# II B.TECH I SEMESTER SYLLABUS

# PROBABILITY AND STATISTICS

## II B. TECH- I SEMESTER

| Course Code: | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A5BS05 | BSC | 3 | - | - | 3 | 30 | 70 | 100 |

### COURSE OBJECTIVES:

To learn

1. The concepts of discrete and continuous random variables, the probability distribution and density Function.
2. Evaluation of marginal and conditional distribution of multiple random variables.
3. The concept of correlation and regression to find covariance.
4. Evaluation of the given data for appropriate test of hypothesis.
5. Analyzing the data for variance.

### COURSE OUTCOMES

**At the end of the course, student will be able to:**

1. Describe the continuous random variables and moments of Discrete and continuous random variables.
2. Calculate probabilities and derive the marginal and conditional distribution of bivariate random variables.
3. Apply the concept of correlation and regression to find covariance.
4. Evaluate the given data for appropriate test of hypothesis.
5. Test the data for analysis of variance.

| UNIT - I | SINGLE RANDOM VARIABLES | CLASSES: 08 |
|---|---|---|

Basic definitions of probability- Random Variables – Discrete and Continuous. Probability distributions, mass function/ density function of a probability distribution, mathematical expectation, moments about origin, central moments, skewness, Kurtosis. Moment generating function of probability distribution.

| UNIT - II | PROBABILITY DISTRIBUTIONS | CLASSES: 08 |
|---|---|---|

Binomial, Poisson, Normal, exponential and Gamma distributions -their Properties.
Moment generating functions of the above distributions and hence find the mean and variance.
Joint probability distributions- Joint probability mass /density function, Marginal probability, mass / density functions.

| UNIT - III | CORRELATION & REGRESSIONSAMPLING DISTRIBUTIONS | CLASSES: 10 |
|---|---|---|

Coefficient of correlation, the rank correlation, Covariance of two random variables. Regression- Regression Coefficient, The lines of regression and multiple correlation & regression
**Sampling:** Definitions of population, sampling, statistic, parameter. Types of sampling, Expected values of Sample mean and variance, sampling distribution, Standard error, Sampling distribution of means and samplingdistribution of variance.
Parameter estimation- Point estimation and interval estimation

| UNIT - IV | TESTING OF HYPOTHESIS - I | CLASSES: 10 |
|---|---|---|

**Testing of hypothesis**: Null hypothesis, Alternate hypothesis, Type I& Type II errors – critical region, confidenceinterval, Level of significance. One sided test, Two sided test.

**Large sample tests:**

(i) Test of Equality of means of two samples, equality of sample mean and population mean (cases of known variance & unknown variance, equal and unequal variances)

(ii) Tests of significance of difference between sample S.D and population S.D.

(iii) Tests of significance difference between sample proportion and population proportion, difference between two sample proportions.

| UNIT - V | TESTING OF HYPOTHESIS-II | CLASSES: 06 |
|---|---|---|

Student t-distribution, its properties; Test of significance sample mean and population mean, difference between means of two small samples. Snedecor's F- distribution and its properties. Test of equality of two population variances. Chi-square distribution, its properties, Chi-square test of goodness of fit.

## TEXT BOOKS:

1. B.S.Grewal, Higher Engineering Mathematics, Khanna publishers, 36th Edition, 2010.
2. Probability and Statistics for Engineers by Richard Arnold Johnson, Irwin Miller and John E. Freund, New Delhi, Prentice Hall.
3. Probability and Statistics for Engineers and Sciences by Jay L. Devore, Cengage Learning

## REFERENCE BOOKS:

1. Ervin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
2. Fundamentals of Mathematical Statistics by S.C. Guptha &V.K. Kapoor, S. Chand
3. Introduction to Probability and Statistics for Engineers and Scientists by Sheldon M. Ross, Academic Press

## WEB REFERENCES:

1. https://www.efunda.com/math/math_home/math.cfm
2. https://www.ocw.mit.edu/resources/#Mathematics
3. https://www.sosmath.com/
4. https://www.mathworld.wolfram.com/

## E -TEXT BOOKS:

1. https://www.e-booksdirectory.com/details.php?ebook=10166
2. https://www.e-booksdirectory.com/details.php?ebook=10166

## MOOCS COURSE:

1. https://swayam.gov.in/
2. https://onlinecourses.nptel.ac.in/

# DISCRETE MATHEMATICS

## II B. TECH- I SEMESTER

| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A5BS16 | BSC | 3 | 1 | - | 4 | 30 | 70 | 100 |

