

*SYLLABUS*

*BS (CS)-II*

*3<sup>rd</sup> SEMESTER*

# GOVT. DEGREE COLLEGE, LARKANA

DEPARTMENT OF COMPUTER SCIENCE

SEMESTER-III

## LINEAR ALGEBRA

### 1. MATRIX

#### a. TYPES OF MATRIX:

1. Periodic
2. Idempotent
3. Nil-potent
4. Involutory
5. Symmetric
6. Skew Symmetric
7. Hermitian
8. Skew Hermitian.

#### b. ELEMENTARY ROW OPERATION:

1. Echelon form
2. Reduce Echelon form
3. Inverse of Matrix by row operation
4. Rank of a Matrix
5. Gaussian Elimination
6. Gauss Jordan Method (System of Homogenous linear Equation and System of Non-Homogenous linear equation)

### 2. DETERMINANT:

1. Basic idea
2. Properties of determinants
3. Singular and non-singular matrix
4. Inverse of matrix by Adjoin method
5. Cramer's rule of system of non-homogeneous linear equation.

### 3. VECTOR SPACE:

1. Definition
2. Linear combination and generated set (spanning set)
3. Linearly dependent and Linearly independent set
4. Basic and dimension
5. Coordinates of vector space
6. Transition matrix.

### 4. INNER PRODUCT SPACE:

1. Norm
2. Orthogonal basis
3. Gram schmid process.

### 5. TRANSFORMATION:

1. Linear transformation
2. Matrix of Linear
3. Transformation
4. Digonalization
5. Eigen valueand eigen vector

### Recommended Books:

#### Text Book

1. Elementary Linear Algebra (By Howard Anton & Chris Rorres 7<sup>th</sup> Edition)

#### Reference Book:

1. Advanced Engineering Mathematics (By Erwin Kreyszig 7<sup>th</sup> Edition)

### MARKS DISTRIBUTION

	Mid(Th)	Final(Th)	Attendance	Assig:	Total
Internal	10	20	10	10	50
External	by S.A.L.U Khairpur				50
Total					100

# GOVT. DEGREE COLLEGE, LARKANA

DEPARTMENT OF COMPUTER SCIENCE

BS in COMPUTER SCIENCE

SEMESTER-III

COMMUNICATION SKILLS

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## CHAPTER 1

### Introduction to Communications

Definition and practical skills, lifeblood of every organization

### Importance & scope of Effective Communication in Business

Benefits and Challenges

## CHAPTER 2

### The Process of Communication and Miscommunication

Six Components of Communication

Context, Sender, Encoder, Message, Medium, Receiver, Decoder, Feedback

## CHAPTER 3

### Miscommunication

Problems with meaning, Denotations, Euphemism, Non- Verbal Communication

Appearance & body language, Facial expression, Gestures, Postures, Voice and sound

Summary, Ex. 3 miscommunication in translation.

## CHAPTER 4

### Communication Principle-I

- Completeness

Five Ws. Answer all questions

- Conciseness

No wordy sentence, relevant matters, no repetition.

- Consideration

Focus on 'you' and his interests only emphasis positives

- Concreteness

Precise, active voice, vivid image, action in verbs in verbs, common problem.

## CHAPTER 5

### Communication Principle -II

- Clarity

Familiar words, effective sentences on idea in sentence.

- Courtesy.

Be Sincere appreciative, respectful.

- Correctness.

Right level language, accuracy of facts, grammar correctness, and words confuse.

## EXERCISES

Exercises of choice of words

Substitution word

Neutral Gender

Rewriting into Nongender

## CHAPTER 6

### Communication and Global Context

Intercultural Communication

National Cultural Variables

Individual Cultural Variables, Ex-4 Written Memo & Oral Presentation.

## CHAPTER 7

### Communication and Ethical Context

Ethical situation backgrounds Influence on personal ethics check list 4.1 guide lines for ethical special writing messages.

Commercial and ethical cross cultural ethics.

Business communication and Technologies

Challenges by new technologies

E-mail

Voice Mail/ Teleconferences / Faxes

## **CHAPTER 8**

### **Collect all the Facts & Data**

Outline-Organize – Your Message

Basic organization plans direct deductive & Indefinite Approach.

Beginnings of Endings, Operating Paragraphs/Closing Paragraph

Composition of Message, Write or dictate your drafts / edit and revise / Proofread.

E-mail / Fax / Tele-conference.

