logical database designs, database modeling, relational, hierarchical and network models.
- Identify basic database storage structures and access techniques such as file organizations, indexing methods including B-tree, and hashing.
- Learn and apply Structured query language (SQL) for database definition and database manipulation.
- Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
- Understand various transaction processing, concurrency control mechanisms and database protection mechanisms.

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**Examination Scheme:**

| Components | A | CT | S/V/Q/HA | ESE |
|---|---|---|---|---|
| Weightage (%) | 5 | 15 | 10 | 70 |

A: Attendance, CT: Class Test,:, S/V/Q/HA: Seminar/Viva/Quiz/ Home Assignment, ESE: End Semester Examination;

## Text & References:

***Text:***

- Korth, Silberschatz, "Database System Concepts", 4th Ed., TMH, 2000.
- Steve Bobrowski, "Oracle & Architecture", TMH, 2000

***References:***

- Date C. J., "An Introduction to Database Systems", 7th Ed., Narosa Publishing, 2004
- Elmsari and Navathe, "Fundamentals of Database Systems", 4th Ed., A. Wesley, 2004
- Ullman J. D., "Principles of Database Systems", 2nd Ed., Galgotia Publications, 1999.

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# DIGITAL ELECTRONICS AND LOGIC DESIGN

**Course Code: ECE 306** **Credit Units: 03**
**Total Hours: 30**

**Course Objective:**
This course is an introduction to the basic principles of digital electronics. At the end of this course, the student will be able to quantitatively identify the fundamentals of computers, including number systems, logic gates, logic and arithmetic subsystems, and integrated circuits.

**Course Contents:**

**Module I: Fundamentals of Digital Systems: (7 Hours)**
Digital signals, digital circuits, AND, OR, NOT, NAND, NOR and Exclusive-OR operations, Boolean algebra, examples of IC gates, number systems-binary, signed binary, Octal hexadecimal number, binary arithmetic, one's and two's complements, Standard representation for logic functions, K-map representation, and simplification of logic functions using K-map, minimization of logical functions. Don't care conditions, Q-M method of function realization.

**Module II: Combinational Digital Circuits: (5 Hours)**
Multiplexer, De-Multiplexer/Decoders, Adders, Subtractors, BCD arithmetic, digital comparator, parity checker/generator, code converters, priority encoders, decoders/drivers for display devices.

**Module III: Sequential circuits and systems: (8 Hours)**
A 1-bit memory, the circuit properties of bi-stable latch, the clocked SR flip flop, J- K-T and D types flip flops, applications of flip flops, shift registers, applications of shift registers, serial to parallel converter, parallel to serial converter, ring counter, ripple (Asynchronous) counters, synchronous counters, counters design using flip flops, applications of counters.

**Module IV: A/D and D/A Converters Logic families: (5 Hours)**
**A/D and D/A Converters:** Digital to analog converters: weighted resistor/converter, R-2R Ladder D/A converter, specifications for D/A converters, examples of D/A converter IC's, sample and hold circuit, analog to digital converters: parallel comparator A/D converter, successive approximation A/D converter, counting A/D converter, specifications of A/D converter.
**Logic families**: Characteristics of digital IC's, digital logic Families, TTL, Schottky TTL and CMOS logic, interfacing CMOS and TTL, Tri-state logic, ECL, RTL, DTL

**Module V: Semiconductor memories and Programmable logic devices: (5 Hours)**
Memory organization and operation, expanding memory size, classification and characteristics of memories, sequential memory, read only memory (ROM), read and write memory (RAM), content addressable memory (CAM), charge de coupled device memory (CCD), commonly used memory chips, ROM as a PLD, Programmable logic array, Programmable array logic

## Course Outcomes:

- At the end of this course, students will demonstrate the ability to
- Understand working of logic families and logic gates.
- Design and implement Combinational and Sequential logic circuits.
- Understand the process of Analog to Digital conversion and Digital to Analog conversion.
- Be able to use PLDs to implement the given logical problem

**Examination Scheme:**

| Components | A | CT | S/V/Q/HA | EE |
|---|---|---|---|---|
| Weightage (%) | 5 | 15 | 10 | 70 |