### COURSE OBJECTIVES:

The course should enable the students to:

1. To help students understand discrete and continuous mathematical structures
2. To impart basics of relations and functions
3. To facilitate students in applying principles of Recurrence Relations to calculate generating
4. Functions and solve the Recurrence relations
5. To acquire knowledge in graph theory

### COURSE OUTCOMES:

**At the end of the course, student will be able to**

1. Analyze and examine the validity of argument by using propositional and predicate calculus
2. Apply basic counting techniques to solve the combinatorial problems
3. Apply sets relations and digraphs to solve applied problems
4. Solve the given recurrence relation using different methods such as substitution, Generating function and characteristics roots equation.
5. Use the basic concepts of graph theory and some related theoretical problems

| UNIT - I | MATHEMATICAL LOGIC | CLASSES: 11 |
|---|---|---|

Statements and notations, Connectives, Well formed formulas, Truth Tables, Tautology, Equivalence implication, Normal forms, Logical Inference, Rules of inference, Direct Method, Direct Method using CP(Conditional Proof), Consistency, Proof of contradiction, Automatic Theorem Proving.

| UNIT - II | RELATIONS | CLASSES: 16 |
|---|---|---|

Introduction to set theory**,** Relations, Properties of Binary Relations, Equivalence Relation, Transitive closure, Compatibility and Partial ordering relations, Lattices, Hasse diagram. Functions: inverse Function , Composition of functions.

| UNIT - III | ELEMENTARY COMBINATORICS | CLASSES: 12 |
|---|---|---|

Basis of counting, Combinations & Permutations, Enumeration of Combinations and Permutations, Enumeration of Combinations and Permutations With repetitions, Enumerating Permutations with Constrained repetitions, Binomial Coefficients, Binomial and Multinomial theorems, The principles of Inclusion – Exclusion, Pigeon- hole principles and its applications.

| UNIT - IV | RECURRENCE RELATION | CLASSES: 11 |
|---|---|---|

Generating Functions, Function of Sequences, Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating functions , The method of Characteristics roots, Solution of Inhomogeneous Recurrence Relation.

| UNIT - V | GRAPHS | CLASSES: 10 |
|---|---|---|

| |
|---|
| Basic Concepts, Isomorphism and Subgraphs, Trees and their properties, Spanning Trees- DFS,BFS, Minimal Spanning Trees- Prims, Kruskal's Algorithm, Planar Graphs, Euler's Formula, Multi graph and Euler circuits, Hamiltonian Graphs, Chromatic number. |
| **TEXT BOOKS:** |
| 1. Discrete Mathematics for computer scientists & Mathematicians, *J.L. Mott, A. Kandel, T.P.* Baker PHI<br>2. Discrete Mathematical Structures With Applications to Computer Science, JP Tremblay, R Manohar |
| **REFERENCE BOOKS:** |
| 1. Logic and Discrete Mathematics, *Grass Man & Trembley*, Pearson Education. |

# DATA STRUCTURES

**II B. TECH- I SEMESTER**

| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A5CS03 | ESC | 3 | 1 | - | 4 | 30 | 70 | 100 |

## COURSE OBJECTIVES:

1. Impart the basic concepts of structures, pointers and data structures.
2. Understand concepts linked lists and their applications.
3. Understand basic concepts about stacks, queues and their applications.
4. Understand basic concepts of trees, graphs and their applications.
5. Enable them to write algorithms for sorting and searching.

## COURSE OUTCOMES

**At the end of the course, student will be able to:**

1. Use arrays, pointers and structures to formulate algorithms and programs.
2. Design and implement applications of Linked List.
3. Design and implement Stack ADT using Array and Linked List.
4. Design and implement Queue ADT using Array and Linked List.
5. Solve problems involving graphs and trees.
6. Analyze searching and sorting techniques based on time and space complexity.

| UNIT - I | INTRODUCTION TO DATA STRUCTURES | CLASSES: 15 |
|---|---|---|

**Introduction to Structures -** Structure definition, initialization, accessing structures, nested structures, arrays of structures, structures and functions, self-referential structures, Pointer – Basics, Pointer to Structure.

