

# Engineering Fundamentals for Broadcasters

## COURSE SCHEDULE

Date	Level-1 Contents	
26 <sup>th</sup> July, Monday	<b>Module-1.1 Video Basics</b> <i>This module will be an introduction to cover visual basics and capturing light as a video signal.</i>	
	1.1a	Human Visual System
	1.1b	Colour Perception, Light Basics
	1.1c	Global Picture Controls
	1.1d	TV System Designing Issues
	1.1e	Monochrome Signals
	1.1f	SDTV basics
	1.1g	Colour Video Signal Formats
	1.1h	Analog to Digital Conversion
	1.1i	Colour Sampling and Sub-sampling
27 <sup>th</sup> July, Tuesday	<b>Module-1.2 Audio Basics</b> <i>This module will be an introduction to cover sound basics and capturing sound as an audio signal.</i>	
	1.2a	Human sound perception.
	1.2b	Sound fundamentals.
	1.2c	Microphones.
	1.2d	Speakers.
	1.2e	Acoustics basics for broadcasters.
28 <sup>th</sup> July, Wednesday	<i>Free time</i>	
29 <sup>th</sup> July, Thursday	Live QnA session for modules- 1.1 & 1.2	
	Evaluation for modules- 1.1 & 1.2 ( After QnA )	
30 <sup>th</sup> July, Friday	<b>Module-1.3 Digital video and Audio</b> <i>This module will cover digital signal basics and analogue to digital conversion.</i>	
	1.3a	Digital and analogue signals.
	1.3b	Conversion, ADC & DAC.
	1.3c	Digital video.
	1.3d	Digital timing and synchronisation.
	1.3e	Serial Digital Interface (SDI)
	1.3f	Digital audio.
	1.3g	AES Standards.
31 <sup>st</sup> July, Saturday	<i>Free time</i>	
1 <sup>st</sup> August, Sunday	<i>Free time</i>	
2 <sup>nd</sup> August, Monday	Live QnA session for module-1.3	
	Evaluation for module -1.3 ( After QnA )	

3 <sup>rd</sup> August, Tuesday	<b>Module-1.4 Analog Communication Fundamentals</b> <i>This module will cover main concepts of analogue transmission.</i>	
	1.4a	Communication fundamentals.
	1.4b	Rf fundamentals and modulation.
	1.4c	Antennas and propagation.
	1.4d	AM, FM, PM.
4 <sup>th</sup> August, Wednesday	<b>Module-1.5 Digital Communication Fundamentals</b> <i>This module will be a continuum of module-1.4, to cover main concepts of digital transmission.</i>	
	1.5a	Digital transmission fundamentals for broadcasters
	1.5b	ASK, FSK, PSK, QAM.
	1.5c	Source & channel coding techniques.
5 <sup>th</sup> August, Thursday	<i>Free time</i>	
6 <sup>th</sup> August, Friday	Live QnA session for module-1.4 & 1.5	
	Evaluation for modules 1.4 & 1.5 ( After QnA )	
7 <sup>th</sup> August, Saturday	<b>Module-1.6 Signals &amp; Mediums</b> <i>This module will cover main concepts of transmission mediums, including fibre-optics.</i>	
	1.6a	Applications of transmission technology in different media.
	1.6b	Guided & unguided media.
	1.6c	Types of media.
	1.6d	Basics of optical transmission.
	1.6e	Different types of OFC.
	1.6f	Design of optical link.
	1.6g	Use of OFC in broadcasting.
8 <sup>th</sup> August, Sunday	<i>Free time</i>	
9 <sup>th</sup> August, Monday	Live QnA session for module-1.6	
	Evaluation for module -1.6 ( After QnA )	
10 <sup>th</sup> August, Tuesday	<b>Module-1.7 Satellite Communications Fundamentals</b> <i>This module will cover main concepts of Satellite Communications.</i>	
	1.7a	Satellite communication fundamentals.
	1.7b	Satellite communication frequency bands.
	1.7c	Satellite's footprint.
	1.7d	Satellite orbits.
	1.7e	The space segment & the Earth segment.
	1.7f	Transponders.
	1.7g	Satellite antennas.
	1.7h	Multiple access techniques.
11 <sup>th</sup> August, Wednesday	<i>Free time</i>	
12 <sup>th</sup> August, Thursday	Live QnA session for module-1.7	
	Evaluation for module -1.7 ( After QnA )	

13 <sup>th</sup> August, Friday	<b>Module-1.8 Networking &amp; IT Basics</b> This module will cover basic concepts of networking & IT.	
	1.8a	IT & Networking fundamentals.
	1.8b	OSI and TCP-IP models.
	1.8c	IP Addressing.
	1.8d	WAN, LAN and Network topologies.
	1.8e	TCP/IP troubleshooting utilities.
	1.8f	Network equipment (Switches, Routers, Servers, etc).
	1.8g	Network security.
	1.8h	Storage systems.
	1.8i	Cloud basics.
14 <sup>th</sup> August, Saturday	<i>Free time</i>	
15 <sup>th</sup> August, Sunday	<i>Free time</i>	
16 <sup>th</sup> August, Monday	Live QnA session for module-1.8	
	Evaluation for module -1.8 ( After QnA )	
17 <sup>th</sup> August, Tuesday	<b>Module-1.9 Signal Measurement and Quality Analysis</b> This module will focus all kind of signal measurement fundamentals for broadcasters.	
	1.9a	Baseband signal measurement & quality analysis (analogue / digital)
18 <sup>th</sup> August, Wednesday	Live QnA session for module-1.9	
	Evaluation for module -1.9 ( After QnA )	
19 <sup>th</sup> August, Thursday	<b>Module-1.10 Overall Broadcast Chain</b> This module planned to give an overall perspective and insight for all previous modules, as how to handle their combination as a one living body, in real radio studios, TV studios, and OB Vans.	
	1.10a	Broadcast signal chain (from camera/microphone to audience)
	1.10b	Overview of equipment used in studios
	1.10c	Electrical power basics, safety considerations.
	1.10d	HVAC basics.
20 <sup>th</sup> August, Friday	Live QnA session for module-1.10	
	Evaluation for module -1.10 ( After QnA )	
21 <sup>st</sup> August, Saturday	<i>Free time</i>	
22 <sup>nd</sup> August, Sunday	<i>Free time</i>	
23 <sup>rd</sup> August, Monday	Summary & Answers	