A: Attendance, CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination

## Text & References:


- R. P. Jain, "Modern Digital Electronics", McGraw Hill Education, 2009.
- M. M. Mano, "Digital logic and Computer design", Pearson Education India, 2016.
- A. Kumar, "Fundamentals of Digital Circuits", Prentice Hall India, 2016.
- Thomas L. Floyd: Digital Fundamentals, Pearson Education.
- Malvino and Leech: Digital Principles & Applications, Tata Mc-Graw Hill

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# DATA STRUCTURES THROUGH C++ LAB

**Course Code: CSE 222** **Credit Unit: 01**

**Total Hours: 20**

**Course Objective:**

To write and execute programs in C++ to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees. To write and execute write programs in C++ to implement various sorting and searching methods.

**SOFTWARE REQUIREMENTS:** Turbo C++ compiler or GCC compilers

**Course Contents:**

Lab Experiments are based on the course Data Structures Through C++ (CSE 202)

**List of experiments / demonstrations: (Each experiment is of 2 Hours duration)**

1. Write a C++ programs to implement recursive and non recursive i) Linear search ii) Binary search
2. Write a C++ programs to implement i) Bubble sort ii) Selection sort iii) quick sort iv) insertion sort
3. Write a C++ programs to implement the following using an array.
   (a) Stack ADT b) Queue ADT
4. Write a C++ programs to implement list ADT to perform following operations
   (a) Insert an element into a list.
   (b) Delete an element from list
   (c) Search for a key element in list
   (d) count number of nodes in list
5. Write C++ programs to implement the following using a singly linked list. Stack ADT b) Queue ADT
6. Write C++ programs to implement the deque (double ended queue) ADT using a doubly linked list and an array.
7. Write a C++ program to perform the following operations:
   (a) Insert an element into a binary search tree.
   (b) Delete an element from a binary search tree.
   (c) Search for a key element in a binary search tree.
8. Write C++ programs for implementing the following sorting methods:Merge sort b) Heap sort
9. Write C++ programs that use recursive functions to traverse the given binary tree in a) Preorder b) in order and c) post order
10. Write a C++ program to perform the following operations a) Insertion into a B-tree b) Deletion from a B-tree

## Course Outcomes:

- Ability to identify the appropriate data structure for given problem.
- Graduate able to design and analyze the time and space complexity of algorithm or program.
- Ability to effectively use compilers includes library functions, debuggers and trouble shooting.

**Examination Scheme:**

| IA | | | EE | | | |
|---|---|---|---|---|---|---|
| **A** | **PR** | **Practical Based Test** | **Major Experiment** | **Minor Experiment** | **LR** | **Viva** |
| 5 | 10 | 15 | 35 | 15 | 10 | 10 |

Note: IA –Internal Assessment, EE- External Exam, A- Attendance PR- Performance, LR – Lab Record, V – Viva.

## Text & References:


- Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press Orient Longman Pvt. Ltd.
- Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and .Mount, Wiley student edition, John Wiley and Sons.
- Data structures using C and C++, Langsam, Augenstein and Tanenbaum, PHI

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# PYTHON PROGRAMMING LAB

**Course Code: CSE 322** **Credit Units: 01**
**Total Hours: 20**

**Course Objective:**
To write and execute programs in python to solve problems using data structures such as lists, tuples, dictionaries. To write and execute write programs in python to implement various networking, web applications

**SOFTWARE REQUIREMENTS:** Python 3.6

**Course Contents:**
Lab Experiments are based on the course Python Programming (CSE 302)

**List of experiments/demonstrations:**

1. Write a python program to demonstrate working of lists.**: (2 Hours)**
2. Write a python program to demonstrate working of tuples.**: (2 Hours)**
3. Write a python program to demonstrate working of dictionaries and conditional statements**: (2 Hours)**
4. Write a python program to demonstrate working of Inheritance and other OOP concepts.**: (2 Hours)**
5. Write a python program to demonstrate regular expressions like match function, search function, pattern search function.**: (2 Hours)**
6. Write a python program for reading data from CSV file.**: (2 Hours)**
7. Write a python program for writing data in CSV file.**: (2 Hours)**
8. Write a python program for reading data from text file.**: (2 Hours)**
9. Write a python program for writing data from text file.**: (01 Hour)**
10. Write a python program for image analysis using open CV.**: (01 Hour)**
11. Write a program to demonstrate connection with postgresql**: (01 Hour)**
12. Develop a dynamic website using Django framework and postgresql as backend.**: (1 Hour)**

## Course Outcomes:

- Ability to create client-server application for real world problems.
- Ability to develop multithreaded application.
- Ability to create web application for real world problem.

