

## TV Engineering

<b>Course Code</b>	20EC2601B	<b>Year</b>	III	<b>Semester</b>	II
<b>Course Category</b>	OE - II	<b>Branch</b>	Offered by ECE	<b>Course Type</b>	Theory
<b>Credits</b>	3	<b>L-T-P</b>	3-0-0	<b>Prerequisites</b>	--
<b>Continuous Internal Evaluation:</b>	30	<b>Semester End Evaluation:</b>	70	<b>Total Marks:</b>	100

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### Course Outcomes

Upon successful completion of the course, the student will be able to

<b>CO1</b>	Compare Digital TV transmission standards and performance parameters (L2)
<b>CO2</b>	Analyse channel coding, errors, interferences and modulation techniques for Digital TV(L4)
<b>CO3</b>	Make use of RF amplifiers, modules and systems for Digital TV (L3)
<b>CO4</b>	Identify Transmission lines for Digital TV(L3)
<b>CO5</b>	Test for a Digital TV Transmitter(L4)

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### Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)

Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation

\* - Average value indicates course correlation strength with mapped PO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	2	1	-	-	-	-	-	-	-	
CO2	-	3	-	-	2	-	-	-	-	-	-	-	-	2
CO3	-	2	-	-	3	-	-	-	-	-	-	-	-	
CO4	-	-	-	-	2	2	-	-	-	-	-	-	-	3
CO5	-	2	-	-	2	-	1	-	-	-	-	-	-	
Average*	2	2	-	-	2	2	1	-	-	-	-	-	-	3

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### Syllabus

Unit No.	Contents	Mapped CO
I	<b>Digital Television Transmission Standards:</b> ATSC terrestrial transmission standard, vestigial sideband modulation, DVB-T transmission standard, ISDB-T transmission standard, channel allocations, antenna height and power, MPEG-2 Performance Objectives for Digital Television: System noise, external noise sources, transmission errors, error vector magnitude, eye pattern, interference, cochannel interference, adjacent channel interference, analog to digital TV, transmitter requirements	CO1, CO2

II	<b>Channel Coding and Modulation for Digital Television:</b> Data synchronization, randomization/scrambling, forward error correction, interleaving, inner code, frame sync insertion, quadrature modulation, 8 VSB, bandwidth, error rate, COFDM, flexibility, bandwidth	CO1,CO2
III	<b>Transmitters for Digital Television:</b> Precorrection and equalization, up conversion, precise frequency control, RF amplifiers, solid-state transmitters, RF amplifier modules, power supplies, cooling, automatic gain or level control, ac distribution, transmitter control, tube transmitters, performance quality.	CO1,CO3
IV	<b>Transmission Line for Digital Television:</b> Fundamental parameters, efficiency, effect of VSWR, system AERP, rigid coaxial transmission lines, dissipation, attenuation, and power handling, higher-order modes, peak power rating, frequency response, standard lengths, corrugated coaxial cables, wind load, waveguide, bandwidth, waveguide attenuation, power rating, frequency response, size trade-offs, waveguide or coax pressurization	CO1,CO4
V	<b>Test and Measurement for Digital Television:</b> Power measurements, average power measurement, calorimetry, power meters, peak power measurement, measurement uncertainty, testing digital television transmitters.	CO1,CO5

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### Learning Resources

#### Text Books

1. Gerald w. Collins, Fundamentals of Digital Television Transmission, John Wiley, 2001.

#### Reference Books

1 R. R. Gulati, Modern Television Practice, Principles, Technology and servicing, 2/e, New Age International Publishers, 2001.

2 John Arnold, Michael Frater, Mark Pickering, Digital Television Technology and Standards, John Wiley, 2007.

#### e- Resources & other digital material

1. <https://www.youtube.com/watch?v=nGnRvyHMEI&list=RDCMUCdlnqMpRrMcCIK2fT6z8EEw&index=2>
2. <https://www.rfwireless-world.com/Tutorials/digital-television-DTV-basics.html>

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