**Introduction to Data Structures**- Definition, Linear Data Structures, Non-Linear Data Structures, Representation of single, two dimensional arrays, sparse matrices and their representation.

| UNIT - II | Linked List | CLASSES: 15 |
|---|---|---|

Singly Linked Lists-Operations-Insertion, Deletion, Concatenating singly linked lists, Circularly linked lists-Operations-Insertion, Deletion, Doubly Linked Lists- Operations- Insertion, Deletion.

| UNIT - III | STACKS | CLASSES: 12 |
|---|---|---|

**Stacks**-Stack ADT, definition, operations, array and linked implementations in C,
**Applications-**infix to postfix conversion, Postfix expression evaluation, recursion implementation.

| UNIT - IV | QUEUES | CLASSES: 12 |
|---|---|---|

**Queues**-Queue ADT, definition and operations ,array and linked Implementations in C, Circular queues-array and linked implementations in C, Dequeue (Double ended queue)ADT, array and linked implementations in C.

| UNIT - V | SEARCHING & SORTING AND NON-LINEAR DATA STRUCTURES | CLASSES: 10 |
|---|---|---|

**Searching**- Linear Search, Binary Search, **Sorting**- Bubble Sort, Insertion Sort, Selection Sort, Quick sort, Merge Sort, Comparison of Sorting methods.
**Non-Linear Data Structures- Trees** – Introduction, Definition, Terminology, Applications, Tree Representations- List Representation, Left Child – Right Sibling Representation. **Graphs -** Introduction, Definition, Terminology, Applications, Graph Representations- Adjacency matrix, Adjacency lists

## TEXT BOOKS:

1. E. Balagurusamy, "Programming in ANSI C", McGraw Hill Education, 6th Edition, 2012.
2. "Fundamentals of Data Structures", Illustrated Edition by Ellis Horowitz, Sartaj Sahni, Computer Science Press.
3. Data Structures using C, R.Thareja 2nd Edition, Oxford Press.

## REFERENCE BOOKS:

1. Data structures using C, A.K.Sharma, 2nd edition, Pearson.
2. "How to Solve it by Computer", 2nd Impression by R. G. Dromey, Pearson Education

## WEB REFERENCES:

1. https://hackr.io/tutorials/learn-data-structures-algorithms
2. https://www.geeksforgeeks.org/fundamentals-of-algorithms/
3. https://www.udemy.com/introduction-to-algorithms-and-data-structures-in-c/
4. https://leetcode.com

## E-TEXT BOOKS:

1. http://www.freetechbooks.com/algorithm-analysis-and-design-t1030.html
2. http://www.freetechbooks.com/algorithmic-problem-solving-t373.html
3. http://www.freetechbooks.com/algorithms-and-data-structures-the-basic-toolbox-t871.html

## MOOC COURSE

1. https://www.coursera.org/specializations/data-structures-algorithms
2. https://onlinecourses.nptel.ac.in/noc16_cs06/preview

# DATABASE MANAGEMENT SYSTEMS

## II B. TECH- I SEMESTER

| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A5CS05 | PCC | 3 | 1 | - | 4 | 30 | 70 | 100 |

### COURSE OBJECTIVES:

The course should enable the students to:

1. Discuss the basic database concepts, applications, data models, schemas and instances.
2. Design Entity Relationship model for a database.
3. Demonstrate the use of constraints and relational algebra operations.
4. Describe the basics of SQL and construct queries using SQL
5. Understand the importance of normalization in databases.
6. Demonstrate the basic concepts of transaction processing and concurrency control.
7. Understand the concepts of database storage structures and identify the access techniques.

### COURSE OUTCOMES:

At the end of the course the students are able to:

1. Use the basic concepts of Database Systems in Database design
2. Design a Database using ER Modelling
3. Apply normalization on database design to eliminate anomalies
4. Apply SQL queries and PL/SQL queries to interact with Database
5. Analyze database transactions and can control them by applying ACID properties.

| UNIT - I | INTRODUCTION | CLASSES: 09 |
|---|---|---|

**INTRODUCTION**: Introduction and applications of DBMS, Purpose of data base, Data Independence, Database System architecture- Levels, Database users and DBA.

DATABASE DESIGN: Database Design Process, ER Diagrams - Entities, Attributes, Relationships, Constraints, keys, extended ER features, Generalization, Specialization, Aggregation, Conceptual design with the E-R model.

| UNIT - II | RELATIONAL MODEL &SCHEMA REFINEMENT | CLASSES: 09 |
|---|---|---|

**THE RELATIONAL MODEL:** Introduction to the relational model, Integrity constraints over relations, Enforcing integrity constraints, Querying relational data, Logical database design: E-R to relational, Introduction to views, Destroying/altering tables and views.