**Examination Scheme:**

| IA | | | EE | | | |
|---|---|---|---|---|---|---|
| **A** | **PR** | **Practical Based Test** | **Major Experiment** | **Minor Experiment** | **LR** | **Viva** |
| 5 | 10 | 15 | 35 | 15 | 10 | 10 |

Note: IA –InternalAssessment, EE- External Exam, A- Attendance, PR- Performance, LR – Lab Record, V – Viva.

## Text & References:


- Core Python Programming, Wesley J. Chun, Publisher: Prentice Hall PTR, First Edition.
- Python: The Complete Reference, Martin C Brown, McGraw Hill Publications.
- Programming Python, Mark Lutz, O'Reilly. Ltd., Second Edition.

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# DATABASE MANAGEMENT SYSTEMS LAB

**Course Code: CSE 324** **Credit Unit: 01**
**Total Hours: 20**

**Course Objective:**
To write and execute SQL statements, understand design of backend applications

**Software Required:** Oracle 9i

**Course Contents:**
Lab Experiments are based on the course Database Management Systems (CSE 304)

**Topics covered in lab will include the following Programs: (2 Hours)**

1. Using create command design three specific table and the table structure is given below.
   Table name- Book

| ISBN | TITLE | PUB_YEAR | UNIT_PRICE | AUTHOR_NAME | PUB_NAME |
|---|---|---|---|---|---|
| 1001 | Oracle | 2004 | 399 | Arora | phi |
| 1002 | Dbms | 2004 | 400 | Basu | technical |
| 2001 | Dos | 2003 | 250 | Sinha | nirali |
| 2002 | Adbms | 2004 | 450 | Basu | technical |
| 2003 | Unix | 2000 | 300 | Kapoor | scitech |

   Table name- Author

| AUTHOR_NAME | COUNTRY |
|---|---|
| Arora | U.S.A. |
| Kapoor | Canada |
| Basu | India |
| Sinha | India |

   Table name- Publisher

| PUB_NAME | PUB_ADD1 |
|---|---|
| Phi | Delhi |
| Technical | Pune mainmarket |
| Nirali | Mumbai |
| Scitech | Chennai |

2. Write the SQL query to find the name of all publisher from Book relation. **(2 Hours)**
3. Write the SQL query to display the name of all publisher using distinct clause. **(2 Hours)**
4. Write the SQL query to find the names of author from the author table where the first two characters of names are ‘ba’. **(2 Hours)**
5. Write the SQL query to display title of books published in year 2004. **(2 Hours)**
6. Write the SQL query to display title of books having price between 300 to 400. **(1 Hour)**
7. Write the SQL query to display title of books having price between 300 to 400 using operators. **(1 Hour)**
8. Write the SQL query to display title of books with author_name and country published in year 2004. **(1 Hour)**
9. Write the SQL query to display all title and (unit_price*10) as an attribute from book table using arithmetic expression. **(01 Hour)**
10. Write the SQL query to add the new column in all three tables. **(1 Hour)**
11. Study the concept of Views and their utility in DBMS, write the SQL query to design a view. **(1 Hour)**
12. Write the SQL query to make the attribute ISBN as a primary key in Book relation. **(1 Hour)**
13. Write the SQL query to display the all the titles of Books with price and year in descending order. **(1 Hour)**

14. Write the SQL query to study the use of Delete and Drop command in DBMS. **(1 Hour)**
15. Study the concept of Triggers, cursors and stored procedures in DBMS. **(1 Hour)**

## Course Outcomes:

- At the end of lab session students would be able to design the Database application for the real life projects.
- Students would be able to perform insertion, deletion and updation operation on Databases.

**Examination Scheme:**

| IA | | | EE | | | |
|---|---|---|---|---|---|---|
| **A** | **PR** | **Practical Based Test** | **Major Experiment** | **Minor Experiment** | **LR** | **Viva** |
| 5 | 10 | 15 | 35 | 15 | 10 | 10 |

Note: IA – Internal Assessment, EE - External Exam, A - Attendance, PR - Performance, LR – Lab Record, V – Viva.

