

EE6432: TOPICS IN DIGITAL VIDEO BROADCASTING

Effective Term

Semester B 2024/25

Part I Course Overview

Course Title

Topics in Digital Video Broadcasting

Subject Code

EE - Electrical Engineering

Course Number

6432

Academic Unit

Electrical Engineering (EE)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

P5, P6 - Postgraduate Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

EE3101 Communication Engineering, or EE4115 Audio-Visual Engineering; or EE5809 Digital Audio Processing and Applications, or equivalent

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course aims at providing students with an understanding of technologies in digital video broadcasting (DVB) particularly in receiver designs, and with discovery learning experience to broaden their vision in a macro view of the DVB industry, including career development and job opportunities in the related consumer electronic markets.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe the digital video broadcasting standards and systems.		x		
2	Explain the transmission and reception mechanisms of digital TV content.		x		
3	Describe the receiver designs in DVB industry.		x		
4	Analyze the consumer electronic market and general business models.		x	x	x
5	Demonstrate the understanding of digital switchover in various countries.		x	x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Students engage in lectures where they learn the fundamental knowledge and key concepts of digital video broadcasting.	1, 2, 3, 4, 5	2 hrs/wk (Some of the lectures will also be conducted in class as mini-projects)
2	Tutorial	Students solve problems to consolidate their learning of the course content from the lectures.	1, 2, 3, 4, 5	1hr/wk
3	Mini-project	Students form small groups to perform a research-based mini-project on digital switchover and present their results to the class.	1, 2, 3, 4, 5	

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	At least 3 assignments (mini-projects and/or written assignments etc.)	1, 2, 3, 4, 5	25	
2	Test	1, 2, 3	25	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

Remark: To pass the course, students are required to achieve at least 30% in course work and 30% in the examination.

Assessment Rubrics (AR)**Assessment Task**

Examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Achievements in CILOs

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal level

Assessment Task

Coursework (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Achievements in CILOs

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal level

Assessment Task

Examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Achievements in CILOs

Excellent

(A+, A, A-) High

Good

(B+, B) Medium

Marginal

(B-, C+, C) Low

Failure

(F) Not even reaching marginal level

Assessment Task

Coursework (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Achievements in CILOs

Excellent

(A+, A, A-) High

Good

(B+, B) Medium

Marginal

(B-, C+, C) Low

Failure

(F) Not even reaching marginal level

Additional Information for AR

Constructive Alignment with Programme Outcomes

PILO 1, 2, 3 The course provides students with a clear picture of digital switchover in different countries, and hence allows them to describe various digital video broadcasting standards and systems. With the introduction of DVB-T standard, the students are expected to be capable of understanding the basic concepts of other DVB standards, and are able to take part in receiver hardware and software designs.

PILO 4, 5, 6 Receiver designs, content protection technologies and the industry appreciation offer students practical knowledge for product developments according to design specifications.

Part III Other Information

Keyword Syllabus

Overview of Digital Video Broadcasting: digital switchover, digital TV standards, formats and systems.

Digital Contents Fundamentals: digital audio and video formats, their compressions.

Digital Video Broadcasting - Terrestrial: general network structure, modulation schemes, MPEG transport stream, interaction between a broadcaster and a viewer.

Generic Receiver Designs: set-top-box designs, and iDTV designs.

Content Protection for Paid TVs: common interface background, scheme, further development.

Industry Appreciation: various parties in the industry, business models, market evolvement.

Reading List

Compulsory Readings

Title	
1	Ulrich Reimers, "Digital Video Broadcasting (DVB), The International Standard for Digital Television", Springer-Verlag ISBN: 978-3-662-04564-0

Additional Readings

Title	
1	Ronald de Bruin and Jan Smits, "Digital Video Broadcasting: Technology, Standards, and Regulations", Artech House Publishers ISBN-13: 978-0890067437