

## **Mgm-311 INDUSTRIAL MANAGEMENT AND HUMAN RELATIONS.**

|                            |          |          |          |
|----------------------------|----------|----------|----------|
| <b>Total Contact Hours</b> | <b>T</b> | <b>P</b> | <b>C</b> |
| Theory 32                  | 1        | 0        | 1        |

**AIMS**The study of this subject will enable the student to develop the management skill, acquaint him with the principles of management and human relations and develop psychological approach to solve the labour problems.

### **COURSE CONTENTS**

- 1. INDUSTRIAL PSYCHOLOGY. 2 Hours**
  - 1.1 History and definition.
  - 1.2 Nature and scope.
  
- 2. LEADERSHIP 1 Hour**
  - 2.1 Definition and types.
  - 2.3 Qualities of a good leader.
  
- 3. MOTIVATION 2 Hours**
  - 3.1 Definition.
  - 3.2 Types (Financial and non financial motives).
  - 3.3 Conflict of motives.
  
- 4. MORALE 1 Hour**
  - 4.1 Importance.
  - 4.2 Development.
  - 4.3 Measurement.
  
- 5. HUMAN ENGINEERING. 1 Hour**
  - 5.1 Importance of human factor in industry.
  - 5.2 Man-machine system.
  - 5.3 Strategy for making allocation decisions.
  
- 6. INDUSTRIAL FATIGUE AND BOREDOM. 2 Hours**
  - 6.1 Definition and distinction.
  - 6.2 Psychological causes.
  - 6.3 Objective causes.
  - 6.4 Prevention
  
- 7. INDUSTRIAL ACCIDENTS 2 Hours**
  - 7.1 Psychological causes.
  - 7.2 Objective causes.

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| 7.3        | Prevention  |                |
| <b>8.</b>  | <b>INDUSTRIAL PREJUDICE</b>                         | <b>2 Hours</b> |
| 8.1        | Causes  |                |
| 8.2        | Remedies  |                |
| <b>9.</b>  | <b>PUBLIC RELATIONS.</b>                            | <b>2 Hours</b> |
| 9.1        | Importance  |                |
| 9.2        | Functions   |                |
| <b>10.</b> | <b>GUIDANCE AND COUNSELLING</b>                     | <b>2 Hours</b> |
| 10.1       | Importance  |                |
| 10.2       | Choice of job.                                      |                |
| 10.3       | During service.                                     |                |
| <b>11.</b> | <b>JOB EVALUATION</b>                               | <b>2 Hours</b> |
| 11.1       | Importance  |                |
| 11.2       | Methods   |                |
| 11.3       | Job satisfaction                                    |                |
| 11.4       | Work simplification.                                |                |
| <b>12.</b> | <b>INDUSTRIAL MANAGEMENT</b>                        | <b>2 Hours</b> |
| 12.1       | Introduction  |                |
| 12.2       | Functions of management.                            |                |
| 12.3       | Subdivisions of management                          |                |
| 12.4       | Objectives of industrial management.                |                |
| <b>13.</b> | <b>PERSONNEL SELECTION.</b>                         | <b>2 Hours</b> |
| 13.1       | Recruitment of employees.                           |                |
| 13.2       | Training.   |                |
| 13.3       | Effects of training on production and product cost. |                |
| <b>14.</b> | <b>WORKING CONDITIONS.</b>                          | <b>2 Hours</b> |
| 14.1       | Importance and consideration.                       |                |
| 14.2       | Effects on efficiency and per unit cost.            |                |
| <b>15.</b> | <b>TIME AND MOTION STUDY.</b>                       | <b>3 Hours</b> |
| 15.1       | Concept and importance.                             |                |
| 15.2       | Sequence of motion study.                           |                |
| 15.3       | Principles of motion study.                         |                |
| 15.4       | Steps to time study.                                |                |
| 15.5       | Determination of operations time.                   |                |

- 16. QUALITY CONTROL. 2 Hours**  
16.1 Concept and advantages  
16.2 Methods.

- 17. ROLE OF FOREMAN IN MANAGEMENT. 2 Hours**  
17.1 Foreman's abilities.  
17.2 Duties and functions.

**BOOKS RECOMMENDED:**

- 1.C.S. Meyers, Industrial Psychology, Oxford University Press, London.
2. Smith Wakley, Psychology of Industrial Behaviors, Mc-Graw Hill, New York.
3. Ghulam Hussain, Nizamat-e-Sanaat Aur Insani Rawabat, Ilmi Kitab Khana, Urdu Bazar, Lahore.
4. Andrew R. Megill, The Process of Management William M New Man.
5. Richard N Omen, Management of Industrial Enterprises.

## **Mgm-311 INDUSTRIAL MANAGEMENT AND HUMAN RELATIONS.**

### **INSTRUCTIONAL OBJECTIVES**

At the completion of this course, the students will be able to:

- 1. KNOW INDUSTRIAL PSYCHOLOGY.**
  - 1.1 Describe brief history of industrial psychology.
  - 1.2 Describe in detail definition of industrial psychology.
  - 1.3 State nature and scope of industrial psychology.
  
- 2. KNOW LEADERSHIP.**
  - 2.1 Define leadership.
  - 2.2 Describe types of leadership.
  - 2.3 State qualities of a good leader.
  
- 3. UNDERSTAND MOTIVATION.**
  - 3.1 Define motivation.
  - 3.2 Describe financial and non financial motives.
  - 3.3 Explain conflict of motives.
  
- 4. KNOW MORALE.**
  - 4.1 State importance of morale.
  - 4.2 Describe development of morale.
  - 4.3 State the method of measurement of morale.
  
- 5. UNDERSTAND HUMAN ENGINEERING.**
  - 5.1 Explain importance of human engineering in the industry.
  - 5.2 Explain man-machine system.
  - 5.3 Explain strategy for making allocation decisions.
  
- 6. UNDERSTAND INDUSTRIAL FATIGUE AND BOREDOM.**
  - 6.1 Define fatigue and boredom.
  - 6.2 Describe psychological causes of fatigue and boredom.
  - 6.3 Describe objective causes of fatigue and boredom.
  - 6.4 Explain measures to prevent fatigue and boredom.
  
- 7. UNDERSTAND INDUSTRIAL ACCIDENTS.**
  - 7.1 Explain psychological causes of industrial accidents.
  - 7.2 Explain objective causes of industrial accidents.
  - 7.3 Explain measures to prevent industrial accidents.
  
- 8. UNDERSTAND INDUSTRIAL PREJUDICE.**

- 8.1 Define prejudice
- 8.2 Explain causes of industrial prejudice.
  - 8.3 Explain remedies of industrial prejudice.
- 9. UNDERSTAND THE SIGNIFICANCE OF PUBLIC RELATIONS.**
  - 9.1 Explain importance of public relations.
  - 9.2 Explain functions of public relations.
- 10. UNDERSTAND THE NEED FOR GUIDANCE AND COUNSELLING.**
  - 10.1 State importance of guidance and counselling.
  - 10.2 Explain the role of guidance and counselling in choosing the job.
  - 10.3 Describe help of guidance and counselling during service.
- 11. UNDERSTAND JOB EVALUATION.**
  - 11.1 Explain importance of job evaluation.
  - 11.2 Explain methods of job evaluation.
  - 11.3 Explain job satisfaction.
  - 11.4 Explain work simplification.
- 12. UNDERSTAND INDUSTRIAL MANAGEMENT.**
  - 12.1 Define management.
  - 12.2 State functions of management.
  - 12.3 Enlist subdivision of management.
  - 12.4 Explain objectives of industrial management.
- 13. UNDERSTAND TRAINING AND ITS EFFECTS.**
  - 13.1 Describe the recruitment procedure of employees in an industrial concern.
  - 13.2 Explain training.
  - 13.3 Identify the kinds of training.
  - 13.4 Explain the effects of training on production and product cost.
- 14. UNDERSTAND THE EFFECT OF WORKING CONDITION ON EFFICIENCY.**
  - 15.1 Explain importance of working condition.
  - 15.2 Describe air-conditioning, ventilation, lighting and noise.
  - 15.3 State the effects of good working conditions on efficiency and per unit cost.
- 15. UNDERSTAND TIME AND MOTION STUDY.**
  - 15.1 Explain the concept.
  - 15.2 Describe the importance of work study.
  - 15.3 Explain the sequence of motion study.
  - 15.4 State the principles of motion study.
  - 15.5 Describe the steps for carrying out time study.

15.6 Explain the method of determination of operations time.

**16. UNDERSTAND THE METHODS OF QUALITY CONTROL.**

16.1 Define quality control

16.2 State the advantages of quality control.

16.2 Explain methods of quality control.

**17. UNDERSTAND THE ROLE OF FOREMAN IN AN INDUSTRIAL UNDERTAKING.**

17.1 Explain ability of the foreman.

17.2 Enlist duties of foreman.

17.3 Describe functions of foreman as middle management.

**Mgm-321 BUSINESS COMMUNICATION**

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| 1 | 0 | 1 |

**Total contact hours**

Theory 32 Hrs.

