B. Sc. Physical Sciences with Electronics as one of the Core Disciplines

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 8-1: CONSUMER ELECTRONICS IN DAILY LIFE

Course Title and Code	Credits	Credit distribution of the course			Pre-requisite of the course
		Lecture	Tutorial	Practical	
Consumer Electronics in Daily Life DSE 8-1	4	3	0	1	

COURSE OBJECTIVES

This course aims to familiarize students with the basic principles, functioning, and practical applications of commonly used consumer electronic devices encountered in daily life. It provides an overview of sound and audio systems, television and video technologies, electronic gadgets, home appliances, and office automation tools, along with hands-on training for installation, operation, and basic troubleshooting.

LEARNING OUTCOMES

By the end of the course, students will be able to:

- Understand the basic characteristics of audio signals and the components involved in sound systems, including microphones, amplifiers, and loudspeakers.
- Explain the functioning and standards of television and video systems, including analog and digital formats.
- Describe the working principles of common household electronic gadgets and appliances such as air conditioners, washing machines, and microwave ovens.
- Demonstrate familiarity with office automation devices like laser printers, projectors, and video conferencing systems.
- Perform basic measurements, installations, interfacing, and market analysis of consumer electronic devices through practical exposure.

SYLLABUS OF DSE 8-1
THEORY COMPONENT
(Hours: 45)

Unit I **(15 Hours)**

Basic characteristics of sound signal: Audio level metering, Decibel Level in acoustic measurement, Level and Loudness, Pitch, Frequency response, Fidelity, Sensitivity and selectivity. Audio systems: PA system, Microphone, Amplifier, Loudspeakers. Radio receivers, AM/FM. Audio recording and reproduction, Cassettes, CD and MP3.

Unit II **(11 Hours)**

TV and Video systems: Television standards, BW/Colour, CRT/HDTV. Video system, VCR/VCD/DVD players, MP4 players, LCD, Plasma & LED TV. Projectors: DLP, Home Theatres, Remote Controls

Unit III **(11 Hours)**

Electronic Gadgets and Domestic Appliances (Basic working): Digital clock, Digital camera, Home security system, CCTV. Air conditioners, Refrigerators, Washing Machine/Dish Washer, Microwave oven, Vacuum cleaners

Unit IV **(8 Hours)**

Office Automation appliances (Basic Working): Laser Printer, Smart Interactive Board, LED Projector, Video conferencing system

PRACTICAL COMPONENT: CONSUMER ELECTRONICS IN DAILY LIFE
(Hours: 30)

Students should perform at least five experiments from the following list:

1. Testing and measurement of the various parameters of a microphone.
2. Test the given speaker and plot its frequency response.
3. Installation of Audio /Video systems – site preparation, electrical requirements, cables and connectors.
4. Market Survey of Products (at least one from each module)
5. To Interface and configure LED projector using various controls.
6. Study of PA systems for various situations – Public gathering, closed theatre /Auditorium, Conference room, Prepare Bill of Material (Costing)
7. Interface the laser printer to the desktop computer and identify various controls.

REFERENCES

Essential references

1. R. P. Bali Consumer Electronics Pearson Education (2008)
2. R. G. Gupta Audio and Video systems Tata McGraw Hill (2004)
3. Electronic Instrumentation by H.S Kalsi, McGraw Hill
4. Instrumentation measurements and analysis by Nakra & Choudhary
5. Measurement & Instrumentation- DVS Murthy
6. Electronic Sensor Circuits and Projects, III Volume, Forrest M Mims, Master Publishing Inc.