**SCHEMA REFINEMENT AND NORMAL FORMS:** Introduction to schema refinement, functional dependencies, reasoning about FDs. Normal forms: 1NF, 2NF, 3NF, BCNF, properties of decompositions, normalization, schema refinement in database design.

| UNIT - III | RELATIONAL ALGEBRA AND CALCULS &SQL | CLASSES: 11 |
|---|---|---|

**RELATIONAL ALGEBRA AND CALCULUS**:Relational algebra operators, relational calculus - Tuple and domain relational calculus.

**SQL:** Basics of SQL, DDL,DML,DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator, Functions - aggregate functions, Built-in functions – numeric, date, string functions, set operations, sub-queries, correlated sub-queries,

| UNIT - IV | SQL &PL/SQL | CLASSES: 11 |
|---|---|---|

**SQL:**Use of group by, having, order by clauses, join and its types, Exist, Any, All clauses . Transaction control commands – Commit, Rollback, Save point,

**PL/SQL:** Environment, block structure, variables, operators, data types, control structures; cursors, stored procedures, Triggers.

| UNIT - V | TRANSACTION &CONCURRENCY CONTROL | CLASSES: 10 |
|---|---|---|

**TRANSACTIONS MANAGEMENT:** Transaction concept, transaction state, concurrent executions, Serializability, recoverability, testing for serializability.

**CONCURRENCY CONTROL AND RECOVERY SYSTEM:** Concurrency control,lock based protocols, time-stamp based protocols, validation based protocols, multiple granularity and deadlock handling. Recovery system - failure classification, storage structure, recovery and atomicity, log based recovery.

## TEXT BOOKS:


1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, “Database System Concepts”, Sixth Edition, Tata McGraw Hill, 2011.
2. Raghurama Krishnan, Johannes Gehrke, “Data base Management Systems”, TATA McGraw Hill, 3rd Edition, 2007.
3. R.P. Mahapatra & Govind Verma, Database Management Systems, Khanna Publishing House, 2013.
4. Michael McLaughlin, Oracle Database 11g PL/SQL Programming, Oracle press.


## REFERENCE BOOKS:


1. Peter Rob, Carlos Coronel, Database Systems Design Implementation and Management, 7th edition, 2009.
2. Scott Urman, Michael McLaughlin, Ron Hardman, “Oracle database 10g PL/SQL programming “, 6th edition, Tata McGraw Hill,2010
3. S.K.Singh, “Database Systems Concepts, Design and Applications”, First edition, Pearson Education, 2006.
4. Ramez Elmasri, Shamkant B. Navathe, “Fundamentals of Database Systems”, Fourth Edition, Pearson / Addision wesley, 2007


## WEB REFERENCES:

1. http://www.learndb.com/databases/how-to-convert-er-diagram-to-relational-database
2. https://www.w3schools.com/sql/sql_create_table.asp
3. http://www.edugrabs.com/conversion-of-er-model-to-relational-model/?upm_export=print
4. http://ssyu.im.ncnu.edu.tw/course/CSDB/chap14.pdf
5. http://web.cs.ucdavis.edu/~green/courses/ecs165a-w11/8-query.pdf

## E-TEXT BOOKS:

1. http://www.freebookcentre.net/Database/Free-Database-Systems-Books-Download.html
2. http://www.ddegjust.ac.in/studymaterial/mca-3/ms-11.pdf

## MOOC COURSE:

1. https://www.mooc-list.com/tags/dbms-extensions
2. https://onlinecourses.nptel.ac.in/noc18_cs15/preview

# PYTHON PROGRAMMING

## II B. TECH- I SEMESTER

| Course Code: | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A5IT03 | PCC | 3 | 1 | - | 4 | 30 | 70 | 100 |

### COURSE OBJECTIVES:

1. Understand the basics and function of Python Programming Language.
2. Understand the string operation and sequences used in Python Programming Languages.
3. Understand the data structures used in Python Programming Languages.
4. Know the classes and objects in Python Programming Language.
5. Use the reusability concepts in Python Programming Language.