**Prerequisites:**The students shall already be familiar with the language concerned.

**AIMS**The course has been designed to enable the students to.

1. Develop communication skills.
2. Understand basic principles of good and effective business writing in commercial and industrial fields.
3. Develop knowledge and skill to write technical report with confidence and accuracy.

**COURSE CONTENTS**

- |   |                |
|---|----------------|
| <b>1. COMMUNICATION PROCESS.</b>                | <b>6 Hours</b> |
| 1.1 Purposes of communication                   |                |
| 1.2 Communication process                       |                |
| 1.3 Distortions in communication                |                |
| 1.4 Consolidation of communique                 |                |
| 1.5 Communication flow                          |                |
| 1.6 Communication for self development          |                |
| <b>2. ORAL COMMUNICATION SKILLS.</b>            | <b>6 Hours</b> |
| 2.1 Significance of speaking.                   |                |
| 2.2 Verbal and non-verbal messages.             |                |
| 2.3 Strategic steps of speaking.                |                |
| 2.4 Characteristics of effective oral messages. |                |
| 2.5 Communication Trafficking.                  |                |
| 2.6 Oral presentation.                          |                |
| <b>3. QUESTIONING SKILLS.</b>                   | <b>3 Hours</b> |
| 3.1 Nature of question.                         |                |
| 3.2 Types of questions.                         |                |
| 3.3 Characteristics of a good question.         |                |
| 3.4 Questioning strategy                        |                |
| <b>4. LISTENING SKILLS.</b>                     | <b>5 Hours</b> |
| 4.1 Principles of active listening.             |                |
| 4.2 Skills of active listening.                 |                |

- 4.3 Barriers to listening.
- 4.4 Reasons of poor listening.
- 4.5 Giving Feedback.
  
- 5. INTERVIEWING SKILLS. 3 Hours**
  - 5.1 Significance of interviews.
  - 5.2 Characteristics of interviews.
  - 5.3 Activities in an interviewing situation
  - 5.4 Types of interviews.
  - 5.5 Interviewing strategy.
  
- 6. REPORT WRITING. 3 Hours**
  - 6.1 Goals of report writing
  - 6.2 Report format.
  - 6.3 Types of reports.
  - 6.4 Report writing strategy.
  
- 7. READING COMPREHENSION. 2 Hours**
  - 7.1 Reading problems.
  - 7.2 Four Reading skills.
  
- 8. GROUP COMMUNICATION. 4 Hours**
  - 8.1 Purposes of conducting meetings.
  - 8.2 Planning a meeting.
  - 8.3 Types of meetings.
  - 8.4 Selection of a group for meeting.
  - 8.5 Group leadership skills.
  - 8.6 Running a successful meeting.
  - 8.7 Active participation techniques.

#### **RECOMMENDED BOOKS**

1. Sh. Ata-ur-Rehman Effective Business Communication & Report Writing.
2. Ulman J.N. Could JR. Technical Reporting.



**Mgm-321 BUSINESS COMMUNICATION.**

**INSTRUCTIONAL OBJECTIVES**

**1.UNDERSTAND THE COMMUNICATION PROCESS.**

- 1.1 State the benefits of two way communication.
- 1.2 Describe a model of communication process.
- 1.3 Explain the major communication methods used in organization.
- 1.4 Identify the barriers to communication and methods of overcoming these barriers.
- 1.5 Identify misconceptions about communication.

**2. UNDERSTAND THE PROCESS OF ORAL.**

- 2.1 Identify speaking situations with other peoples.
- 2.2 Identify the strategy steps of speaking.
- 2.3 Identify the characteristics of effective speaking.
- 2.4 State the principles of one-way communication.
- 2.5 State the principles of two-way communication.
- 2.6 Identify the elements of oral presentation skills.
- 2.7 Determine the impact of non-verbal communication on oral communication.

**3.DETERMINE THE USES OF QUESTIONING SKILLS TO GATHER AND CLARIFY INFORMATION IN THE ORAL COMMUNICATION PROCESS.**

- 3.1 Identify different types of questions.
- 3.2 Determine the purpose of each type of question and its application.
- 3.3 Identify the hazards to be avoided when asking questions.
- 3.4 Demonstrate questioning skills.

**4.DEMONSTRATE THE USE OF ACTIVE LISTENING SKILL IN THE ORAL COMMUNICATION PROCESS.**

- 4.1 State the principles of active listening.
- 4.2 Identify skills of active listening.
- 4.3 Identify barriers to active listening.
- 4.4 State the benefits of active listening.
- 4.5 Demonstrate listening skills.
- 4.6 Explain the importance of giving and receiving feed back.

**5.DETERMINE THE APPROPRIATE INTERVIEW TYPE FOR THE SPECIFIC WORK-RELATED SITUATION AND CONDUCT A WORK-RELATED INTERVIEW.**

- 5.1 State the significance of interviews.
- 5.2 State the characteristics of interviews.
- 5.3 Explain the activities in an interviewing situation.
- 5.4 Describe the types of interviews.

- 5.5 Explain the interviewing strategy.
- 5.6 Prepare instrument for a structured interview.

**6. PREPARE A REPORT OUT-LINE, BASED ON SUBJECT MATTER AND AUDIENCE.**

- 6.1 Identify the different types of reports.
- 6.2 Determine when to use an informal or formal report presentation.
- 6.3 Identify the stages of planning a report.
- 6.4 Identify the parts of a report and choose the parts appropriate for each type of report.
- 6.5 Draft a report outline.

**7. DEMONSTRATE READING COMPREHENSION.**

- 7.1 Identify major reading problems.
- 7.2 Identify basic reading skills.
- 7.3 State methods of previewing written material.
- 7.4 Identify methods of concentration when reading.
- 7.5 Demonstrate reading comprehension.

**8. UNDERSTAND THE PRINCIPLES OF GROUP COMMUNICATIONS.**

- 8.1 State the purpose and characteristics of major types of meeting.
- 8.2 Explain responsibilities of a meeting/committee.
- 8.3 Identify problems likely to be faced at meeting and means to overcome these problems.
- 8.4 Distinguish between content and process at meetings.
- 8.5 Explain the key characteristics of a good group facilitator.

**Comp-314 COMPUTER MAINTENANCE AND SERVICING.**

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| 1 | 6 | 4 |

**Total Contact Hours**

Theory 32 Hours

**COURSE CONTENTS.**

**1. BASIC TROUBLESHOOTING**

- 1.1 Introduction to troubleshooting
- 1.2 Component recognition.
- 1.3 Component failures.
- 1.4 How to localize the failure and make repairs.
- 1.5 Safety precautions during trouble shooting and repair.

**2. PREVENTIVE MAINTENANCE.**

- 2.1 Contributors to system failure.
  - 2.1.1 Heat and cold
  - 2.1.2 Dust and other particles.
  - 2.1.3 Noise interference.
  - 2.1.4 Power line problems.
  - 2.1.5 Corrosion.
  - 2.1.6 Magnetism.
- 2.2 Diskette handling.
- 2.3 Drives maintenance.
- 2.4 Maintenance schedule.
  - 2.4.1 Weekly maintenance.
  - 2.4.2 Semi annual maintenance.

**3. POWER SUPPLY.**

- 3.1 Switch mode power supply and transformer based power supply.
- 3.2 Power requirement.
- 3.3 Testing the power supply.
- 3.4 Diagnosing and rectifying the problems.
- 3.5 Replacing the power supply.

**4. MOTHERBOARD.**

- 4.1 Motherboard components.
- 4.2 Motherboard connections.
- 4.3 Motherboard configuration.
- 4.4 Memory configuration.
- 4.5 CMOS RAM setup of AT compatibles.
- 4.6 RAM shadowing.

- 4.7 Expansion cards.
- 4.8 Card conflicts.
- 4.9 Adding memory
- 4.10 Performance enhancement.
- 4.11 Diagnosing problems.
- 4.12 Motherboard replacement.

## **5. KEYBOARD.**

- 5.1 Keyboard basics.
- 5.2 XT and AT Keyboards.
- 5.3 Diagnosing problems.
- 5.4 Dismantling and reassembly.

## **6. VIDEO DISPLAY.**

- 6.1 Digital and analog monitors.
- 6.2 LCD display.
- 6.3 Testing monitors.
- 6.4 Display adapters.
- 6.5 Display problems.

## **7. DISK DRIVES.**

- 7.1 Floppy Disk drive.
  - 7.1.1 FDD configuration.
  - 7.1.2 FDD controller.
  - 7.1.3 Diagnosing problems.
  - 7.1.4 Drive misalignment.
  - 7.1.5 Servicing drive.
  - 7.1.6 Diskette change line problems.
  - 7.1.7 Diskette Trouble shooting.
  - 7.1.8 Disk drive installation.
  - 7.1.9 FDD removal.
  - 7.1.10 Casing for diskette.
- 7.2 Hard Disk.
  - 7.2.1 Hard disk basics
  - 7.2.2 HD interface.
  - 7.2.3 Cylinder wraparound.
  - 7.2.4 HD cards.
  - 7.2.5 Low level formatting.
  - 7.2.6 Inter leaving.
  - 7.2.7 Disk optimization.
  - 7.2.8 Removing Hard disk.
  - 7.2.9 Installing Hard disk.
  - 7.2.10 Setting-up Hard disk.

