

<b>Course Title:</b> Broadcast technologies			
<b>Course Code:</b> ETE 457	<b>Credit Hour:</b> 3.0	<b>Total Marks:</b> 100	
<p><b>Rationale:</b> In order to meet up the challenges of Broadcast and Telecast industries, students need to learn about different types of audio video systems and their properties as well as need to learn about different broadcast technologies which are widely used and also have emerging demand in future. These will help them to analyze numerous problems regarding Broadcast Equipment and Systems in their job field.</p>			
<p><b>Objectives:</b></p> <ol style="list-style-type: none"> <li>1. To build clear concept about audio and visual system.</li> <li>2. Able to analyze hands-on problems using different voice compression and audio-video editing system.</li> <li>3. To improve communication skill through presentation.</li> <li>4. To develop leadership quality through Group work.</li> <li>5. To build up decision making ability through assignment.</li> <li>6. To expand confident by doing various practical problem.</li> <li>7. To become efficient broadcast engineer by solving real life problem through case study.</li> </ol>			
<b>Learning Outcomes</b>	<b>Course Content</b>	<b>Teaching/ Learning Strategy</b>	<b>Assessment Strategy</b>
<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>•The basic components of a broadcast system.</li> <li>• Overview of Analog TV.</li> <li>• Overview of Digital TV.</li> <li>• Advantages of the Digital TV over Analog TV</li> </ul>	<p><b>Chapter 1. Basic Television System</b></p> <ol style="list-style-type: none"> <li>1.1 Components of TV System</li> <li>1.2 Video Signal</li> <li>1.3 Digital Television Standard</li> <li>1.4 Advantage of Analog TV over Digital TV</li> </ol>	<p>Lecture, Discussion, Problem based learning, Exercise</p>	<p>Assignment, Q/A, MCQ, Quiz</p>
<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>• Sampling.</li> </ul>	<p><b>Chapter 2. Video Compression</b></p> <ol style="list-style-type: none"> <li>2.1 Sampling</li> </ol>	<p>Lecture, Discussion, Problem based learning, Exercise</p>	<p>Assignment, Q/A, MCQ, Quiz</p>

<ul style="list-style-type: none"> <li>• Quantization.</li> <li>• Digital Interfaces: SDI, ASI, etc.</li> <li>• Picture Compression: JPEG.</li> <li>• Moving Picture Compression: MPEG</li> </ul>	<p>2.2 Analog to Digital Conversion</p> <p>2.3 Raw Bit Rate</p> <p>2.4 JPEG</p>		
<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>• Intra-frame Compression in MPEG.</li> <li>• Inter-frame Compression in MPEG.</li> <li>• MPEG Profiles.</li> <li>• MPEG Levels</li> </ul>	<p><b>Chapter 3. Video Compression -I</b></p> <p>3.1 MPEG History</p> <p>3.2 MPEG Compression</p> <p>3.3 MPEG Profile and Level</p>	Lecture, Discussion, Problem based learning, Exercise.	Assignment, Q/A, MCQ, Quiz
<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>• MPEG Transport Stream (MPEG-TS.)</li> <li>• Program Association Table (PAT)</li> <li>• Program Map Table (PMT).</li> </ul>	<p><b>Chapter 4. Video Compression –II</b></p> <p>4.1 MPEG Transmission Stream</p> <p>4.2 MPEG-TS: Program</p> <p>4.3 MPEG-TS: Timing</p> <p>4.4 MPEG-TS: Null Packet</p>	Lecture, Discussion, Problem based learning, Exercise.	Assignment, Q/A, MCQ, Quiz
<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>• Voice compression techniques</li> <li>• Commercial voice broadcasting techniques</li> </ul>	<p><b>Chapter 5. Audio Compression</b></p> <p>5.1 Audio Compression</p> <p>5.2 Types of Audio Compression</p> <p>5.3 Standard Codec for Audio Compression</p> <p>5.4 OFDM</p> <p>5.5 MPEG Encode Decode</p>	Lecture, Discussion, Problem based learning, Exercise, Industrial Tour	Assignment, Q/A, MCQ, Quiz
<p>At the end of the session, student will be able to know:</p>	<p><b>Chapter 6. Basic Television Broadcasting</b></p>	Lecture, Discussion, Problem based learning, Exercise	Assignment, Q/A, MCQ, Quiz

<ul style="list-style-type: none"> <li>• The floor plan of television studio.</li> <li>• The devices used in television studio.</li> </ul>	6.1 Television Studio Setup 6.2 PCR and MCR 6.3 Video Signal Transmission 6.4 Audio Signal Transmission		
<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>• Technologies used in DAB.</li> <li>• The transmission and distribution subsystem in DAB.</li> </ul>	<b>Chapter 7: Digital Audio Broadcast (DAB)</b>  7.1 DAB Species 7.2 DAB Specification 7.3 IBOC DAB 7.4 OFDM 7.5 CDMA	Lecture, Discussion, Problem based learning, Exercise	Assignment, Q/A, MCQ, Quiz
<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>• Difference between HD, Full HD and 4K.</li> <li>• Identify the display type used in broadcasting.</li> <li>• Understand about Steroscopic Image of 3D.</li> <li>• The transmission system of 3D-TV.</li> </ul>	<b>Chapter 8: HDTV and 3DTV</b>  8.1 HDTV Standard 8.2 HDTV Features 8.3 HDTV Types 8.4 3DTV based on T-DMB 8.5 System Configuration of 3D-DMB 8.6 Broadcast system of 3D DVB-H 8.7 Services and Requirement of 3DTV	Lecture, Discussion, Problem based learning, Exercise	Assignment, Q/A, MCQ, Quiz
<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>• The functionality of SNG.</li> <li>• The design the link budget of SNG link.</li> </ul>	<b>Chapter 9: DSNG</b>  9.1 What is DSNG? 9.2 Types of DSNG 9.3 Components of DSNG 9.4 Link Budget Analysis 9.5 Subsystem of DSNG	Lecture, Discussion, Problem based learning, Exercise	Assignment, Q/A, MCQ, Quiz

<p>At the end of the session, student will be able to know:</p> <ul style="list-style-type: none"> <li>• Encoders, Multiplexers and Decoders.</li> <li>• Modulators and Demodulators.</li> <li>• Up Converters.</li> <li>• Down Converters.</li> <li>• Power Amplifiers.</li> <li>• Low Noise Amplifiers.</li> <li>• Transmitter Antennas.</li> <li>• TV Receiving Antennas</li> </ul>	<p><b>Chapter 10: Transmission Equipment</b></p> <p>10.1 Encoders 10.2 Multiplexers and Decoders. 10.3 Modulators and Demodulators. 10.4 Up Converters. 10.5 Down Converters. 10.6 Power Amplifiers. 10.7 Low Noise Amplifiers. 10.8 Transmitter Antennas. 10.9 TV Receiving Antennas</p>	<p>Lecture, Discussion, Problem based learning, Exercise</p>	<p>Assignment, Q/A, MCQ, Quiz</p>
<p><b>Recommended Books and Periodical</b></p>			
<p><b>Text Books:</b></p> <p>1. Color TV, Bernard, Grobe</p>			
<p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Color and Monochrome TV, Gulati</li> <li>2. Electronic Communication System, Davis, Kennedy</li> <li>3. Electronic Communication System, Jesray</li> </ol>			

**Assessment Plan:**

<b>Quiz</b>	15%
<b>Attendance</b>	7%
<b>Assignment</b>	5%
<b>Presentation</b>	8%
<b>Mid Term Exam</b>	25%
<b>Final</b>	40%