Annexure 2

# DIGITAL ELECTRONICS AND LOGIC DESIGN LAB

**Course Code : ECE 326** **Credit Unit: 01**
**Total Hours: 20**

**Course Objectives:**

- To understand number representation and conversion between different representation in digital electronic circuits.
- To analyze logic processes and implement logical operations using combinational logic circuits.
- To understand characteristics of memory and their classification.
- To understand concepts of sequential circuits and to analyze sequential systems
- To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.
- To prepare students to perform the analysis and design of various digital electronic circuits.

**Course Contents:**

Lab Experiments are based on the course Digital Electronics and Logic Design (ECE 306)

**List of Experiments:**

1. To verify the truth tables of NOT, OR, AND, NOR, NAND, XOR, XNOR gates. **(2 Hours)**
2. To obtain half adder, full adder using gates and verify their truth tables. **(2 Hours)**
3. To obtain half subtractor, full subtractor using gates and verify their truth tables. **(2 Hours)**
4. To implement control circuit using multiplexer. **(2 Hours)**
5. To convert BCD code into excess 3 code and verify the truth table. **(2 Hours)**
6. To verify the truth tables of RS, D, JK and T flip- flops. **(2 Hours)**
7. To implement and verify 3-bit bi-directional shift register. **(2 Hours)**
8. To design and study asynchronous/ripple counter. **(2 Hours)**
9. To design and study synchronous counter. **(2 Hours)**
10. To design and study a sequence detector. **(2 Hours)**

## Course Outcomes:

After studying this course the students would gain enough knowledge.

- To have thorough understanding of the fundamental concepts and techniques used in digital electronics.
- To understand and examine the structure of various number systems and its application in digital design.
- The ability to understand, analyze and design various combinational and sequential circuits.
- Ability to identify basic requirements for a design application and propose a cost-effective solution.
- To develop skill to build and troubleshoot digital circuits.

**Examination Scheme:**

| IA | | | | EE | |
|---|---|---|---|---|---|
| **A** | **PR** | **LR** | **V** | **PR** | **V** |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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# COMMUNICATION SKILLS – III

**Course Code: BCU 341** **Credit Units: 01**

**Total Hours: 10**

**Course Objective:**

To emphasize the essential aspects of effective written communication necessary for professional success.

**Prerequisites:** NIL

<table>
<tr><td colspan="3">Course Contents / Syllabus:</td></tr>
<tr><td>1.</td><td>Module I Principles of Effective Writing</td><td>35% Weightage</td></tr>
<tr><td></td><td>• Spellings-100 Most Misspelled Words in English<br>• Web Based Writing<br>• Note Taking: Process & Techniques</td><td></td></tr>
<tr><td>2.</td><td>Module II Formal Letter Writing</td><td>35% Weightage</td></tr>
<tr><td></td><td>• Block Format<br>• Types of Letters<br>• E-mail<br>• Netiquette</td><td></td></tr>
<tr><td>3.</td><td>Module III Business Memos<br>• Format & Characteristics</td><td>20% Weightage</td></tr>
<tr><td>4.</td><td>Module IV Short Stories</td><td>10% Weightage</td></tr>
<tr><td></td><td>• Stench of Kerosene-Amrita Pritam<br>• A Flowering Tree-A.K. Ramanujan<br>• The Gift of the Magi- O. Henry<br>• A Fly in Buttermilk-James Baldwin</td><td></td></tr>
<tr><td>5.</td><td>Student Learning Outcomes:<br>The students should be able to write correctly and properly with special reference to Letter writing.</td><td></td></tr>
<tr><td>6.</td><td>Pedagogy for Course Delivery:<br>• Workshop<br>• Group Discussions<br>• Presentations<br>• Lectures</td><td></td></tr>
<tr><td>7.</td><td>Assessment/ Examination Scheme:
<table>
<tr><th>Theory L/T (%)</th><th>Lab/Practical/Studio (%)</th><th>End Term Examination</th></tr>
<tr><td>100%</td><td>NA</td><td>70%</td></tr>
</table>
Theory Assessment (L&T):
<table>
<tr><th>Components (Drop down)</th><th>ClE</th><th>Mid Sem</th><th>Attendance</th><th>End Term Examination</th></tr>
<tr><td>Weightage (%)</td><td>10%</td><td>15%</td><td>5%</td><td>70%</td></tr>
</table></td><td></td></tr>
</table>