- 7.2.11 Bad sectors.
- 7.2.12 HD problems.

## **8. PRINTERS AND PLOTTERS.**

- 8.1 Preventive maintenance of printers and plotters.
- 8.2 Printer interface.
  - 8.2.1 Parallel interface.
  - 8.2.2 Serial interface.
- 8.3 Serial port.
- 8.4 Serial port problems.
- 8.5 Serial printer problem.
- 8.6 Parallel printer problems.
- 8.7 Printer configuration problems.
- 8.8 Line and page control problems.
- 8.9 Diagnosing problems.

## **Comp-314    COMPUTER MAINTENANCE AND SERVICING**

### **INSTRUCTIONAL OBJECTIVES**

#### **1.    BASIC TROUBLESHOOTING.**

- 1.1    Define the trouble shooting.
- 1.2    Identify components.
- 1.3    Describe failure of components.
- 1.4    Describe how to localize failures and make repairs.
- 1.5    Describe safety precautions during trouble shooting.

#### **2.    PREVENTIVE MAINTENANCE.**

- 2.1    Enlist the contributors to system.
  - 2.1.1    Explain the effect of hot and cold on system performance.
  - 2.1.2    Explain the effect of dust    and other particles on system performance.
  - 2.1.3    Describe the noise interference.
  - 2.1.4    Describe the power line problems, their causes and prevention.
  - 2.1.5    Describe the effect of corrosion on system performance.
  - 2.1.6    Describe the effect of magnetic field on system performance.
- 2.2    Describe the disk handling.
- 2.3    Explain the drive maintenance.
- 2.4    Explain the maintenance schedule.
  - 2.4.1    Describe weekly maintenance schedule.
  - 2.4.2    Describe semi annual maintenance schedule.

#### **3.    POWER SUPPLY.**

- 3.1 Differentiate between switch mode power supply and transformer base power supply.
- 3.2    Explain the power required for different components.
- 3.3    Explain the procedure for testing the power supply.
- 3.4    Explain diagnosing the power supply problems.
- 3.5    Enlist the problems to replace the power supply.

#### **4.    MOTHER BOARD.**

- 4.1    Enlist the mother board components.
- 4.2    Describe the mother board connections.
- 4.3    Explain the mother board configuration.
- 4.4    Explain the memory configuration.
- 4.5    Describe the CMOS setup for AT compatibles.
- 4.6    Describe the RAM shadowing.
- 4.7    Describe the expansion cards.
- 4.8    Describe the cards conflicts.
- 4.9    Explain Adding memory.
- 4.10    Describe performance enhancement.

- 4.11 Explain the procedure of diagnosing motherboard problems.
- 4.12 Describe the procedure for motherboard replacement.

**5. KEYBOARD.**

- 5.1 Describe the Keyboard.
- 5.2 Differentiate between XT and AT keyboard.
- 5.3 Diagnosing and rectifying keyboard problems.
- 5.4 Explain processing dismantling and Reassembly of Keyboard.

**6. VIDEO DISPLAY.**

- 6.1 Differentiate between Analog and Digital monitor.
- 6.2 Describe the LCD display.
- 6.3 Explain procedures for testing monitors.
- 6.4 Explain the display adopters.
- 6.5 Explain the display problems.

**7. DISK DRIVES.**

- 7.1 Floppy Disk Drive.
  - 7.1.1 Explain floppy disk drive configuration.
  - 7.1.2 Explain the floppy disk drive controller.
  - 7.1.3 Explain the diagnosing problems.
  - 7.1.4 Describe the drive misalignment.
  - 7.1.5 Explain the procedure for drive servicing.
  - 7.1.6 Explain the diskette change line problems.
  - 7.1.7 Explain the diskette change troubleshooting.
  - 7.1.8 Explain the procedure to install FDD.
  - 7.1.9 Explain the procedure to remove floppy disk drive.
  - 7.1.10 Explain the procedure for caring floppy drive.
- 7.2 Hard Disk.
  - 7.2.1 Describe the Hard Disk.
  - 7.2.2 Explain the hard disk interface.
  - 7.2.3 Describe the cylinder wraparound.
  - 7.2.4 Explain the HD card.
  - 7.2.5 Explain the low level formatting.
  - 7.2.6 Describe the interleaving.
  - 7.2.7 Explain the disk optimization.
  - 7.2.8 Explain the procedure for removing HD.
  - 7.2.9 Explain the procedure for installing HD.
  - 7.2.10 Explain the setup of HD.
  - 7.2.11 Explain the Bad sectors.
  - 7.2.12 Explain HD problems.

**8. PRINTERS AND PLOTTERS.**

- 8.1 Explain the preventive maintenance for printers and plotters.
- 8.2 Explain the printer interface.
  - 8.2.1 Explain the parallel interface.
  - 8.2.2 Explain the serial interface.
- 8.3 Explain the serial port.
- 8.4 Explain the serial port problems.
- 8.5 Explain the serial printers problem.
- 8.6 Explain the parallel printers problems.
- 8.7 Explain the printers configuration problem.
- 8.8 Explain line and page control problem.
- 8.9 Explain the procedure for diagnosing problems.



## Comp-314 COMPUTER MAINTENANCE AND SERVICING

### LIST OF PRACTICALS

192 Hours

1. Using Logic probe/pulsar.
2. Using storage Oscilloscope.
3. Using signature analyser.
4. Use of signature analyser and logic analyser.
5. Use of IC tester.
6. Use of emulator.
7. Demonstrating construction of mother board.
8. Identification of mother board components.
9. Preventive maintenance of system.
10. Testing the power supply.
11. Replacing the power supply.
12. Using CMOS RAM setup.
13. PC installation.
14. Adding memory.
15. Replacement of cards.
16. Using DOS commands.
  - Format
  - Disk
  - Backup-restore-x copy
  - Creating coming system and auto exec bat file
17. Drive installation.
18. Using diagnostic programs.
19. Using PC Tools package.
20. Using Anti virus program.
21. Using Norton utilities.
22. Disassembly/assembly of PC.
23. Disassembly/assembly of monitors.
24. Disassembly/assembly of printers.
25. Disassembly/assembly of keyboard.
26. Disassembly/assembly of disk drives.
27. Disassembly/assembly of mouse.
28. Disassembly/assembly of plotters.
29. Diagnosing faults and rectifying faults of various input/output devices.

## Comp-323 PERIPHERALS AND INTERFACING

|                            |   |        |        |   |
|----------------------------|---|--------|--------|---|
| <b>Total Contact hours</b> | 2 | T<br>3 | P<br>3 | C |
| Theory 64 Hours            |   |        |        |   |
| Practicals 96 Hours        |   |        |        |   |

### COURSE CONTENTS

- 1. KEYBOARD.**
  - 1.1 Serial and parallel keyboard.
  - 1.2 Keyboard interface.
  - 1.3 Key matrix.
  - 1.4 Key codes.
  - 1.5 Keyboard switches.
  - 1.6 Keyboard microprocessor (8048).
  
- 2. MOUSE.**
  - 2.1 Mouse construction.
  - 2.2 Working principles of mouse.
  - 2.3 Mouse interface.
  
- 3. DIGITIZER.**
  - 3.1 Digitizer construction.
  - 3.2 Working principles of digitizer.
  - 3.3 Digitizer interfacing.
  
- 4. SCANNER.**
  - 4.1 Types of scanner.
  - 4.2 Mono and color scanner.
  - 4.3 Construction of scanner.
  - 4.4 Working principles of scanner.
  - 4.5 Scanner interface.
  
- 5. DISPLAYS AND ADAPTERS.**
  - 5.1 CRT Display.
    - 5.1.1 CRT interface.
    - 5.1.2 Composite video.
    - 5.1.3 CRT controller.
  - 5.2 Monochrome display and adapter.
  - 5.3 Color graphic display and adapter.
  - 5.4 Enhanced color graphic display and adapter.
  - 5.5 VGA displays and adapters.

- 5.6 Digital and analog monitors.
- 5.7 LCD displays.