### COURSE OUTCOMES:

1. Apply control structures and functions in Program
2. Analyze various String handling functions and data structures
3. Apply the files and object orientation concepts
4. Solve the problems by using Inheritance and polymorphism
5. Illustrate programs on various python libraries such asnumpy, pandas and matplotlib

### SYLLABUS

**UNIT - I** — **CLASSES: 12**

**Introduction to Python Programming:**Features of Python Language, Data Types, Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Shift Operators, Ternary operator, Membership Operators, Identity Operators, Expressions and order of evaluations. Illustrative examples on all the above operators, Expressions, Control Statements, and Standard I/O Operations: input, print, ‘sep’,’end’.

**Functions and Modules:**
Declaration and Definition Function Calling, Defining Functions, Recursive Functions, Modules, Packages in Python, Doc Strings, Built-in Functions.

**UNIT – II** — **CLASSES: 13**

**Strings and Regular Expressions:**
String Operations, Built-in String Methods and Functions, Comparing Strings, functions in Regular Expression.
**Sequence:** List, Tuples, Dictionaries.

**UNIT - III** — **CLASSES: 12**

**File Handling:** Introduction, File Path, Types of Files, Opening and Closing Files, Reading and Writing Files, File Positions, Renaming and Deleting Files, Directory Methods.

**Implementation of classes and objects in Python:**

Classes and Objects, Methods and Self Argument, The __init__Method, Class Variables and Object Variables, The __del__Method, Public and Private Data Members, Private Methods,Built-in Functions to Check, Get, Set and Delete Class Attributes, Garbage Collection (Destroying Objects).

**UNIT – IV** — **CLASSES: 11**

**Implementation of Inheritance in Python:**
Inheriting Classes in Python, Types of Inheritance, Composition/Containership, Abstract Classes and Interfaces, Meta class,Implementing Operator Overloading, Overriding Methods
**Exception Handling in Python:**
Introduction, Exception hierarchy, Handling Exception, Multiple except Blocks and Multiple Exceptions, Finally Block.

| UNIT - V | | CLASSES: 10 |
|---|---|---|

**Python NumPy:** Features of Numpy, NumPyndarray, Data Types, Functions of NumPy Array, Numpy Array Indexing, Mathematical Functions on Arrays in NumPy.

**Python Pandas:** Pandas Features, Install Pandas, Dataset in Pandas, Series, DataFrames, Panel, Manipulating the Datasets, Describing a Dataset, group by Function, Filtering, Missing Values in Pandas, Concatenating Data Frames
**Matplotlib:** Formatting the style of plot, plotting with keyword strings, plotting with categorical variables, controlling line properties.

## TEXTBOOKS

1. Core Python Programming, by R.NageswaraRao
2. ReemaThareja, Python Programming using Problem Solving Approach, First Edition,Oxford Higher Eduction.

## REFERENCE BOOKS

1. Kenneth A.Lambert, Fundamentals of Python
2. Charles Dierach, Introduction to Computer Science using Python

## SUGGESTED LINKS

1. https://www.programiz.com/python-programming
2. https://www.javatpoint.com/python-tutorial
3. https://www.geeksforgeeks.org/python-programming-language/

# DATA STRUCTURES LAB

**II B. TECH- I SEMESTER**

| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A5CS04 | ESC | - | - | 3 | 1.5 | 30 | 70 | 100 |

## COURSE OBJECTIVES:

**The course should enable the students to:**

1. Ability to identify the appropriate data structure for given problem.
2. Effectively use compilers include library functions, debuggers and trouble shooting.
3. Write and execute programs using data structures such as arrays, linked lists to implement stacks, queues.
4. Write and execute programs in C to implement various sorting and searching.

## COURSE OUTCOMES:

**The course should enable the students to:**

1. Use appropriate data structure for given problem.
2. Use compilers include library functions, debuggers and trouble shooting.
3. Execute write programs in C to implement various types Linked Lists.
4. Execute programs using data structures such as arrays, linked lists to implement stacks.
5. Execute programs using data structures such as arrays, linked lists to implement queues.
6. Execute write programs in C to implement various sorting and searching.

## LIST OF EXPERIMENTS

**WEEK - 1** — **STRUTCURES**

Write a C Program using functions to

a. Reading a complex number
b. Writing a complex number
c. Add two complex numbers
d. Multiply two complex numbers

Note: represent complex number using structure.

**WEEK - 2** — **ARRAYS**

a. Write a C program
   i. To add two matrices
   ii. To multiply two matrices
b. Write a C program to implement Sparse Matrices.

