

**City University of Hong Kong
Course Syllabus**

**offered by Department of Electrical Engineering
with effect from Semester A 2022/2023**

Part I Course Overview

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

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 self-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. Teaching and Learning Activities (TLAs)

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

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4	5		
Lecture	Key concepts of digital video broadcasting are described and illustrated	✓	✓	✓	✓	✓		2 hrs/wk (<i>Some of the lectures will also be conducted in class as mini-projects</i>)
Tutorial	Key concepts are worked out based on questions and problem solving	✓	✓	✓	✓	✓		1hr/wk
Mini-project	The weekly news digest and latest information on media will facilitate students in grabbing the up-to-date information in the DVB industry, inspiring students to develop new technologies that fit the market needs. Students are required to form small groups and perform a research based mini-project on digital switchover. Via this discovery learning with a finding presentation, students will also build up the capability in effective communication.	✓	✓	✓	✓	✓		

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>40%</u>								
At least 3 assignments (mini-projects and/or written assignments etc.)	✓	✓	✓	✓	✓		40%	
Examination: <u>60%</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 in Semester A 2022/23 and thereafter

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

Applicable to students admitted before Semester A 2022/23

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

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 evolvement

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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