TEL4114 TELEVISION AND VIDEO ENGINEERING

Hours per Semester				Weighted Total Mark	Weighted Exam Mark	Weighted Continuous Assessment Mark	Credit Units
LH	PH	TH	CH	WTM	WEM	WCM	CU
45	30	00	60	100	60	40	4

Rationale

This course discussed component and system concepts in television systems and video engineering.

Course Objectives

To give a comprehensive coverage of TV Systems with all the new developments in Television and
Video Engineering.

Detailed Course Content:

Fundamentals of Television: **[9 Hours]**

Geometry form and Aspect Ratio, Image Continuity, Number of scanning Tubes, Interlaced scanning, Picture resolution, Camera tubes, Image orthicon, Vidicon, Plubicon, silicon diode array vidicon, solid state signal, video signal dimension, horizontal sync, Composition, vertical sync, functions of vertical pulse train, scanning sequence, Picture signal transmission, sound signal transmission, standard channel bandwidth. Setting up, Operation and Maintenance of a TV Station.

Monochrome Television Transmitter and Receiver: **[10 Hours]**

TV transmitter, signal propagation, Interface, TV transmission Antennas, Monochrome TV receiver, RF tuner, UHF VHF tuner, Digital tuning techniques, AFT, IF subsystems, AGC, Noise cancellation, Video and sound inter carrier detection, Vision IF subsystem, video amplifiers requirements and configurations, DC re-insertion, Video amplifier circuits, Sync separation typical sync processing circuits, deflection current waveform, Deflection Oscillators, Frame deflection circuits, requirements, Line Deflection Circuits, EHT generation, Receiver antennas.

Essentials Of Colour Television*:* **[10 Hours]**

Compatibility, colour perception, three colour theory, luminance, hue and saturation, colour television cameras, value of luminance and colour difference signals, colour television, display tubes, delta, gun precision, inline and Trinitron colour picture tubes, purity and convergence, purity and static and dynamic convergence adjustments, pincushion correction techniques, automatic degaussing circuit, grey scale tracking, colour signal transmission, bandwidth, modulation of colour difference signals, weighting factors, Formation of chrominance signal.

Colour Television Systems: **[9 Hours]**

NTSC colour TV system NTSC colour receiver, limitations of NTSC system, PAL colour TV system, cancellation of phase errors, PAL-D colour system, PAL coder, PAL Decoder receiver, chromo signal amplifier, separation of U and V signals, colour burst separation, Burst phase Discriminator, ACC Amplifier, Reference oscillator, Ident and colour killer circuits, U and V demodulators, Colour signal matrixing, SECAM system, merits and demerits of the PAL and SECAM systems.

Advanced Television Systems: **[7 Hours]**

Satellite TV technology and standards (DVB, etc); HDTV, CCTV; IPTV; Multifunctional Control: On- Board, Remote and Touch Screen; Cable TV, VCR, Digital Video Disc recording and playback; Teletext broadcast receiver, Digital Television Broadcasting, Projection Television, Flat Panel

Display TV Receiver, stereo sound in TV, 3D TV, EDTV, Digital equipments for TV studios

Learning Outcomes

On successful completion of this module the learner will be able to…

- Understand video display principles.
- Describe the operations in modern audio coding.
- Describe the traditional video formats and some of the more common modern digital formats.
- Understand the advantages of digital broadcast as compared to analogue format broadcast.
- Understand the types of internet video and streaming principles.

Method of Teaching /Delivery

The course will be taught by using lectures, tutorials and assignments.

Mode of Assessment

Assignments, tests and final examination. Their relative contributions to the final grade are :

Requirement	**Percentage contribution**
Course work (Assignments, tests)	40
% Final examination	60
% **Total**	**100%**

Recommended and Reference Books

- R.R.Gulati, " Monochrome Television Practice, Principles, Technology and servcing , Second edition, New age International Publishes, 2004 (Unit I,II,IV and V)
- R.R.Gulati "Monochrome and colour television ", New age Internationl Publisher, 2003 (Unit I,III and IV)
- A.M Dhake, "Television and Video Engineerign", Second edition, TMH, 2003.
- S.P.Bali, " Colour Television, Theory and Practice", TMH, 1994

Possible Lecturers:

Dr. J. Butime
Mr. D. Nsubuga Mubiru
Mr. P. Bogere
Mr. G. Bakkabulindi