**WEEK - 3** — **SINGLE LINKED LIST**

Write a C program that uses functions to perform the following:

a. Create a singly linked list of integers.
b. Delete a given integer from the above linked list.
c. Display the contents of the above list after deletion.

| WEEK - 4 | SINGLE LINKED LIST |
|---|---|

Write a C program that uses functions to perform the following:
a. Create TWO singly linked list of integers.
b. Concatenate TWO Singly Linked Lists.
c. Display the contents of the above list after concatenation.

| WEEK - 5 | DOUBLE LINKED LIST |
|---|---|

Write a C program that uses functions to perform the following:
a. Create a doubly linked list of integers.
b. Delete a given integer from the above doubly linked list.
c. c) Display the contents of the above list after deletion.

| WEEK - 6 | STACK |
|---|---|

Write C programs to implement a Queue ADT using
i) array ii) linked list

| WEEK - 7 | STACK APPLICATION |
|---|---|

a. Write a C program that uses stack operations to convert a given infix expression into its postfix Equivalent, Implement the stack using an array.
b. Write a C program that uses Stack to evaluate Postfix Expression.

| WEEK - 8 | QUEUE |
|---|---|

Write C programs to implement a Queue ADT using
i) array ii) linked list

| WEEK - 9 | DOUBLE ENDED QUEUE |
|---|---|

Write C programs to implement a double ended queue ADT using
i) array
ii) doubly linked list

| WEEK - 10 | SEARCHING |
|---|---|

Write C programs for implementing the following searching methods:
a) Linear Search b) Binary Search

| WEEK - 11 | SORTING |
|---|---|

Write C programs for implementing the following sorting methods to arrange a list of integers in Ascending order :
a) Insertion sort b) Merge sort

| WEEK - 12 | SORTING |
|---|---|

Write C programs for implementing the following sorting methods to arrange a list of integers in ascending order:
a) Quick sort b) Selection sort

**TEXT BOOKS:**

1. C and Data Structures, Prof. P.S.Deshpande and Prof. O.G. Kakde, Dreamtech Press.
2. Data structures using C, A.K.Sharma, 2nd edition, Pearson.
3. Data Structures using C, R.Thareja, Oxford University Press.

**WEB REFERENCES:**

1. http://www.sanfoundry.com/data structures-examples
2. http://www.geeksforgeeks.org/c
3. http://www.cs.princeton.edu

# DATABASE MANAGEMENT SYSTEMS LAB

## II B. TECH- I SEMESTER

| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A5CS06 | PCC | - | - | 3 | 1.5 | 30 | 70 | 100 |

### COURSE OBJECTIVES:

The course should enable the students to:

1. Apply the basic concepts of Database Systems and Applications.
2. Use the basics of SQL and construct queries using SQL in database creation and interaction
3. Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system.
4. Analyze and Select storage and recovery techniques of database system.

### COURSE OUTCOMES:

The course should enable the students to:

1. Apply the basic concepts of Database Systems and Applications.
2. Develop an ER model for a given database.
3. Use the basics of SQL and construct queries using SQL in database creation and interaction.
4. Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system.
5. Analyze and Select storage and recovery techniques of database system.
6. Develop Procedures, Cursors, and Triggers in database system.

### LIST OF EXPERIMENTS

**WEEK -1 DDL Commands**

- Creation of Tables using SQL- Overview of using SQL tool and Data types in SQL
- Altering Tables and
- Dropping Tables

**WEEK -2 Create Table with Primary key and Foreign Key& DML Commands**

Creating Tables (along with Primary and Foreign keys),
Practicing DML commands-

- Insert,
- Update
- Delete.

**WEEK -3 Selection Queries**

Practicing Select command using following operations

- AND, OR
- ORDER BY
- BETWEEN
- LIKE
- Apply CHECK constraint

**WEEK -4 AGGREGATE FUNCTIONS and Views**

Practice Queries using following functions

- COUNT,
- SUM,
- AVG,
- MAX,
- MIN,

Apply constraint on aggregation using

- GROUP BY,
- HAVING,

VIEWS Create , Modify and Drop

| WEEK -5 | Nested QUERIES |
|---|---|

Practicing Nested Queries using

- UNION,
- INTERSECT,
- CONSTRAINTS
- IN

| WEEK -6 | CO- RELATED NESTED QUERIES |
|---|---|

Practicing Co – Related Nested Queries using

- EXISTS,
- NOT EXISTS. ANY, ALL

| WEEK -7 | JOIN QUERIES |
|---|---|

Practicing Join Queries using

- Inner join
- Outer join
- Equi join
- Natural join

| WEEK -8 | TRIGGERS |
|---|---|

Practicing on Triggers - creation of trigger, Insertion using trigger, Deletion using trigger, Updating using trigger.