## **6. STORAGE DEVICES.**

- 6.1 Magnetic storage and optical storage.
- 6.2 Data recording methods, FM and MFM.
- 6.3 Sequential and direct access storage devices.
- 6.4 Magnetic tape.
  - 6.4.1 Data recording on tape.
  - 6.4.2 Parts of magnetic tape.
  - 6.4.3 Tape drive.
- 6.5 Floppy disk drive.
  - 6.5.1 FDD components.  
R/W head, head Actuator, spindle motor, circuit board, connectors and sensors.
  - 6.5.2 FDD configuration.
  - 6.5.3 Types of FDD.
  - 6.5.4 FD types and specifications.
  - 6.5.5 High density and low density disks.
  - 6.5.6 Hard Sectors and soft sectors.
- 6.6 Hard disk.
  - 6.6.1 HDD components.
  - 6.6.2 Platters and media, R/W heads, head actuator mechanism, stepper motor, voice coil, air filters, spindle motor, logic board.
  - 6.6.3 HD interfaces.
  - 6.6.4 HDD types.
  - 6.6.5 HDD controller.
  - 6.6.6 Clusters and cylinders.
  - 6.6.7 HD card.
  - 6.6.8 Low level formatting.
  - 6.6.9 Inter leaving.
  - 6.6.10 HDD configuration.
- 6.7 CD-ROM.
- 6.8 CD ROM Drive.

## **7. PRINTER.**

- 7.1 Serial and Parallel interface.
- 7.2 Impact and Non impact printer.
- 7.3 Printer subassemblies.
- 7.4 Dot-matrix printer.
  - 7.4.1 Parts of Dot Matrix Printer.
  - 7.4.2 Working principles.
- 7.5 Laser Printer.
  - 7.5.1 Construction.

- 7.5.2 Working mechanism.
- 7.6 Inject Printer.
  - 7.6.1 Construction.
  - 7.6.2 Working Principles.
- 7.7 Daisy wheel Printer.
- 7.8 Line Printer.

## **8. PLOTTERS.**

- 8.1 Types of plotter.
- 8.2 Drum plotter.
- 8.3 Flat bed plotter.
- 8.4 Photo Plotter.

## **9. MODEM.**

- 9.1 Modem types.
- 9.2 Working principles of Modem.

## **Comp-323 PERIPHERALS AND INTERFACING**

### **INSTRUCTIONAL OBJECTIVES**

#### **1. KEYBOARD.**

- 1.1 Explain parallel and serial key board with help of block diagram.
- 1.2 Describe the keyboard interface.
- 1.3 Explain the key matrix.
- 1.4 Enlist the key codes.
- 1.5 Enlist the key switches.
- 1.6 Explain the 8048 Keyboard microprocessor.

#### **2. MOUSE.**

- 2.1 Identify the parts of Mouse.
- 2.2 Explain the working principles of Mouse.
- 2.3 Describe the mouse interfacing.

#### **3. DIGITIZER.**

- 3.1 Discuss the specification of digitizer.
- 3.2 Explain the working principles of digitizer.
- 3.3 Discuss the interfacing with CPU.

#### **4. SCANNER.**

- 4.1 Differentiate between flat bed and hand held scanner.
- 4.2 Discuss the mono and color scanner.
- 4.3 Identify the parts of scanner.
- 4.4 Explain the working principles of scanner.
- 4.5 Describe the interfacing of scanner.

#### **5. DISPLAYS AND ADAPTERS.**

- 5.1 Describe the CRT interface.
- 5.2 Describe the Composite video.
- 5.3 Explain the CRT controller.
- 5.4 Explain the monochrome display and adapter.
- 5.5 Explain the color graphic display and adapter.
- 5.6 Explain Enhanced color graphic display and adapter.
- 5.7 Explain VGA displays and adapters.
- 5.8 Discuss Digital and analog monitors.
- 5.9 Explain the LCD displays.

#### **6. STORAGE DEVICES.**

- 6.1 Differentiate between magnetic storage and optical storage.

- 6.2 Explain frequency modulation (FM) and modified frequency modulation (MFM) methods.
- 6.3 Discuss sequential and direct access storage devices.
- 6.4 Discuss how data is recorded on tape.
- 6.5 Identify logical record, physical record, inter block gap, frame and channels/tracks.
- 6.6 Explain the magnetic tape drive.
- 6.7 Identify the FDD components.  
\*R/W head, Head Actuator, spindle motor, circuit board connectors and sensors.
- 6.8 Explain the FDD configuration.
- 6.9 Discuss the types of FDD.
- 6.10 Explain FD types and specifications.
- 6.11 Describe High density and low density disks.
- 6.12 Define Hard sectors and soft sectors.
- 6.13 Discuss the HD basics.
- 6.14 Identify components of HD:  
\*Platters and media, R/W heads, head actuator mechanism, stepper motor, voice coil, air filters, spindle motor, logic board.
- 6.15 Explain the HD interfaces.
- 6.16 Enlist HD types.
- 6.17 Explain the HD controller.
- 6.18 Explain Clusters and Cylinders.
- 6.19 Describe function of HD card.
- 6.20 Describe the Low level formatting.
- 6.21 Describe the Inter leaving.
- 6.22 Explain the HDD configuration.
- 6.23 Explain the CD-ROM.
- 6.24 Explain the working mechanism of CD-ROM Drive.

## 7. **PRINTER.**

- 7.1 Differentiate between Serial and Parallel interface.
- 7.2 describe Impact and Non impact printer.
- 7.3 Explain the Printer subassemblies.
- 7.4 Enlist the printer Types.
- 7.5 Explain the construction of Dot-matrix printer.
- 7.6 Enlist the Parts of Dot Matrix Printer.
- 7.7 Explain the Working principles of dot matrix printer.
- 7.8 Explain the Construction of laser printer.
- 7.9 Explain the Working mechanism of laser printer.
- 7.10 Explain the construction of Inject printer.
- 7.11 Explain the working Principles of Inject Printer.
- 7.12 Explain the Daisy wheel Printer.
- 7.13 Describe the Line Printer.

**8. PLOTTERS.**

- 8.1 Enlist types of plotter.
- 8.2 Explain the working principles of Drum plotter.
- 8.3 Explain the working principles of Flat bed plotter.
- 8.4 Describe the Photo Plotter.

**9. MODEM.**

- 9.1 Enlist the Modem types.
- 9.2 Explain the working principles of Modem.

## **Comp-323 PERIPHERALS AND INTERFACING**

### **LIST OF PRACTICALS**

**96 Hours**

1. Identification of parts.
2. Keyboard interfacing.
3. Disassembly/Assembly of Keyboard.
4. Demonstrating working of the Mouse.
5. Identification of various components.
6. Working of a digitizer.
7. Identifying the parts of digitizer.
8. Identifying the parts of a scanner.
9. Demonstrating the working of a scanner.
10. Demonstrate the interfacing of various Adapters.
11. Identification of components of various monitors.
12. Identify parts of floppy disk and HD.
13. Identify the components of FDD.
14. Identify the components of HDD.
15. Demonstrating working of the CDROM.
16. Identify the Printer subassemblies.
17. Demonstrate working of various Printers.
18. Disassembly/Assembly of various printers.
19. Printer interfacing.
20. Identify parts of plotters.
21. Demonstrate working of plotters.
22. Demonstrate working of Modem.



**Comp-332 DATA COMMUNICATION AND COMPUTER NETWORKS**

|   |   |   |
|---|---|---|
| T | P | C |
| 2 | 3 | 2 |

**Total Contact Hours:**

Theory 64 Hours  
Practical 96 Hours

**Pre-requisites:** Control and Automation (Comp-262).

**AIMS** Students will be able to realize the difference between the hardware requirements of a various P.C systems. They will also select a particular P.C for a specific corporation by applying the appropriate selection.

This course has been designed to enable the students:

1. To gain understanding of the techniques for transmission of Analog and Digital messages.
2. To Gain an understanding of the Networking concept and LAN.

**COURSE CONTENTS**

**1. INTRODUCTION TO COMMUNICATION SYSTEM.**

- 1.1 The essentials of a communication system.
- 1.2 Description and need for modulation.
- 1.3 Analog and Digital messages.
- 1.4 Bandwidth.
- 1.5 Noise.
- 1.6 Signal to Noise Ratio and Noise figure.
- 1.7 Sampling theorem.

**2. CARRIER COMMUNICATION.**

- 2.1 Carrier signal, modulating and modulated signals.
- 2.2 Base band and Broad band communication.
- 2.3 Amplitude Modulation.
- 2.4 Frequency modulation.
- 2.5 Advantages of FM over AM.

**3. PULSE COMMUNICATION.**

- 3.1 Coding.
- 3.2 Pulse Modulation.
- 3.3 PAM, PPM, and PWM.
- 3.4 Pulse code Modulation.
- 3.5 Time division multiplexing.
- 3.6 Quantization.

- 3.7 Generation of PCM.
- 3.8 Advantages and application of PCM.
- 3.9 Delta Modulation.
- 3.10 Comparison of Delta Modulation, PCM and differential PCM.

#### **4. DATA COMMUNICATION.**

- 4.1 Digital Multiplexing.
- 4.2 Microprocessor.
- 4.3 Data transmission circuits.
- 4.4 Characteristics of Data transmission circuits such as Bandwidth requirements, Data transmission speeds, Noise, Cross talk, Distortion, equalizers.
- 4.5 Digital codes (Baudot, ASCII Codes).
- 4.6 Parity check codes for error detection.
- 4.7 Data sets i.e Modems.
- 4.8 Modes of Modem operation (simplex, Duplex).
- 4.9 Modem data transmission speeds.
- 4.10 Modem modulation method (ASK, FSK, PSK).
- 4.11 RS. 232 interface.
- 4.12 Introduction of data sets to telephone loops.
- 4.13 Facsimile machines.