## **CHAPTER 9**

### **Strategies for Oral Communication**

For successful speaking & listening, improving oral presentation, improving listening skills, purpose of informative & persuasive speaking kinds and audience analysis of interest & attitudes

Occasion/ location

Organization for P.S

Introduction / Body / Summary / Location

Support-6 forms (Data) question on support.

Interviewing

Purpose / Responsibility

Telephoning, dictating.

## **CHAPTER 10**

### **Job Application.**

Self-Assessment – Your skills & Accomplishments.

Market – Assessment – Interest and Personal Value

Career & Job information/ Helpful persons employees & Jobs.

Resume.

Education – Works Experience / Achievement & Awards / Personal Data / Reference / Sample Resume.

Cover Letter to Resume.

Ex: Of General Nature.

## **CHAPTER 11**

### **Process – Interview and Follows – Up**

Successful Preparation for job interview – prior – chronology Activity

Follow-up message after interview: Candidates to Employer to candidate

Successful Negotiating

Preparation / Basic issues in negotiating job offer.

### **Appendixes**

Visual Aids in B.C

Grammar Modifiers/ Conference/ Parallels

Style Abbreviation/ Number or words/ word choice

### **Recommended Book:**

#### **EFFECTIVE BUSINESS COMMUNICATION**

BY: HERTA A.MURPHY & HERBERT W. HILDERANDT

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# GOVT. DEGREE COLLEGE, LARKANA

DEPARTMENT OF COMPUTER SCIENCE

BS in COMPUTER SCIENCE

SEMESTER-III

DATA STRUCTURE

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## 1. INTRODUCTIONS AND OVERVIEW

- 1.1 Introduction.
- 1.2 Data Structures (Static or Dynamic)  
(Array, Linked list, Stack, Queue, Tree, Graph)
- 1.3 Data Structure Operations.  
(Traversing, Inserting, Deleting, Sorting, Searching)

## 2. PRELIMINARIES

- 2.1 Introduction
- 2.2 Algorithmic Notation
- 2.3 Control Structures
- 2.4 Complexity of Algorithms
- 2.5 Sub-algorithms

## 3. ABSTRACT DATA TYPES AND THEIR IMPLEMENTATION

- 3.1 Introduction
- 3.2 General Definitions
- 3.3 Refinement of Data Specification

## 4. STRING PROCESSING

- 4.1 Introduction
- 4.2 Basic Terminology
- 4.3 Storing Strings
- 4.4 String Operations  
(Substring, Indexing, Concatenation, Length)
- 4.5 Word processing  
(Insertion, Deletion, replacement)
- 4.6 First Pattern Matching Algorithms
- 4.7 Second Pattern Matching Algorithms

## 5. LINKED LISTS

- 5.1 Introduction
- 5.2 Linked Lists
- 5.3 Representation of Linked Lists in Memory
- 5.4 Traversing a Linked List
- 5.5 Insertion into a Linked List
- 5.6 Deletion from a Linked List
- 5.7 Header Linked lists & Algorithms
- 5.8 Two-way Lists & Algorithms

## 6. STACKS, QUEUES, RECURSION

- 6.1 Introduction
- 6.2 Stacks
- 6.3 Array Representation of Stacks
- 6.4 Insertion and Deletion Algorithm  
(PUSH & POP)
- 6.5 Application of Stack. (Recursion, Polish Notation, Quick-sort)
- 6.6 Queues
- 6.7 Representation of Queues
- 6.8 Insertion and Deletion Algorithms
- 6.9 Application of Queues  
(Simulation)
- 6.10 Deques
- 6.11 Priority queues

**7. TREES**

- 7.1 Introduction
- 7.2 Binary Trees Terminology
- 7.3 Representing Binary Trees in Memory
- 7.4 Implementation of Traversal Algorithms (Using Stacks)
- 7.5 Binary Search Trees
- 7.6 Searching and Inserting in Binary Search Trees
- 7.7 Deleting in a Binary Search Tree
- 7.8 Heap; Heapsort

**8. GRAPHS AND THEIR APPLICATIONS**

- 8.1 Introduction
- 8.2 Graph Theory Terminology
- 8.3 Linked representation of a Graph
- 8.4 Operations on Graphs
- 8.5 Traversing a Graph

**9. HASHING**

- 9.1 Definition
- 9.2 Hash Function
- 9.3 Collision Resolution (Open Addressing, chaining)
- 9.4 Hashing

