Program : **Diploma in Electronics Engineering**	
Course Code : **6041C**	Course Title: **Consumer Electronics**
Semester : **6**	Credits: **4**
Course Category: **Program Elective**	
Periods per week: **4 (L:4, T:0, P:0)**	Periods per semester: **60**

Course Objectives:

- This course is intended to provide awareness about the commonly used consumer electronic equipments, characteristics of physical quantities related to it and working principles.

Course Prerequisites:

Description	Course code	Course Title	Semester
Electronics and Electrical Engineering basics	2031	Fundamentals of Electrical & Electronics Engineering	2
Electronic Components and Circuits.	3043	Electronic Circuits	3

Course Outcomes:

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive level
CO1	Demonstrate the working principle of various Audio Devices	14	Understanding
CO2	Understand the characteristics and features of Audio systems	15	Understanding
CO3	Explain the concept of various video systems	15	Understanding
CO4	Explain the working principle of various home appliances	14	Understanding
	Series Test	2	

CO-PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2	2						
CO3	2						
CO4	2						

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Demonstrate the working principle of various Audio Devices**		
M1.01	Understand Audio Fundamentals	2	Understanding
M1.02	Explain various types of microphones	4	Understanding
M1.03	Explain various types of head phones and headsets	4	Understanding
M1.04	Explain about types of loud speakers	3	Understanding
Contents: **Audio Fundamentals -** Basic characteristics of sound signal-wavelength, amplitude, frequency, time period and velocity -Know the nature of sound- intensity – harmonics – sound synthesis-Octave in music-Decibel level in acoustic measurement. **Microphones** – Fundamental operational principles – types – moving coil, ribbon, crystal, capacitor, electret – special types – tie clip, wireless **Head phones and headsets** – Difference, types – moving iron, crystal, dynamic, electrostatic, electret – user controls **Loud speaker** – Working principle – types – crystal, electrostatic, permanent magnet – multi way speaker system – cross over network			
CO2	**Understand the characteristics and features of Audio systems**		
M2.01	Summarise the features of speaker baffles and enclosures	3	Understanding
M2.02	Explain acoustics behaviour in various indoor environments	4	Understanding
M2.03	Outline the characteristics and components of PA system	4	Understanding
M2.04	Explain the principle of digital audio players	4	Understanding
	Series Test1	1	

Contents:
Speaker baffles and enclosures – Functioning – bass reflex system – folded horn system
Acoustics – Reflection, absorption, reverberation – indoor acoustics – living room, auditorium, studio – stereo and multi way system
PA system – Features, components and system level block diagram – mega phone
Digital audio players – Principles of digital audio – optical recording of sound- optical recording on disc- play back process – mp3 format

CO3	**Explain the concept of various video systems**		
M3.01	Understand Television Fundamentals	3	Understanding
M3.02	Classify different types of TV	4	Understanding
M3.03	Explain the concept of Cable & satellite TV	4	Understanding
M3.04	Explain the concept of CCTV	4	Understanding

Contents:
Television Fundamentals – Persistence of vision, Aspect ratio, resolution, picture elements (pixels), hue, brightness, saturation, luminance and chrominance.
Different types of TV – Comparative study of LCD TV, LED TV, Plasma TV, Projection TV and 3D TV(features and benefits)
Cable & satellite TV– Satellite communication system – block diagram – satellite transponder, earth station – concept of DTH, cable TV – distribution station, block diagram, internet through cable TV network.
Concept of CCTV- Block diagram of CCTV - working of CCTV- Different cameras- Bullet camera, Dome camera, Covert camera, C-Mount camera, Night vision camera, Day/Night camera.

CO4	**Explain the working principle of various home appliances**		
M4.01	Explain the operating principle of induction cooker	3	Understanding
M4.02	Explain the operating principle of microwave oven	3	Understanding
M4.03	Explain the operating principle of washing machine	3	Understanding
M4.04	Explain the operating principle of air conditioner and refrigerator	5	Understanding
	Series Test 2	1	

Contents:
Induction cooker – Block diagram – working – advantage and disadvantages
Microwave oven - Block diagram – working principle – types – features – safety instructions
Washing machine - Block diagram – working – types
Air conditioner and refrigerator – Concept of air conditioning – ton cooling definition – types of air conditioner – unitary, split, centralized
Refrigeration system –General block diagram of domestic refrigerator and explain.

Text / Reference:

T/R	Book Title/Author
T1	Consumer Electronics - Bali S P - Pearson Education India, latest edition
T2	Modern Television practices - Gulati R R - New Age International Publication (P) Ltd. New Delhi
R1	Audio video systems - Gupta R G - Tata Mc graw Hill, New Delhi, India
R2	The Digital Consumer Technology Handbook - Amit Dhir - Xilinx, Inc., San Jose, CA, USA
R3	Television engineering and video systems - Gupta R G - Tata Mc graw Hill, New Delhi, India

Online Resources

Sl No	Website Link
1	https://www.explainthatstuff.com/induction-cooktops.html
2	http://www.texient.com/2011/01/induction-cooker-cooktop-price-review.html
3	https://www.cabletv.com/blog/tv-port-guide-how-to-hook-up-tv
4	https://www.geeky-gadgets.com/the-difference-between-lcd-and-led-tvs/
5	https://www.guidingtech.com/26940/led-lcd-plasma-difference/
6	https://www.explainthatstuff.com/plasmatv.html