

**IV B.Tech – II Semester  
(17EC831) TV ENGINEERING  
(Professional Elective-IV)**

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
40	60	100	4	-	-	3

**Pre-Requisites: Analog & Digital Communications**

**Course Objectives:**

- To provide the basic principles and techniques used in Cognitive Radio.
- To introduce Software defined radio and cognitive radio with their architectures, spectrum sensing, accessing and sharing techniques of cognitive radio.

**UNIT-I:**

**INTRODUCTION:** TV transmitter and receivers, synchronization. Television Pictures: Geometric form and aspect ratio, image continuity, interlaced scanning, picture resolution, Composite video signal: Horizontal and vertical sync, scanning sequence. Colour signal generation and Encoding: Perception of brightness and colours, additive colour mixing, video signals for colours, luminance signal, colour difference signals, encoding of colour difference signals, formation of chrominance signals, PAL encoder.

**UNIT-II:**

**TV SIGNAL TRANSMISSION AND PROPAGATION :** Picture signal transmission, positive and negative modulation, VSB transmission, sound signal transmission, standard channel BW, TV transmitter, TV signal propagation, interference, TV broadcast channels, TV transmission Antennas.

**Unit III:**

**TV CAMERAS:** Camera tube types, Vidicon, Silicon Diode Array Vidicon, Monochrome TV camera, color camera. CCD Image Sensors.

**UNIT-IV:**

**PICTURE TUBES:** Monochromatic Picture tube, Electrostatic focussing, Beam deflection, picture tube characteristics and specifications, colour picture tubes. TV Standards: American 525 line B&W TV system, NTSC colour system, 625-line monochrome system, b PAL colour system, TV standards.

**UNIT-V:**

**MONOCHROME TV RECEIVER:** RF tuner, IF subsystem, video amplifier, sound section, sync separation and processing, deflection circuits, scanning circuits. PAL-D Colour Receiver: Electron tuners, IF subsystem, Y-signal channel, Chroma decoder, Separation of U & V Colour Phasors, synchronous demodulators, Subcarrier generation, raster circuits.

**UNIT-VI:**

**SYNC SEPARATION, AFC AND DEFLECTION OSCILLATORS :** Synchronous separation, k noise in sync pulses, separation of frame and line sync pulses. AFC, single ended AFC circuit. Deflection Oscillators, deflection drive Ics. Receiver Antennas. DIGITAL TV Digital Satellite TV, Direct to Home Satellite TV, Digital TV Receiver, Digital Terrestrial TV.

**Course Outcomes:**

After successful completion of the course, the students can be able to:

S. No	Course Outcome	BTL
1.		L2
2.		L2
3.		L3
4.		L3
5.		L3
6.		L2

**Correlation of COs with POs & PSOs:**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1														
CO 2														
CO 3														
CO 4														
CO 5														
CO 6														

**Text Books:**

1. Modern Television Practice – Principles, Technology and Service – R.R. Gulati, NewAge International Publication, 2002.
2. Television and Video Engineering - A.M. Dhake, 2nd Edition
3. Monochrome and Colour TV – R.R. Gulati, New Age International Publication, 2002.

**Reference Books:**

1. Colour Television Theory and Practice – S.P. Bali, TMH, 1994.
2. Basic Television and Video Systems – B. Grob and C.E. Herndon, McGraw Hill, 1999.