



COMMUNICATIONS SYSTEMS II

ELN 245-5

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Course Name

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Course Number

GOALS:

A second course in Analog electronic communications at a Technology level.

The principles of FM, Stereophonic Broadcasting, Black and White Television, Colour Television and advanced communications techniques are studied.

The emphasis is on the presentation of electronic analog systems based on the circuits studied in ELN 237-8.

METHOD OF ASSESSMENT:

3 written tests	75%
Lab reports and practical tests	25%

TEXTBOOKS:

"Modern Electronic Communication" by Gary M. Miller  
"Basic Television and Video Systems" by Bernard Grob

OBJECTIVES:

BLOCK I

FM PRINCIPLES

Modulation index  
Power distribution in the FM wave  
Bandwidth requirements  
Bessel functions  
Deviation ratio  
Phase modulation  
Preemphasis and deemphasis

FM RECEIVERS

Block diagram  
FM limiter  
foster-seeley discriminator  
Ratio detector  
PLL demodulator  
FM detector alignments

BLOCK II

FM TRANSMITTERS

The direct method  
The indirect method  
Reactangle modulator  
Varactor modulator  
Crosby FM system  
Phase modulator

STEREOPHONIC BROADCASTING

Block diagram of transmitter  
Block diagram of receiver  
Stereo Demodulation  
SCA decoder  
Linear IC stereo decoders

BLOCK III

THE TELEVISION SYSTEM

BLACK AND WHITE TELEVISION

Scanning a picture  
Picture elements  
Interlaced scanning  
Horizontal and vertical deflection  
Frame and fields  
Blanking  
Synchronization  
Aspect ratio and resolution  
TV cameras and picture tubes  
The television signal

B & W TELEVISION RECEIVERS

Tuner (UHF AND VHF)  
IF Amplifiers  
The audio section  
The video section  
Sync. and vertical deflection  
Horizontal deflection and high voltage

OBJECTIVES - Continued

BLOCK IV

THE TELEVISION SYSTEM

PRINCIPLES OF COLOUR TELEVISION

The luminance signal  
The chrominance signal  
The principles of colour generation  
HUE, saturation and brightness  
The Colour TV camera and picture tube  
The colour subcarrier  
The R-Y, G-Y, and B-Y signals  
The bandwidth of a colour TV signal  
Colour Burst signal  
The composit colourplexed video signal  
Block diagram of a colour TV receiver  
Detailed block diagram of the colour circuits

THE COLOUR TELEVISION RECEIVER

Circuit analysis of the stages of a colour TV receiver

BLOCK V

COMMUNICATIONS TECHNICS

Double frequency conversion  
UP conversion  
Delayed AGL  
Auxiliary AGL  
Bandspreading  
Variable Sensitivity  
Variable Selectivity  
Noise Limiter  
The Meter  
Squelch  
CB transcievers  
CB frequency synthesizers  
Facsimile  
Mobile telephone  
The communications transceiver