GUJARAT TECHNOLOGICAL UNIVERSITY

Semester: 4

Diploma in Electronics & Communication

Subject Name **TELEVISION ENGINEERING**

Sr.No	Course content
1.	**ESSENTIAL OF TELEVISION SYSTEM** 1.1 Simple block diagram of TV Transmission and Receiver 1.2 Elementary camera tube and its operation 1.3 Scanning, Interlace Scanning 1.4 Picture resolution, aspect ratio, highest modulation frequency 1.5 Structure of a picture tube : Gun, focusing anode, accelerating anode, deflection yoke, screen 1.6 Receiver controls: Brightness, contrast, luminance, hue, saturation
2.	**TV OPTICS AND VIDEO SIGNAL** 2.1 Monochrome TV camera 2.2 Colour cameras 2.3 Monochrome picture tube 2.4 Control circuitry for monochrome picture tube 2.5 Colour picture tubes: PIL, Trintron 2.6 Composite video signal 2.7 Horizontal sync composition 2.8 Vertical sync details
3.	**COLOUR THEORY AND COLOUR SIGNAL PROCESSING** 3.1 Perception of brightness and colours 3.2 Additive colour mixing 3.3 Video signal for colours 3.4 Luminance signal Y 3.5 Compatibility 3.6 Colour difference signals: Production and encoding 3.7 Formation of chrominance signal 3.8 PAL encoder 3.9 Chrominance signal for colour bar pattern
4.	**TV SIGNAL MODULATION AND TV SYSTEMS** 4.1 Picture signal transmission 4.2 Positive and negative modulation 4.3 Vestigial sideband transmission 4.4 Sound signal transmission: Sound signal modulation and bandwidth 4.5 Standard channel bandwidth 4.6 TV Transmission antenna 4.7 Interference suffered by TV signals 4.8 TV broadcast channels 4.9 NTSC colour system 4.10 CCIR PAL colour system and standards

5.	**PAL – D COLOUR RECEIVER** 5.1 Block diagram of PAL – D colour receiver 5.2 Electronic tuner 5.3 IF subsystems 5.4 Y signal channel 5.5 Chroma detector 5.6 Separattion of U and V colour phasors 5.7 Synchronous demodulators 5.8 Subcarrier generation and control 5.9 Matrixing for drive circuits 5.10 Raster circuits 5.11 Switch Mode Power Supply for Television receivers, Merits and Demerits
6.	**RECEIVER SERVICING AND ALIGNMENT** 6.1 Common faults in tuner circuits 6.2 Common faults in IF subsystem 6.3 Common faults in sound channel 6.4 Common faults in colour picture tube 6.5 Common fault in frame scan circuit 6.6 Fault finding in power supplies 6.7 Colour receiver alignment 6.8 Sweep marker generator and colour TV pattern generator 6.9 Servicing colour receivers
7.	**ADVANCE TOPICS IN TV TECHNOLOGY (Conceptual overview only)** 7.1 Closed circuit TV 7.2 Digital television 7.3 High Definition Television (HDTV) 7.4 LCD TV and LED TV 7.5 DTH (Direct To Home) system

LABORATORY EXPERIENCES:

The sample experiments to be performed include, but are not limited to the following.

1. To study Block diagram of TV transmitter
2. To study Block diagram of Colour TV receiver
3. To study various components of composite video signal
4. To study operation of Electronic Tuner
5. To observe various patterns of Colour Pattern Generator
6. To design Yagi - Uda Antenna for given channel
7. To locate and understand various operative and service controls of Colour TV receiver
8. To study Camera Tube
9. To understand AGC circuits
10. To understand VIF stage and observe input and output waveforms
11. To understand sound section and observe waveforms at various stages
12. To understand Sync separator circuit and observe input and output waveforms
13. To understand deflection section and observe input and output waveforms

14. To understand working of EHT section
15. To understand SMPS section and find out load and line regulation
16. To study various faults in Colour TV receiver
17. To understand PAL decoder section and to measure input and output voltages
18. To list out CCIR - B TV standards
19. To study PAL Coder
20. To study remote control transmitter and receiver

Reference Books:

1. Modern TV Practice R.R. Gulati
2. Monochrome and Colour TV R.R. Gulati
3. Colour Television R.R. Gulati
4. Television Engg A.M. Dhake
5. Basic Television and Video System Grob