#### **5. COMPUTER NETWORKS.**

- 5.1 Network concepts.
- 5.2 Types of networks according to geographical limitations.
- 5.3 Local area network.
- 5.4 Elements of LAN (Gate ways, file server, work stations, hard ware, network operating system).
- 5.5 Packets.
- 5.6 The OSI reference model.
- 5.7 Layers of the OSI model.
- 5.8 Protocols.
- 5.9 Some important protocols.
- 5.10 LAN topologies such as:  
Token ring, Token bus, star networking.
- 5.11 Inter Net.
- 5.12 IEEE 802 standards for LANs such as 802.1, 802.2, 802.3
- 5.13 Introduction to NOVELL NETWARE.

#### **6. ADVANCED COMMUNICATION SYSTEM.**

- 6.1 Fax and facsimile transmission.
- 6.2 Data Communication computer.
- 6.3 Satellite communication.
- 6.4 Fibre optic communication.

## 6.5 Applications of computer Networks such as E-mail, Internet, World (WWW).

## **Comp-332 DATA COMMUNICATION AND COMPUTER NETWORKS.**

### **INSTRUCTIONAL OBJECTIVES**

#### **1. UNDERSTAND COMMUNICATION SYSTEM AND ASSOCIATED TERMINOLOGIES.**

- 1.1 List the essential requirements of a communication.
- 1.2 Explain the functioning of a transmitter, receiver, channel in a communication system.
- 1.3 Discuss the difference between analog and Digital Messages.
- 1.4 Define distortion, signal to noise ratio.
- 1.5 Define frequency spectrum of a signal, channel Bandwidth and Noise figure.
- 1.6 Define modulation, baseband modulating signal, carrier and modulated signal.
- 1.7 Explain the need for modulation in communication systems.
- 1.8 Differentiate between baseband and broadband signals.
- 1.9 Define the purpose and concept of frequency division multiplexing.
- 1.10 Explain the sampling theorem.

#### **2. UNDERSTAND CARRIER COMMUNICATION AND ALLIED TERMINOLOGY.**

- 2.1 Name different modulation system.
- 2.2 Define amplitude, frequency and phase modulation.
- 2.3 Sketch the waveforms for AM, FM, PM signals.
- 2.4 Define Bandwidth and signal to Noise ratio for A.M signals and F.M signals.
- 2.5 Compare A.M and F.M in respect of sideband generation, signal to noise ratio, noise, bandwidth and field of application.
- 2.6 Draw simple block diagrams of A.M and F.M transmitters.
- 2.7 State the function of each block in 2.6
- 2.8 Draw the block diagram of F.M receiver.
- 2.9 State the function of each block in 2.8

#### **3. UNDERSTAND PULSE COMMUNICATION SYSTEM.**

- 3.1 Define digital communication system.
- 3.2 Define the concept of Information and its measurement.
- 3.3 Define coding and its importance.
- 3.4 Explain Baudot code.
- 3.5 Explain time division multiplexing.
- 3.6 Describe effects of noise, redundancy in an information carrying channel.
- 3.7 Explain pulse modulation for the transmission of analog signals.
- 3.8 Explain the analog pulse modulation system i.e PAM, and pulse time modulation.
- 3.9 Explain PWM and PPM.
- 3.10 List the Digital Pulse modulation system.
- 3.11 Explain in detail pulse code application.
- 3.12 Discuss the advantages and application of PCM.
- 3.13 Discuss the effects of noise on PCM.

- 3.14 Explain delta modulation.
- 3.15 Define differential pulse code modulation.
- 3.16 Draw a comparison between delta modulation, differential pulse code modulation and PCM.

#### **4 UNDERSTAND DATA COMMUNICATION.**

- 4.1 Explain digital multiplexing .
- 4.2 Discuss shift registers for parallel to serial conversion of data.
- 4.3 Discuss the microprocessor as a data oriented device.
- 4.4 Discuss the characteristics of data transmission circuits (Bandwidth, requirements, data transmission, speeds, Noise, cross talk).
- 4.5 Explain Echo suppressors distortion, equalizers.
- 4.6 Discuss the digital codes, the error detection and correction codes (Parity check codes).
- 4.7 Define modems/Data sets.
- 4.8 Discuss the modes of operation of modems.
- 4.9 List the typical data transmission speeds of modems.
- 4.10 List the modem modulation methods.
- 4.11 Explain FSK, ASK, PSK.
- 4.12 Discuss the RS-232 Interface.
- 4.13 Explain the Inter connection of data circuits to telephone loops.

#### **5 UNDERSTAND COMPUTER NETWORKING.**

- 5.1 Define computer networks.
- 5.2 State and define the types of Networks according to geographical limits.
- 5.3 State the network topologies.
- 5.4 Sketch and explain 5.3
- 5.5 Explain LAN.
- 5.6 Explain the elements of LAN such as gate ways, file server, work stations, Hardwares network operating systems.
- 5.7 Discuss the concept of packets, and packet switching.
- 5.8 Draw the block diagram of OSI model.
- 5.9 State the function of each layer of OSI model.
- 5.10 Define protocol.
- 5.11 State the functioning of some Important protocols.
- 5.12 Explain LAN with OSI model.
- 5.13 Explain the principle of protocols for each layer.
- 5.14 State the function of JEEE 802 standards for LAN such as 802.1, 802.2, 802.3
- 5.15 Explain data communication software.
- 5.16 Describe system Network Architecture.
- 5.17 Discuss the functioning of Network operating system such as NOVELL.
- 5.18 State the need for Network security.

**6 UNDERSTAND ADVANCED COMMUNICATION SYSTEM.**

- 6.1 Explain the principle of fax machine with block diagram.
- 6.2 Explain facsimile transmission.
- 6.3 Explain data transmission with computers using block diagram.
- 6.4 Explain the principle of working of satellite communication.
- 6.5 Discuss the working of fibre optic communication.
- 6.6 Explain the data transmission through fibre optics.
- 6.7 Illustrate the working of transmitter in fibre optic communications using a block diagram.
- 6.8 Illustrate the working receiver used in fibre optic communications using a block diagram.
- 6.9 Discuss the applications of computer Networks such as Electronic Mail, Inter Net, World Wide Web (WWW).
- 6.10 Define Interservices digital network (ISDN).
- 6.11 Discuss the basic principle and applications of ISDN.

**Comp-332 DATA COMMUNICATION AND COMPUTER NETWORKS**

**LIST OF PRACTICALS**

**96 Hours**

**Comp-344****OPERATING SYSTEM & C LANGUAGE.**

|                            |           |   |   |   |
|----------------------------|-----------|---|---|---|
|                            |           | T | P | C |
| <b>Total Contact Hours</b> | 2         | 6 | 4 |   |
| Theory                     | 64 Hours  |   |   |   |
| Practicals                 | 192 Hours |   |   |   |

**COURSE CONTENTS.**

- 1. OPERATING SYSTEM. 6 Hours.**
  - 1.1 Introduction.
  - 1.2 Process concepts.
  - 1.3 Memory Management
  - 1.4 Virtual storage process Management
  - 1.5 Device management.
  - 1.6 Information management.
  
- 2. UNIX SYSTEM FUNDAMENTALS. 6 Hours.**
  - 2.1 Structure Kernel.
  - 2.2 File systems.
  - 2.3 Protection.
  - 2.4 Images.
  
- 3. C LANGUAGE.**
  - 3.1 Structural Organization.
  - 3.2 Elementary data type, operators, expressions.
  - 3.3 Functions, scope and utilization.
  - 3.4 Pointers and Arrays.
  
- 4. UNIX PROGRAMMING. 10 Hours.**
  - 4.1 Command line arguments.
  - 4.2 Standard I/O, I/O library, file descriptions, file handling functions, low level I/O.
  - 4.3 Access control programming I/O routines from low level I/O, error handling.
  - 4.4 System function, low level process creation and termination, fork, wait, software interrupt, inter-process communication, management utilities.
  
- 5. SHELL PROGRAMMING. 12 Hours**
  - 5.1 Shell variables.
  - 5.2 Conditional tests.
  - 5.3 Looping.
  - 5.4 Multiway branching.
  - 5.5 Command grouping.
  - 5.6 Debugging shell procedures.



- 5.7 Device characteristics.
  - 5.7.1 I/O programming.
  - 5.7.2 Device drivers.
  - 5.7.3 Device specific command.

**6. GRAPHICS. 8 hours.**

- 6.1 Line drawing.
- 6.2 Rotation.
- 6.3 Animation.
- 6.4 3 D graphics and devices.

