

**City University of Hong Kong
Course Syllabus**

**offered by Department of Electrical Engineering
with effect from Semester A in 2024/2025**

Part I Course Overview

Course Title:	Topics in Digital Video Broadcasting
Course Code:	EE6432
Course Duration:	One Semester (13 weeks)
Credit Units:	3
Level:	P6
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	Nil
Precursors: <i>(Course Code and Title)</i>	EE3101 Communication Engineering, or EE4115 Audio-Visual Engineering; or EE5809 Digital Audio Processing and Applications, or equivalent
Equivalent Courses: <i>(Course Code and Title)</i>	Nil
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Part II Course Details

1. 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.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Describe the digital video broadcasting standards and systems.		✓		
2.	Explain the transmission and reception mechanisms of digital TV content.		✓		
3.	Describe the receiver designs in DVB industry.		✓		
4.	Analyze the consumer electronic market and general business models.		✓	✓	✓
5.	Demonstrate the understanding of digital switchover in various countries.		✓	✓	✓
		100%			

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.

3. Learning and Teaching Activities (LTAs)

(LTAs designed to facilitate students' achievement of the CILOs.)

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

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.						Weighting	Remarks
	1	2	3	4	5			
Continuous Assessment: <u>50%</u>								
At least 3 assignments (mini-projects and/or written assignments etc.)	✓	✓	✓	✓	✓		25%	
Test	✓	✓	✓				25%	
Examination: <u>50%</u> (duration: 2hrs , if applicable)								
							100%	

Remark:

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

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Examination	Achievements in CILOs	High	Significant	Moderate	Basic	Not even reaching marginal level
2. Coursework	Achievements in CILOs	High	Significant	Moderate	Basic	Not even reaching marginal level

Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B,)	Marginal (B-, C+, C)	Failure (F)
1. Examination	Achievements in CILOs	High	Medium	Low	Not even reaching marginal level
2. Coursework	Achievements in CILOs	High	Medium	Low	Not even reaching marginal level

6. Constructive Alignment with Programme Outcomes

PILO	How the course contribute to the specific PILO(s)
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.
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 (more details can be provided separately in the teaching plan)

1. 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 evolvment.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

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

(Additional references for students to learn to expand their knowledge about the subject.)

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