

Audio Video Engineering(404189)

Teaching Scheme:

Lectures: 4 Hrs/ Week

Examination Scheme:

In Semester Assessment:

Phase I : 30

End Semester Examination:

Phase II: 70

Course Objectives:

- After learning AVE course, students will get benefit to learn and understand the working of real life video system and the different elements of video system plus the encoding/decoding techniques.
- The learners will be groomed up to understand different channel allocations, difference between various systems present in this world, their transmission and reception techniques.
- Students will get insight on functioning of individual blocks, different standards of compression and they will be acquainted with different types of analog, digital TV and HDTV systems.
- The students will get overview of fundamentals of Audio systems and basics Acoustics

Course Outcomes:

- To study the analysis and synthesis of TV Pictures, Composite Video Signal, Receiver, Picture Tubes and Television Camera Tubes.
- To study the various Colour Television systems with a greater emphasis on television standards.
- To study the advanced topics in Digital Television and High Definition Television.
- To study audio recording systems such CD/DVD recording, Audio Standards, and Acoustics principles.

Unit I : Fundamentals of Colour Television

8L

Color TV systems, fundamentals, mixing of colours, colour perception, chromaticity diagram. NTSC, PAL, SECAM systems, colour TV transmitter, (high level, low level), colour TV receivers, remote control. Fault finding and servicing equipments like Wobbuloscope, TV Pattern Generator, and Field Strength meter.

Unit II : Digital TV and Display Devices

6L

Introduction to Digital TV, Digital TV signals and parameters, Digital TV Transmitters, MAC signals, advanced MAC signal transmission, Digital TV receivers, Basic principles of Digital Video compression techniques, MPEG Standards. Digital TV recording techniques, Display devices: LED, LCD, TFT, Plasma,

Unit III : HDTV

6L

HDTV standards and systems, HDTV transmitter and receiver/encoder, Digital TV satellite Systems, video on demand, CCTV, CATV, direct to home TV, set top box with recording facility, conditional access system (CAS), 3D TV systems, Digital broadcasting, case study (Cricket match, Marathon, Foot ball match).

Unit IV : Advanced TV Systems

8L

IP Audio and Video, IPTV systems, Mobile TV, Video transmission in 3G mobile System, IPod(MPEG4 Video player), Digital Video Recorders, Personal Video Recorders, Wi-Fi Audio / Video Transmitter and Receivers. Video Projectors, HD Video projectors, Video Intercom systems/ Video door phones.

Unit V : .Fundamentals of Audio-Video Recording

6L

Methods of sound recording & reproduction, optical recording, CD recording, , audio standards. Digital Sound Recording, CD/ DVD player, MP3 player, Blue Ray DVD Players, MPEG, MP3 Player.

Unit VI : Fundamentals of Acoustics

6L

Studio acoustics & reverberation, P.A. system for auditorium, , acoustic chambers , Cordless microphone system, special types of speakers & microphones, Digital Radio Receiver Satellite radio reception.

Text Books

1. Television and video Engineering, A. M. Dhake, TMH Publication.
2. Video Demisified, Kelth jack, Penram International Publication.
3. Audio Video Systems, R.G. Gupta, Technical Education.

Reference Books

1. S. P. Bali, "Color TV Theory and Practice".
2. Bernard Grobb, Charles E, "Basic TV and Video Sytems".

List of Practicals

1. Voltage and waveform analysis for color TV.
2. Study of direct to home TV and set top box.
3. Study Wi-Fi TV / IPTV system
4. Study of Digital TV pattern generator.
5. Study of HDTV
6. Study of Digital TV.
7. Simulation of video, Audio and Image compressing techniques (Software Assignments)
8. Study of Audio system: CD players and MP3 player.
9. Study of PA system with chord less microphone
10. Directivity pattern of Microphones / Loud speakers
11. Practical visit to TV transmitter/ Digital TV Studio/ All India Radio / TV Manufacturing factory