**7. ADVANCED MC DOS PROGRAMMING. 12 Hours.**

- 7.1 Genealogy of MS DOS.
- 7.2 MS DOS operating
- 7.3 Programming for the MS DOS environment.
- 7.4 Using the MS DOS programming tools.
- 7.5 Programming the character devices.
- 7.6 File and record manipulation.
- 7.7 Directories, subdirectories and volume labels.
- 7.8 Disk internals.
- 7.9 Allocations.
- 7.10 EXEC Function
- 7.11 Interrupt Handlers.
- 7.12 Writing MS DOS filters.

**INSTRUCTIONAL OBJECTIVES.**

- 1. UNDERSTAND THE FUNCTIONS OF AN OPERATING SYSTEM.**
  - 1.1 Explain memory management in a system.
  - 1.2 Explain the various process involved in Memory management.
  - 1.3 Define virtual storage.
  - 1.4 Explain virtual storage, Describe the process of virtual storage.
  - 1.5 Explain process and device managements.
  - 1.6 Describe the device management process.
  - 1.7 Explain the information management and its process.
  
- 2. KNOW THE STRUCTURE OF UNIX OPERATING SYSTEMS.**
  - 2.1 Describe the structure of UNIX Operating system.
  - 2.2 Define UNIX operating system
  - 2.3 List the functions of an operating system.
  - 2.4 Define kernel.
  - 2.5 Understand the working and functions of a Kernel.
  - 2.6 Define file system of UNIX operating system.
  - 2.7 List out the different files of UNIX operating system.
  - 2.8 Define Ordinary file.
  - 2.9 Explain ordinary file.
  - 2.10 Define different directories.
  - 2.11 Explain different directories.
  - 2.12 Define special files.
  - 2.13 Explain special files.
  - 2.14 Explain removable file system.
  - 2.15 Define file protection.
  - 2.16 Explain file protection.
  - 2.17 Define an image.
  
- 3. UNDERSTAND C LANGUAGE PROGRAMMING.**
  - 3.1 Describe structure of C language.
  - 3.2 Define Arithmetic, Logical, Relational, shift, Assignment and Conditional Operators.
  - 3.3 Define character sets and variables.
  - 3.4 Give statement construction covering simple declarations, constant assignments. IF, IF..ELSE, SWITCH WHILE, FOR DO WHILE, BREAK, CONTINUE, GOTO, PRINT, SCAN.
  - 3.5 Write program segments using the above.
  - 3.6 Explain the shift operation and bit wise logical operation using statement.
  - 3.7 Illustrate the same through program segments.
  - 3.8 Apply control flow for block and statement.

- 3.9 Explain micro facility in C.
- 3.10 Illustrate the usage of library and system functions in a statement.
- 3.11 Explain the hierarchical organization of block and flow of control from block to block.
- 3.12 Illustrate the nesting of loops.
- 3.13 Use the functions and statements in writing program.

#### **4. UNDERSTAND THE BASICS OF UNIX PROGRAMMING**

- 4.1 Define command line arguments.
- 4.2 Define the working command line arguments.
- 4.3 Define standard I/O routines.
- 4.4 Explain the working standard I/O routines.
- 4.5 Define I/O library.
- 4.6 Explain working of I/O library.
- 4.7 Define a file description.
- 4.8 Explain the working of a file descriptor.
- 4.9 List the various file handling functions.
- 4.10 Explain the different file handling functions.
- 4.11 Explain low level I/O.
- 4.12 Explain access control
- 4.13 Explain the different programming I/O routines.
- 4.14 Explain error handling.
- 4.15 Explain low level process creation.
- 4.16 Explain process termination.
- 4.17 Explain Fork and Wait.
- 4.18 Explain software interrupts.
- 4.19 Explain pipes.
- 4.20 Explain inter-process communications.
- 4.21 Explain semaphores.
- 4.22 Explain memory management utilities.

#### **5. UNDERSTAND THE BOURN SHELL PROGRAMMING.**

- 5.1 Define the shell variable.
- 5.2 Explain the shell variable with suitable example.
- 5.3 List the various conditional tests.
- 5.4 Explain the various conditional tests.
- 5.5 Explain looping.
- 5.6 Explain multiway branching.
- 5.7 Explain command grouping.
- 5.8 Explain debugging.
- 5.9 Explain I/O programming.
- 5.10 Explain device drivers.
- 5.11 List the device specific commands.

- 5.12 Explain device specific commands.
- 5.13 Explain local system calls.
- 5.14 Explain spoolers.

**6. UNDERSTAND COMPUTER GRAPHICS.**

- 6.1 Explain the point plotting techniques.
- 6.2 List the graphic input devices.
- 6.3 Explain about pointing and positioning devices (The mouse, tablet, light pen).
- 6.4 List display devices and controllers.
- 6.5 Explain the CRT display.
- 6.6 Explain inherent Memory devices.
- 6.7 List transformation principles
- 6.8 Explain translation, rotation, scaling.
- 6.9 Discuss about Clipping and Windowing.
- 6.10 Explain about view transformation.
- 6.11 Explain about the windowing transformation.
- 6.12 List the applications of 3-D graphics.
- 6.13 Discuss about CAD, Animation, Simulation.
- 6.14 Discuss the techniques for achieving realism.
- 6.15 Describe CAD/CAM.

**7. UNDERSTAND M.S. DOS PROGRAMMING TECHNIQUES.**

- 7.1 Describe the development of M.S. DOS
- 7.2 Explain MS DOS as operating system.
- 7.3 Describe the procedure of MS DOS programming.
- 7.4 Explain the use of MS DOS programming tools.
- 7.5 Describe the programming of character devices.
- 7.6 Discuss file and record manipulation process.
- 7.8 Explain the procedure of creating Directories, Subdirectories and volume labels.
- 7.9 Explain the following:-
  - i) Disk Internals.
  - ii) Allocations.
  - iii) EXEC functions.
  - iv) Interrupts handlers.
  - v) Writing MS DOS filters.

**LIST OF PRACTICALS****192 Hours**

- 1.Simple command on MSDOS such as DIR, COPY, REN, MD, CD, RD, DEL, CLS, FORMAT etc.
- 2.Write the execute .BAT files in MSDOS.
- 3.Execute simple commands in UNIX and XENIX operating system such as pwd, ls, cp, md, cd, rd, who, write etc.
- 4.Exercise involving assembler.
  - a)Writing and Assembler
  - b)Sorting and Searching
- 5.Study features of Macro assembler.
- 6.Study features of compilers.
- 7.Exercise in C for
  - a)String operations
  - b)Arithmetic operations
  - c)If statements
  - d)Loop statements
  - e)Printf and Scanf statements
  - f)File operations
  - g)Programmes using system calls
- 8.Exercise in Shell programming.
- 9.Exercise in computer graphics
- 10.Exercises in CAD, Animation and Simulation.

## Comp-352COMPUTER HARDWARE

|   |   |   |
|---|---|---|
| T | P | C |
| 1 | 3 | 3 |

### Total Contact Hours:

Theory 32 Hours  
Practical 96 Hours

### COURSE CONTENTS:

- 1. PC BACKGROUND. 02 Hours**
  - 1.1 PC history.
  - 1.2 Development of Tandy/Radio shock CP/M and IBM microprocessor based systems.
  
- 2. BASIC COMPUTER ORGANIZATION. 04 Hours**
  - 2.1 CPU
  - 2.2 Memory organization.
  - 2.3 BIOS
  - 2.4 Accumulator based processor.
  - 2.5 General register processor.
  - 2.6 Stack machines.
  
- 3. SYSTEM FEATURES. 04 Hours**
  - 3.1 Types of systems.
  - 3.2 The system memory map.
  - 3.3 DOS programme memory.
  - 3.4 Video memory.
  - 3.5 Adopter ROM and RAM memory.
  
- 4. MOTHER BOARD COMPONENTS. 04 Hours**
  - 4.1 Mother Boards.
  - 4.2 Microprocessors.
  - 4.3 Data Bus and Address Bus.
  - 4.4 Using Math Coprocessor chip.
  - 4.5 Examining the features of the following microprocessors 8086, 8088, 80186, 80188, 80286, 80287, 80386DX, SX, SL and SLC, 80387DX, SX, 80486, 80586 and beyond Z-80,6800.
  - 4.6 Microprocessor speed ratings.
  - 4.7 Memory.
    - 4.7.1 Mother Board Memory.
    - 4.7.2 Physical storage and organization.
    - 4.7.3 Memory chips.
    - 4.7.4 Banks of Memory.
    - 4.7.5 Parity checking.