**Text:**

*Rai, Urmila & S.M. Rai. Business Communication, Mumbai: Himalaya Publishing House, 2002.*

*K.K.Sinha, Business Communication, Galgotia Publishing Company.*

**Reference:**

*Sanjay Kumar & Pushp Lata, Communication Skills, Oxford University Press.*

**Additional Reading: Newspapers and Journals**

Annexure 2

# BEHAVIOURAL SCIENCE – III

**Course Code: BSU 343** **Credit Units: 01**

**Total Hours: 10**

**Course Objective:**

To enable the students:

- Understand the process of problem solving and creative thinking.
- Facilitation and enhancement of skills required for decision-making.

**Course Contents:**

**Module I: Thinking as a tool for Problem Solving** **(02 Hours)**

- What is thinking: The Mind/Brain/Behavior
- Critical Thinking and Learning:
  - Making Predictions and Reasoning
  - Memory and Critical Thinking
  - Emotions and Critical Thinking
- Thinking skills

**Module II: Hindrances to Problem Solving Process** **(02 Hours)**

- Perception
- Expression
- Emotion
- Intellect
- Work environment

**Module III: Problem Solving** **(02 Hours)**

- Recognizing and Defining a problem
- Analyzing the problem (potential causes)
- Developing possible alternatives
- Evaluating Solutions
- Resolution of problem
- Implementation
- Barriers to problem solving:
  - Perception
  - Expression
  - Emotion
  - Intellect
  - Work environment

**Module IV: Plan of Action** **(02 Hour)**

- Construction of POA
- Monitoring
- Reviewing and analyzing the outcome

**Module V: Creative Thinking** **(02 Hours)**

- Definition and meaning of creativity
- The nature of creative thinking
  - Convergent and Divergent thinking
  - Idea generation and evaluation (Brain Storming)
  - Image generation and evaluation
  - Debating
- The six-phase model of Creative Thinking: ICEDIP model

**Student learning outcomes**

- Student will be able to understand and solve the problems effectively in their personal and professional life.
- Students will outline multiple divergent solutions to a problem,
- Student will able to create and explore risky or controversial ideas, and synthesize ideas/expertise to generate innovations.

Annexure 2

**Examination Scheme:**

| Evaluation Components | Attendance | Journal of Success (JOS) | Social Awareness Program (SAP) SAP Report/SAP Presentation | End Semester Exam | Total |
|---|---|---|---|---|---|
| **Weightage (%)** | **5** | **10** | **15** | **70** | **100** |

**Suggested Readings:**


- Michael Steven: How to be a better problem solver, Kogan Page, New Delhi, 1999
- Geoff Petty: How to be better at creativity; Kogan Page, New Delhi, 1999
- Richard Y. Chang and P. Keith, Kelly: Wheeler Publishing, New Delhi, 1998.
- Phil Lowe Koge Page: Creativity and Problem Solving, New Delhi, 1996
- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 3, Management (1996); Pfeiffer & Company
- Bensley, Alan D.: Critical Thinking in Psychology – A Unified Skills Approach, (1998), Brooks/Cole Publishing Company.

Annexure 2

# FRENCH – III

**Course Code: FLU 344** **Credit Units: 02**
**Total Hours: 20**

**Course Objective:**
To enable the students

- To talk about the qualities and defects of people.
- To ask/give directions, to enquire about a lodging.
- To ask and give informations about a certain place.
- To describe events in past tense.

**Course Contents:**

**Dossiers5,6–pg45-64**

**Dossier5:Ici etlà**

**ActesdeCommunication:**
Exprimer l'obligationetl'interdiction,parler desqualitésetdesdéfautsdequelqu'un,demander son chemin, indiquerunitinéraire,se situerdansl'espace,serenseignersurunlogement.

**Dossier6:Ailleurs**
**ActesdeCommunication:**
S'exprimeraupasséecomposé, raconterunvoyage, sesituerdanslemonde,exprimerletemps(avecindicateursdetemps–ilya,depuis),serenseignersurunhébergement,exprimerla satisfactionet l'insatisfaction.