| WEEK -9 | PROCEDURES |
|---|---|

Procedures- Creation of Stored Procedures, Execution of Procedure, and Modification of Procedure

| WEEK -10 | CURSORS |
|---|---|

Cursors- Declaring Cursor, Opening Cursor, Fetching the data, closing the cursor.

| WEEK -11 | PL/SQL Part 1 |
|---|---|

. Practice PL/SQL –

- block structure,
- variables,
- data types,

| WEEK -12 | PL/SQL Part 2 |
|---|---|

. Practice PL/SQL –

- operators,
- control structures;
- aseca

**Case study 1: College Management**
**Case study 2 : An Enterprise/Organization**
**Case study 3 : Library Management system**
**Case study 4: Sailors and shipment system**

## TEXT BOOKS:


1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, “Database System Concepts”, Sixth Edition, Tata McGraw Hill, 2011.
2. Raghurama Krishnan, Johannes Gehrke, “Data base Management Systems”, TATA McGraw Hill, 3rd Edition, 2007.


## WEB REFERENCES:

1. http://www.learndb.com/databases/how-to-convert-er-diagram-to-relational-database
2. https://www.w3schools.com/sql/sql_create_table.asp
3. http://www.edugrabs.com/conversion-of-er-model-to-relational-model/?upm_export=print
4. http://ssyu.im.ncnu.edu.tw/course/CSDB/chap14.pdf
5. http://web.cs.ucdavis.edu/~green/courses/ecs165a-w11/8-query.pdf

# ENVIRONMENTAL STUDIES

## II B. TECH- I SEMESTER

| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A5MC03 | MC | 2 | - | - | - | 30 | 70 | 100 |

### COURSE OBJECTIVES:

The course should enable the students to:

1. Understanding the importance of ecological balance for sustainable development.
2. Understanding the impacts of developmental activities and mitigation measures.
3. Understanding the environmental policies and regulations
4. Determine the Natural resources on which the structure of development is raised for sustainability of the society through equitable maintenance of natural resources.
5. Illustrate about biodiversity that raises an appreciation and deeper understanding of species, ecosystems and also the interconnectedness of the living world and thereby avoids the mismanagement, misuse and destruction of biodiversity.
6. Summarize a methodology for identification, assessment and quantification of global environmental issues in order to create awareness about the international conventions for mitigating global environmental problems.
7. Sustainable development that aims to meet raising human needs of the present and future generations through preserving the environment.
8. Outline green environmental issue provides an opportunity to overcome the current global environmental issues by implementing modern techniques like CDM, green building, green computing etc.

### COURSE OUTCOMES:

On Successful completion of this course, Students will be able to

1. Demonstrate an understanding of the Significance of environmental education.
2. Outline the context of environmentalism.
3. Comprehend the multidisciplinary nature of the course environmental Studies.
4. Illustrate the components of the environment and its interactions.
5. Outline the causes, effects and management options for various environmental problems related to Air, Water and land.

| UNIT - I | Ecosystems | CLASSES: 07 |
|---|---|---|

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food web and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Bio magnification, ecosystem value, services and carrying capacity.

| UNIT - II | Natural Resources & Mineral Resources | CLASSES: 10 |
|---|---|---|

Natural Resources: Classification of Resources: Living and Non-Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land resources: Forest resources, Energy resources: growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

| UNIT - III | Biodiversity And Biotic Resources | CLASSES: 08 |
|---|---|---|

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

| UNIT - IV | Environmental Pollution and Control Technologies | CLASSES: 10 |
|---|---|---|

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. Water pollution: Sources and types of pollution, drinking water quality standards. Soil Pollution: Sources and types, Impacts of modern agriculture,. Noise Pollution: Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management. Pollution control technologies: Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. Global Environmental Problems and Global Efforts: Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS).. International conventions / Protocols: Earth summit, Kyoto protocol and Montréal Protocol.

| UNIT - V | Environmental Policy, Legislation & EIA | CLASSES: 10 |
|---|---|---|

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Towards Sustainable Future: Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

**TEXT BOOKS:**


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


**REFERENCE BOOKS:**


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