- 4.7.6 Single in line Memory Modes (SIMMs).
  - 4.7.7 Memory organization.
  - 4.7.8 System Rom.
  - 4.7.9 Speed ratings.
  - 4.8 Slots.
    - 4.8.1 Types.
    - 4.8.2 Difference between slots.
    - 4.8.3 Explain slots design differences.
    - 4.8.4 Placement of Boards in different slots.
    - 4.8.5 Standard system adapters.
- 5. PERSONAL COMPUTER HARDWARE. 06 Hours**
- 5.1 System unit features.
  - 5.2 Introduction to P.C.
  - 5.3 P.C model and features.
  - 5.4 P.C Technical specifications.
  - 5.5 P.C Convertibles and their specifications.
  - 5.6 P.C Convertibles and their features.
  - 5.7 Cards and Adaptors (Memory card, serial/parallel display adaptors).
  - 5.8 Features of XT Models.
  - 5.9 Features of AT Models.
- 6. SYSTEM HARDWARE. 06 Hours**
- 6.1 286 base Model.
  - 6.2 386 base Model.
  - 6.3 486 base Model.
  - 6.4 586 base Model.
  - 6.5 Z 80 base Model.
  - 6.6 6800 base Model.
  - 6.7 Any other recent Model.
- 7. COMPATIBLES. 06 Hours**
- 7.1 Examining types of compatibles.
  - 7.2 Levels of Compatibility.
  - 7.3 Compatibility at the operating system level.
  - 7.4 Compatibility at the ROM BIOS level.
  - 7.5 Compatibility at the Hardware level.
  - 7.6 Compatibility at the physical level.
  - 7.7 Selection criteria and compatible selection check list.

**INSTRUCTIONAL OBJECTIVES**

**1.    UNDERSTAND THE HISTORICAL DEVELOPMENT PROCESS OF P.C.**

- 1.1    Describe the developmental history of computers.
- 1.2    Discuss the four generation of digital computer.
- 1.3    Explain the working of a Microprocessor based system.
- 1.4    Discuss Tandy/Radio shock CP/M and IBM Microprocessor system.

**2.    UNDERSTAND BASIC COMPUTER ORGANIZATION.**

- 2.1    Describe computer organization.
- 2.2    Explain the working of the components in a computer organization.
- 2.3    Explain operation of C.P.U.
- 2.4    Describe the memory organization of a computer.
- 2.5    Discuss Basic Input Output system.

**3.UNDERSTAND DIFFERENT FEATURES OF A PERSONAL COMPUTER SYSTEM.**

- 3.1    Describe different types computer system.
- 3.2    Explain the DOS programme memory.
- 3.4    Describe the feature of video memory.
- 3.5    Describe the adapters for RAM and ROM memories.
- 3.6    Explain the working of RAM and ROM memory adapters.
- 3.7    Identify RAM memory with a sketch on a Mother Board.
- 3.8    Explain the function of RAM memory of a Mother Board.

**4.KNOW PRIMARY SYSTEM COMPONENT AND UNDERSTAND THE FUNCTION OF THE PRIMARY SYSTEM COMPONENTS OF A COMPUTER.**

- 4.1    Enumerate different primary system component.
- 4.2    Sketch position of primary system components in a PC system.
- 4.3    Describe Mother Board structure.
- 4.4    Explain the component placement on a Mother Board.
- 4.5    Explain the Data Bus and Address Bus structure.
- 4.6    Explain the pin structure and pin connections of Microprocessor.
- 4.7    Explain the pin structure and pin connections of Math coprocessor.
- 4.8 Differentiate the following processors on the basis of their speed, Buswidth and capabilities on the basis of registers and internal constituents, 8086, 8088, 80186, 80188, 80286, 80287, 80386DX, SX, SL and SLC, 80387DX, SX, 80486, 80586 and beyond Z-80, 6800 series.
- 4.9    Explain C.P.U memory.
- 4.10    Explain Mother Board Memory and its organization.
- 4.11    describe Memory banks.
- 4.12    Explain the memory provision for parity checking purposes.



- 4.13 Describe the structure and operation of single in line memory modules (SIMMs).
- 4.14 Illustrate complete Memory organization of a P.C system with a sketch.
- 4.15 Describe the operation of memory system provided in a P.C system.
- 4.16 Classify the memory provided in a system.
- 4.17 Explain the effect of speed ratings of a memory in the performance of a P.C.
- 4.18 Describe slots used in a P.C.
- 4.19 Enlist different types of slots.
- 4.20 Explain the design difference of different expansion slots.
- 4.21 Discuss the solution of particular slot for placing in a board.
- 4.22 Recognize different system adapters.

## **5. HARDWARE.**

### **5.1 Understand the Hardware requirements of P.C system.**

- 5.1.1 Describe the system features of well known P.C models and convertibles (IBM, Apple, AST in particular).
- 5.1.2 Explain hardware requirements of well known models (IBM, Apple, AST in particular) and convertibles.
- 5.1.3 Find different feature from the standard tables of specifications provided by the suppliers.

### **5.2 Understand the difference between P.C systems and convertibles on the basis of their hardware requirements.**

- 5.2.1 Differentiate between the features of convertibles and actual PCs.
- 5.2.2 Determine different features of PCs and convertibles from their specifications.
- 5.2.3 Select a PC or convertible having certain features by consulting standard specification of different system.
- 5.2.4 Enlist cards and adapters used in different system.
- 5.2.5 Explain the function of cards and adapters used in different systems.
- 5.2.6 Differentiate between the hardware of XT and AT systems.

## **6. UNDERSTAND THE SPECIFICATIONS OF 8086, 8088, 80186, 80286, 80287, 80386, 80486, 80586 Z-80, 6800 RECENT PROCESSORS.**

- 6.1 Enlist the necessary features of a processor.
- 6.2 Find the value of a particular feature from the standard specifications provided.
- 6.3 Discuss the features of the processors referred in the General Objective.
- 6.4 Explain the operational limits of the above referred processors.

## **7. APPLICATION CRITERIA FOR FINDING THE LEVEL OF COMPATIBILITY OF A SYSTEM.**

- 7.1 Define compatibility.
- 7.2 Explain the level of compatibility.
- 7.3 Differentiate compatibility at different levels.

- 7.4 Explain compatibility and the system level.
- 7.5 Explain compatibility at the ROM BIOS level.
- 7.6 Explain compatibility at the Hardware level.
- 7.7 Explain compatibility at the physical level.
- 7.8 Use the check list based on the selection criteria to determine the level of compatibility.
- 7.9 Select a compatible system based on the selection criteria.

## **Comp-353    COMPUTER HARDWARE**

### **LIST OF EXPERIMENT**

1. Sketch the system layout of a P.C system based on 8088 processor and identify different component.
2.     Repeat the above 80286 processor.
3.     Repeat the above 80386 processor.
4.     Repeat the above 80486 processor.
5.     Repeat the above 280 processor.
6.     Repeat the above 6800 processor.
- 7-12 Trace Address, Data control, Bus system of PCs based and above referred processors.
- 13-18 Identify slots and adaptors in system referred above.
- 29-24 Identify system Memory of the above referred systems.
25. Determine compatibility of different systems and verify it by programme operations.

### **Recommended Books:**

1. Cott Muller Up-grading And Replacing PC 2nd Edition QUE Publication.
2.     Alvis JE Vans Advance Digital Troubleshooting Howard W. Sams Company.

## Comp-362 MICROPROCESSOR

|   |   |   |
|---|---|---|
| T | P | C |
| 2 | 3 | 3 |

### Total Contact Hours:

|             |          |
|-------------|----------|
| Theory :    | 32 Hours |
| Practical : | 96 Hours |

**AIM:**Students will understand the architecture, pin diagram, operating conditions, specifications, operation and processing of data in microprocessors. The ability of writing programmes in the Assembly language will be developed.

### COURSE CONTENTS

- 1. INTRODUCTION. 03 Hours**
  - 1.1 The evaluation of the 16 Bit microprocessor.
  - 1.2 Basic architecture of 8086 and 8088 processor.
  - 1.3 Instruction and data flow, timing and control operation.
  - 1.4 Memory organization of 8086 and 8088 processor.
  - 1.5 The Programming Model.
  - 1.6 Data format.
  - 1.7 The Introduction set.
  
- 2. ADDRESSING MODES. 06 Hours**
  - 2.1 Data Addressing Modes.
  - 2.2 Register Addressing.
  - 2.3 Immediate Addressing.
  - 2.4 Direct Data Addressing.
  - 2.5 Base plus Index Addressing.
  - 2.6 Register Relative Addressing.
  - 2.7 Base Relative Plus Index Addressing.
  - 2.8 Programme Memory Addressing Modes.
  - 2.9 Stack Memory Addressing.
  
- 3. DATA MOVEMENT INSTRUCTIONS. 06 Hours**
  - 3.1 MOV Revisited.
  - 3.2 PUSHH/POP.
  - 3.3 Load Affective Address.
  - 3.4 String Data Transfers.
  - 3.5 Data transfer instructions.
  - 3.6 Segment override prefix.
  - 3.7 Assembly directions.
  
