

Faculty of Engineering & Technology

Digital Television Systems

Information :

Course Code : COM 530

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Specialization of Electronics & Communication

Area Of Study :

- 1- Develop students' knowledge of the Digital Television Systems, Types of broadcasting and Compression Techniques.
- 2- Enrich students' knowledge of the levels and profiles in the broadcasting.
- 3- Develop students' knowledge of the parameters of the standard digital video broadcasting (DVBS) and the advanced one (DVBS2).
- 4- Enrich student knowledge of the difference between the MPEG 2 and MPEG 4 compression techniques.
- 5- Develop students' knowledge of the differences between TVS , HDTV , UHDTV , 4KHDTV , 9KHDTV.
- 6- Effects of choosing FEC ratio, QPSK , 8PSK , QAM modulation techniques on the number of broadcasted TV channels on a given satellite transponder bandwidth.

Description :

Composite analog TV signal. Digital Component signals. Required Bitrate for a digital TV channel broadcasting. Video Compression techniques: MPEG 2, MPEG 4 (Moving Picture Expert Group). Digital Video Broadcasting (DVB). Friis transmission equation , Link budget calculations. Levels and Profiles in video broadcasting. Parameters for the standard Digital Video Broadcasting (DVBS). Advanced Digital Video Broadcasting (DVBS2). The High Definition TV (HDTV). Broadcasting of HDTV channels. Application of DVBS2 and MPEG 4 in the HDTV Broadcasting. The Ultra HDTV. 4K HDTV , 9K HDTV. Effects of FEC ratio, QPSK , 8PSK on the number of broadcasted TV channels on a given satellite transponder bandwidth.

Course outcomes :

a. Knowledge and Understanding: :

1 -	The Required Bitrate for a digital TV channel broadcasting.
2 -	The Digital Video Broadcasting (DVB) and the Compression Techniques MPEG 2 , MPEG 4.
3 -	The differences between TVS , HDTV , UHDTV , 4KHDTV , 9KHDTV.
4 -	How to choose the FEC ratio, QPSK , 8PSK , QAM modulation techniques to maximize the number of channels broadcasted per satellite transponder.
5 -	Define and estimate of the Power Budget , determination of (C/No) ratio for a communication Channel.

b. Intellectual Skills: :

1 -	Apply the different characteristics in the choice between the different digital systems.
2 -	Comparison between IPTV and TVS

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to Digital TV signal. Digital Component signals	5	3	2
Digital TV channel broadcasting	10	6	4
Video Compression techniques: MPEG 2, MPEG 4 (Moving Picture Expert Group). Digital Video Broadcasting (DVB).	10	6	4
Friis transmission equation , Link budget calculations, determination of (C/No) ratio for a communication Channel. . Mid-Term 1Exam.	10	6	4
Levels and Profiles in video broadcasting.	5	3	2
Parameters for the standard Digital Video Broadcasting (DVBS). Advanced Digital Video Broadcasting (DVBS2). The High Definition TV (HDTV). Effects of FEC ratio, QPSK , 8PSK and DVBS2 on the number of broadcasted TV channels on a given satellite transponder bandwidth. Mid-Term Exam 2.	20	12	8
Application of DVBS2 and MPEG 4 in the HDTV Broadcasting. The Ultra HDTV. 4K HDTV , 9K HDTV.	15	9	6

Teaching And Learning Methodologies :

Lectures

Tutorials