**Grammaire :**
1. lesadjectifsdémonstratifs
2. lesverbes:'irgroupe'devoir,falloir
3. lesprépositionsdelieu,depays
4. l'impératif,lepassé composé,forme et accordduparticipe passé,lanégationaupasséecomposé
5. les indicateursdetemps(il ya,depuis)

**Examination Scheme:**

| | INTERNAL | | | | EXTERNAL | GRAND TOTAL |
|---|---|---|---|---|---|---|
| **Components** | MID-SEM | VIVA-VOCE | ATTENDANCE | **TOTAL** | **END SEMESTER** | **100** |
| **Weightage (%)** | 15 | 10 | 5 | **30** | **70** | |

## Text &References:

***Text:***

**Le livre àsuivre:**


· Andant,Christineet al.A proposA1Livre del'élève.Grenoble:Pressesuniversitairesde Grenoble,2010.
· Andant,Christineet al.A proposA1Cahierd'exercices.Grenoble:Pressesuniversitairesde Grenoble,2010.


***Références:***


· Girardeau,Brunoet NellyMous.Réussirle DELFA1.Paris: Didier,2010.

Annexure 2

# TERM PAPER

## Course Code: NTP 330 Credit Units: 02

**Course Objective:**
A term (or research) paper is primarily a record of intelligent reading in several sources on a particular subject. The objective of this course to make a student to carry out intense study on a specific topic related to current development in their field of specialization and Develop skills of presentation and report writing.

**METHODOLOGY:**
The students will choose the topic at the beginning of the session in consultation with the faculty assigned. The progress of the paper will be monitored regularly by the faculty. At the end of the semester the detailed paper on the topic will be submitted to the faculty assigned. The evaluation will be done by Board of examiners comprising of the faculties.

**GUIDELINES FOR TERM PAPER**
The procedure for writing a term paper may consist of the following steps:

1. Choosing a subject
2. Finding sources of materials
3. Collecting the notes
4. Outlining the paper
5. Writing the first draft
6. Editing & preparing the final paper

**1. Choosing a Subject**
The subject chosen should not be too general.

**2. Finding Sources of Materials**
a) The material sources should be not more than 10 years old unless the nature of the paper is such that it involves examining older writings from a historical point of view.
b) Begin by making a list of subject-headings under which you might expect the subject to be listed.
c) The sources could be books and magazine articles, news stories, periodicals, scientific journals etc.

**3. Collecting the notes**
Skim through sources, locating the useful material, then make good notes of it, including quotes and information for footnotes.

a) Get facts, not just opinions. Compare the facts with author's conclusion.
b) In research studies, notice the methods and procedures, results & conclusions.
c) Check cross references.

**4. Outlining the paper**
a) Review notes to find main sub-divisions of the subject.
b) Sort the collected material again under each main division to find sub-sections for outline so that it begins to look more coherent and takes on a definite structure. If it does not, try going back and sorting again for main divisions, to see if another general pattern is possible.

**5. Writing the first draft**
Write the paper around the outline, being sure that you indicate in the first part of the paper what its purpose is. You may follow the following:
a) statement of purpose
b) main body of the paper
c) statement of summary and conclusion
Avoid short, bumpy sentences and long straggling sentences with more than one main idea.

**6. Editing & Preparing the final Paper**
a) Before writing a term paper, you should ensure you have a question which you attempt to answer in your paper. This question should be kept in mind throughout the paper. Include only information/ details/ analyses of relevance to the question at hand. Sometimes, the relevance of a particular section may be clear to you but not to your readers. To avoid this, ensure you briefly explain the relevance of every section.
b) Read the paper to ensure that the language is not awkward, and that it "flows" properly.

c) Check for proper spelling, phrasing and sentence construction.
d) Check for proper form on footnotes, quotes, and punctuation.
e) Check to see that quotations serve one of the following purposes:
   (i) Show evidence of what an author has said.
   (ii) Avoid misrepresentation through restatement.
   (iii) Save unnecessary writing when ideas have been well expressed by the original author.
f) Check for proper form on tables and graphs. Be certain that any table or graph is self-explanatory.