- 4. ARITHMETIC AND LOGIC INSTRUCTIONS. 06 Hours**

- 4.1 Addition, subtraction and comparison.
  - 4.2 Multiplication and Division.
  - 4.3 BCD and ASCII arithmetic.
  - 4.4 Basic logic operations.
  - 4.5 Shifts and Rotates.
  - 4.6 String comparisons.
- 5. PROGRAMME CONTROL INSTRUCTIONS. 05 Hours.**
- 5.1 The Jump group.
  - 5.2 Subroutines.
  - 5.3 Interrupts.
  - 5.4 Machine control and Miscellaneous instructions.
  - 5.5 Programme sample.
- 6.HARDWARE SPECIFICATIONS 8086, 8088, 80186,80286, 80287,80386, 80486, 80586  
Z-80, 6800 processors. 12 Hours**
- 6.1 Pin out and the pin functions.
  - 6.2 Clock Generator.
  - 6.3 Bus Buffering and latching.
  - 6.4 Bus Timing.
  - 6.5 Ready and the wait state.
  - 6.6 Minimum mode verses Maximum Mode.
- 7. MEMORY AND I/O INTERFACE. 06 Hours**
- 7.1 Memory devices.
  - 7.2 Address decoding.
  - 7.3 8088 memory interface.
  - 7.4 Interfacing of other microprocessors.
  - 7.5 Dynamic RAM controller.
  - 7.6 Basic I/O interface.
  - 7.7 F/D part address decoding.
- 8. INTERRUPTS. 04 Hours**
- 8.1 Basic Interrupt processing.
  - 8.2 Hard wave interrupts.
  - 8.3 Interrupt controller.
- 9. DIRECT MEMORY ACCESS. 03 Hours**
- 9.1 Minimum and Maximum Mode DMA.
  - 9.2 Shared Bus operation.
- 10. MICROPROCESSOR BASED SYSTEM DEVELOPMENT. 10 Hours**
- 10.1 Software development side.

- 10.1.1 System monitor.
- 10.1.2 Text editor.
- 10.1.3 Diskette operating system.
- 10.1.4 The Assembler.
- 10.1.5 The Macro Assembler.
- 10.1.6 Compiler.
- 10.2 Hardware Aids.
  - 10.2.1 Single Board computer.
  - 10.2.2 System design kit.

## **Comp-362 MICROPROCESSOR.**

### **INSTRUCTIONAL OBJECTIVES**

- 1. UNDERSTAND 8086/8088 MICROPROCESSOR.**
  - 1.1 Explain how the 8-bit microprocessor evolved into the 16-bit microprocessor.
  - 1.2 Describe the operation of the execution unit (EU) and the bus interface unit (BIU) of the 8086 and the 8088 microprocessors.
  - 1.3 Explain how the memory and internal register array are structured.
  - 1.4 Define the terms memory segment and offset address.
  - 1.5 Calculate the effective address for the next program step using the contents of the instruction pointer (IP) and code segment (CS) system.
  - 1.6 Show how data are stored in the memory for the following integer and unsigned data types; byte, word, and long word.
  - 1.7 Provide an overview of the 8086/8088 instruction set.
  
- 2. UNDERSTAND ADDRESSING MODES.**
  - 2.1 Explain the operation of each data-addressing mode.
  - 2.2 Use the data-addressing modes to form assembly language statement.
  - 2.3 Differentiate between Register, immediate, Direct data, Base plus index, Register relative, Base relative plus index and addressing modes
  - 2.4 Explain the operation of each program memory-addressing mode.
  - 2.5 Use the program memory-addressing modes to form assembly language statement.
  - 2.6 Select the appropriate addressing modes to accomplish a given task.
  
- 3. UNDERSTAND MOVEMENT INSTRUCTIONS.**
  - 3.1 Explain the operation of each data movement instruction with any applicable addressing mode.
  - 3.2 Explain the purpose of some assembly language pseudo-operation and key words such as EQU, DB, DW, DD, ALIGN, OFFSET, ASSUME, ORG.
  - 3.3 Given a specific data movement task, select the appropriate 8086/8088 assembly language instruction to accomplish it.
  - 3.4 Given a hexadecimal machine language instruction, determine the symbolic of code, source, destination, addressing mode.
  
- 4. UNDERSTAND ARITHMETIC AND LOGIC INSTRUCTIONS.**
  - 4.1 Use the 8086/8088 arithmetic instruction to accomplish simple binary, BCD, and ASCII arithmetic.
  - 4.2 Use AND, OR and Exclusive-OR to accomplish binary manipulation.
  - 4.3 Use the shift and rotate instructions.
  - 4.4 Check the contents of a table for a match with the string instructions.

- 5. UNDERSTAND PROGRAM CONTROL INSTRUCTION.**
  - 5.1 Use both conditional and unconditional jump instruction to control the flow of a program.
  - 5.2 Use the call and return instruction to include procedures in the program structure.
  - 5.3 Explain the operation of the interrupts and interrupt control instructions.
  - 5.4 Program with the machine control instructions to modify some of the flag bits.
  - 5.5 Explain the function of programmes in 8086/8088 microprocessor.
  
- 6. UNDERSTAND 8086/8088 HARDWARE SPECIFICATIONS.**
  - 6.1 Describe the functions of each 8086 and 8088 pin.
  - 6.2 Describe the DC characteristics and indicate the fanout to common logic families.
  - 6.3 Use the clock generator chip (8284A) to provide the clock.
  - 6.4 Connect buffers and latches to the buses.
  - 6.5 Interpret the timing diagrams.
  - 6.6 Describe wait states and connect the circuitry required to cause various amounts of waits.
  - 6.7 Explain the difference between minimum and maximum mode operation.
  
- 7. UNDERSTAND MEMORY INTERFACE.**
  - 7.1 Decode the memory address and use the outputs of the decoder to select various memory components.
  - 7.2 Explain how to interface both RAM and ROM to microprocessor.
  - 7.3 Explain how parity can detect memory errors.
  - 7.4 Explain how to interface memory to the 8086 microprocessor.
  - 7.5 Explain how to interface memory to the 8088 microprocessor.
  - 7.6 Explain the operation of a dynamic RAM controller.
  - 7.7 Describe the procedures of interfacing dynamic RAM to the 8086 and 8088.
  
- 8. UNDERSTAND I/O INTERFACE.**
  - 8.1 Explain the operation of the basic input/output device.
  - 8.2 Decode an 8 or 16-bit I/O device so that it can be used at any I/O port address.
  - 8.3 Define handshaking and explain how to use it with many I/O devices.
  - 8.4 Explain how to interface and program the 8255 programmable parallel interface components.
  - 8.5 Explain how to interface and program the 8279 programmable keyboard/display interface components.
  - 8.6 Explain how to interface and program the 8254 programmable interval timer.
  - 8.7 Explain how to interface and program the 8251A communications interface adapter.
  
- 9. UNDERSTAND INTERRUPTS.**
  - 9.1 Explain the interrupt structure of the 8086/8088.
  - 9.2 Explain the operation of software interrupt instructions INT, INT0 and INT3.



- 9.3 Explain how the interrupt enable (I) flag bit applies to interrupts.
- 9.4 Describe the function of a trap (T) flag bit and the operation of trap-generated single-stepping or tracing.
- 9.5 Develop interrupt service subroutines that control lower speed external peripheral devices.
- 9.6 Expand the interrupt structure of the 8086/8088 so that additional interrupts inputs can be added.
- 9.7 Use the 8259A to expand and enhanced the interrupt structure of the 8086/8088.

## **10. UNDERSTAND THE PROCEDURE OF DEVELOPING A MICROPROCESSOR BASED SOFTWARE AND HARDWARE SYSTEMS**

- 10.1 Explain the development of the following Softwares:
  - a) System Monitor
  - b) Text Editor
  - c) Diskette Operating System
  - d) The assembler
  - e) The Macro Assembler
  - f) Computer
- 10.2 Explain the Hardware development of:
  - a) Single Board Computer
  - b) System Design Kit

### **REFERENCE BOOKS:**

- 1. Alan C. Dixon Digital Electronics James Anthonakos with Microprocessor Applications. John Willy sons.
- 2. Aditya P. Mather - Introduction to Microprocessors. The Magraw Hill Publishing Co.
- 3. Barry B. Brey Maxwell Macmillan. Introductory Edition.
- 4. David E Goldberg- Programming with Jacqueline A. Jones - Assembly Language Pat H Sterbenz. Shaume Outline Series.

**LIST OF EXPERIMENTS**

1. Drawing of architectural and pin diagrams of 8086, 8088, 80186, 80286, 80287, 80386, 80486, 80586 Z-80, 6800 processors.
2. Drawing pin diagrams of the above processors.
3. Familiarization with the specifications of the above processors.
4. Observe the working conditions of the processors available in a working kit.
5. Exercise on assembly language format.
6. Exercise on Addressing.
7. Exercise on compare and branch instructions.
8. Exercise on arrays and looping.
9. Exercise on character string manipulations.
10. Exercise on packed decimal numbers.
11. Exercise on function sub-programmes.
12. Exercise on sub routine sub-programmes.
13. Exercise on BIT and BYTE manipulation.
14. Exercise on floating point operation.
- 15-20 Writing and testing at least 5 different programmes in assembly language.
21. Applications on operating system design kit.
- 22-23 Project on microprocessor Based process control.