**BOOKS RECOMMENDED**

**TEXT BOOK:**

- 1. Data Structure  
Schaum's Outline Series  
By Seymour Lipschutz

**REFERENCE BOOK:**

- 1. Data Structures and Algorithms  
By Alfred V.Aho, John E.Hopcroft, Jeffery D.Ullman
- 2. DATA structures and Program Design  
Third Edition  
By Robert L. Kruse

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<b>PRACTICAL</b>					
INTERNAL			EXTERNAL		
25			25		
<b>TOTAL</b>			<b>50</b>		

# GOVT. DEGREE COLLEGE, LARKANA

DEPARTMENT OF COMPUTER SCIENCE

BS in COMPUTER SCIENCE

SEMESTER-III

Fundamentals of IT (FoIT)

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Introduction to data bases

DBMS

Types of Databases

WWW

Web Technologies

Web based applications

Introduction to Multimedia

Multimedia technologies

Multimedia Applications

Introduction to Computer Graphics

Digital Graphics

Animation

Graphic Technologies

Computer Network

Internet and Intranet

Usage of networks

Network technologies

## REFERENCE BOOKS

1. An invitation to CS, second edition by G.Michael , schneider, Judith L. Genrsting
2. Information System today by Leonard Jessup, Joseph valaich
3. Computers today by Suresh K. Basandra

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# GOVT. DEGREE COLLEGE, LARKANA

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BS in COMPUTER SCIENCE

SEMESTER-III

ORGANIZATIONAL BEHAVIOR

Fundamentals of organizational behavior  
Behavioural Science and Organizational behavior  
Individual behavior in organizations  
Personality  
Perception and attitudes  
Learning and reinforcement  
Motivation  
Group behavior in organizations  
Group dimensions in organizations  
Group dynamics  
Leadership  
Organizational Structure and organizational behavior  
Organizational design  
Job design  
Stress and work  
Organizational processes  
The decision making process  
The communication process  
Performance appraisal process  
Special issues in organizational behavior  
Management of conflict and change  
Organizational development  
Impact of computer technology

## Reference Books:

1. Organizational behavior by Fred Luthans

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BS in COMPUTER SCIENCE

SEMESTER-III

Digital Logic & Design (DLD)

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## 1. Logic Gates

Inverters, OR & AND Gates  
NOR & NAND Gates  
Demorgan's 1<sup>st</sup> and 2<sup>nd</sup> Theorems  
Exclusive-OR & Exclusive NOR Gates  
Applications

## 2. Fundamental of Boolean Algebra

Boolean Laws  
Comm.  
Association  
Distributive  
Identity  
Negation  
Redundant  
Special Laws  
Boolean relation  
Sum of Product Method, Product of Sum Methods  
Canonical Form  
Sum of Min. Terms  
Product of Max. Terms  
Manipulation of Boolean Expression  
NAND Logic

## 3. Minimization Techniques

Algebraic  
Karnaugh Maps. (up to 4 variables)  
Quine MC Klusky (Tabulation)

## 4. Combinational Logic Circuits

Introduction to TTL Circuits  
Levels of Integrations  
Bipolar and MOS families  
7400 Devices  
Control Circuits  
Comparators  
Encoder and Decoders  
Multiplexers and Demultiplexers  
Adders  
Half Adder  
Full Adder  
2's Complement Adder-Subtractor  
Subtractors  
Half subtractors  
Full subtractors  
Boolean function implementation on a Multiplexer

## 5. Sequential Logic Circuits

### Flip Flops

- RS Latches
- Level clocking
- D-Latches
- Edge-Triggered D-Flip Flop
- Edge-Triggered JK-Flip Flop
- JK Master-Slave Flip Flop

### Registers and Counters

- Buffer Registers
- Shift Registers
- Ripple Counter
- Synchronize Counter
- Ring Counter
- Modulus Counter
  - Using Feed back advance
  - Binary Equivalent Plus Technique, Count Technique
  - Direct Reset Technique

## 6. Memories

- ROMs (Boolean Function)
- Types of ROMs (Implementation on RAM, ROM)
- RAMs
  - Types of RAMs
  - Applications

## RECOMMENDED LIST OF BOOKS

- Digital Computer Electronics By Molvino
- Computer Logic Design By Bartee
- Introduction to Digital Logic Design By M. Moris Mono

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Total					<b>150</b>