

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. SEMESTER: VII
INFORMATION & COMMUNICATION TECHNOLOGY

Subject Name: **Audio and Video Engineering (Elective)**

Subject Code: **173206**

| Teaching scheme | | | | | Evaluation scheme | | |
|-----------------|----------|-----------|-------|------------------------------|---------------------------------|---------------------------|---------------|
| Theory | Tutorial | Practical | Total | University Exam (Theory) (E) | University Exam (Practical) (E) | Mid Sem Exam (Theory) (M) | Practical (I) |
| 3 | 0 | 2 | 5 | 70 | 30 | 30 | 20 |

| SR.NO | COURSE CONTENT |
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| 1 | Sound Fundamentals The physics of sound, Sound and the Ear, The Cochlea, Mental Processes, Level and Loudness, Pitch, Frequency response and linearity, Audio level metering, The Decibel in acoustics, Acoustic intensity level, Acoustic power level, Acoustic pressure level, Inverse square law, The VU and the volume indicator instrument, The Phon, Velocity of sound, Reflection and refraction, Absorption, RMS measurements, Selection of sound absorbing materials, Architectural Acoustics |
| 2 | Sound Amplification Preamplifiers requirements, Signal voltage and impedance levels, preamplifier stages, Voltage amplifier design, Constant current sources and current mirrors, Performance standards, Power amplifier classes, Thermal dissipation limits, Single ended versus push pull operation, Switching amplifiers, Amplifier grounding, Cross over network, Audio terminations line in/out, AUX in/out, MIC |
| 3 | Audio Devices and applications Microphone sensitivity, Nature of response and directional characteristics, Measurement microphones, various types of microphones, Various types of loud speakers, Characteristic impedance of loud speakers, Headphone types, The basics of magnetic recording, Sound cards, Sound mixers, PA systems and installations, Digital consoles |
| 4 | Introduction to Video Signals Video signal dimensions, Horizontal sync composition, Vertical sync details, function of vertical pulse train, Scanning sequence details, geometric form and aspect ratio, Image continuity, No. of scanning lines, Interlaced scanning, Resolution, brightness, Contrast, Picture transmission, TV transmitter, TV receiver, Synchronization, Receiver controls, Perception of brightness and colour, Additive |

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| | and subtractive colour mixing , Video signals for colour transmission, luminance signal(Y), Compatibility, Colour difference signals, encoding of colour difference signals, Formation of chrominance signals |
| 5 | Television Signal Transmission and Propagation Picture signal transmission, Positive and negative modulation, vestigial sideband transmission, Standard channel BW, Television transmitter, TV signal propagation, Interference suffered by TV channels, TV broadcast channels for terrestrial transmission |
| 6 | Television Receiver RF Tuner, IF Subsystem, Video amplifier, Sound section, Sync separation and processing, Deflection circuits, Scanning currents in the yoke, DC power supplies, Electronic tuners, IF subsystem, Y signal channel, Chroma decoder, Separation of U and V colour phasors, Synchronous demodulators, Subcarrier generation and control, matrixing for drive circuits, receiver servicing, Video pattern generator, Sweep and marker generator, Colour TV pattern generator, Vetroscope |
| 7 | Television Systems and Standards NTSC colour system, PAL colour system, French colour TV system, ATSC, ISDB-T and DTMB, Overview of DVB-T, DVB-C and DVB-IP, DVB-H, Cable television network |

Reference Books:

1. Audio video systems principles, practices and troubleshooting, Bali and Bali, Khanna Publishing Company.
2. Modern Television practice, R R Gulati
3. Audio video systems, R G Gupta, Technical Education

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