Term papers should be composed of the following sections:

1) Title page
2) Table of contents
3) Introduction
4) Review
5) Discussion &Conclusion
6) References
7) Appendix

Generally, the introduction, discussion, conclusion and bibliography part should account for a third of the paper and the review part should be two thirds of the paper.

**Discussion**

The discussion section either follows the results or may alternatively be integrated in the results section. The section should consist of a discussion of the results of the study focusing on the question posed in the research paper.

**Conclusion**

The conclusion is often thought of as the easiest part of the paper but should by no means be disregarded. There are a number of key components which should not be omitted. These include:

a) summary of question posed
b) summary of findings
c) summary of main limitations of the study at hand
d) details of possibilities for related future research

**Reference**

From the very beginning of a research project, you should be careful to note all details of articles gathered. The bibliography should contain ALL references included in the paper. References not included in the text in any form should NOT be included in the bibliography.
The key to a good bibliography is consistency. Choose a particular convention and stick to this.

**Conventions**

MonographsCrystal, D. (2001), Language and the internet. Cambridge: Cambridge University Press.

**Edited volumes**

Gass, S./Neu, J. (eds.) (1996), Speech acts across cultures. Challenges to communication in a second language.

Berlin/ NY: Mouton de Gruyter.
[(eds.) is used when there is more than one editor; and (ed.) where there is only one editor. In German the abbreviation used is (Hoursg.) for Herausgeber].

**Edited articles**

Schmidt, R./Shimura, A./Wang, Z./Jeong, H. (1996), Suggestions to buy: Television commercials from the U.S.,

Japan, China, and Korea. In: Gass, S./Neu, J. (eds.) (1996), Speech acts across cultures. Challenges to communication in a second language. Berlin/ NY: Mouton de Gruyter: 285-316.

**Journal articles**

McQuarrie, E.F./Mick, D.G. (1992), On resonance: A critical pluralistic inquiry into advertising rhetoric.Journal of consumer research 19, 180-197.

**Electronic book**

Chandler, D. (1994), Semiotics for beginners [HTML document]. Retrieved [5.10.'01] from the World Wide Web, http://www.aber.ac.uk/media/Documents/S4B/.

**Electronic journal articles**

Watts, S. (2000) Teaching talk: Should students learn 'real German'? [HTML document]. German as a Foreign Language Journal [online] 1. Retrieved [12.09.'00] from the World Wide Web, http://www.gfl-journal.com/.

**Other websites**

Verterhus, S.A. (n.y.), Anglicisms in German car advertising. The problem of gender assignment [HTML document]. Retrieved [13.10.'01] from the World Wide Web, http://olaf.hiof.no/~sverrev/eng.html.

**Unpublished papers**

Takahashi, S./DuFon, M.A. (1989), Cross-linguistic influence in indirectness: The case of English directives performed by native Japanese speakers. Unpublished paper, Department of English as a Second Language, University of Hawai'i at Manoa, Honolulu.

**Unpublished theses/ dissertations**

Möhl, S. (1996), Alltagssituationen im interkulturellen Vergleich: Realisierung von Kritik und Ablehnung im Deutschen und Englischen. Unpublished MA thesis, University of Hamburg.

Walsh, R. (1995), Language development and the year abroad: A study of oral grammatical accuracy amongst adult learners of German as a foreign language. Unpublished PhD dissertation, University College Dublin.

**Appendix**

The appendix should be used for data collected (e.g. questionnaires, transcripts, ...) and for tables and graphs not included in the main text due to their subsidiary nature or to space constraints in the main text.

**Assessment Scheme:**

**Continuous Evaluation: 40%**

(Based on abstract writing, interim draft, general approach, Research orientation, readings undertaken etc.)

**Final Evaluation: 60%**

(Based on the organization of the paper, objectives/ problem profile/ issue outlining, comprehensiveness of the research, flow of the idea/ ideas, relevance of material used/ presented, outcomes vs. objectives, presentation/ viva etc.)

## Course Outcomes:

After successful completion of this course, students will be able to

- Carry out intense study on a specific topic related to current development in their field of specialization
- Collect, interpret and analyze the information
- Compare and evaluate the existing solutions for a specific cases study
- Develop skills of presentation and report writing