# DIGITAL VIDEO BROADCASTING-TERRESTRIAL SIMULATION USING MATLAB

This project is presented as a fulfillment for the award of the Bachelor in
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## MARA UNIVERSITY OF TECHNOLOGY

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**In the Name of Allah**
**Most Gracious, Most Merciful**

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# ABSTRACT

Digital Video Broadcasting (DVB) is a set of standards that define digital broadcasting using existing satellite, cable, and terrestrial infrastructures.

This project is to build Digital Video Broadcasting software for terrestrial transmission (DVB-T) of digital television signal. The standard prescribes the transmitter design and sets minimum performance requirements for the receiver.

The purpose of this project is to build the transmitter in its "2k mode" as prescribed in the standard, one possible receiver design, and generate error statistics that will help determine whether the receiver model satisfies the performance requirements, using software development tool call MATLAB Communication Blockset.

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# CHAPTER 1

# INTRODUCTION

## 1.1    Introduction

Digital Video Broadcasting (DVB) is a set of standards that define digital broadcasting using existing satellite, cable, and terrestrial infrastructures. In DVB, the video and audio information is digitized and compressed using the Moving Picture Experts Group (MPEG) compression standard. This process is known as source coding. The compressed data is further channel coded to prepare it for transmission. The compression of the video and audio in DVB makes it possible to fit more than one television programme into the same channel spacing occupied by one single analogue television programme. QPSK and QAM are common modulation schemes used in DVB. Quaternary Phase Shift Keying (QPSK) involves varying the phase of the wave, relative to a reference wave, to represent different binary pairs, i.e. 00, 01, 10 and 11. Quadrature Amplitude Modulation (QAM) involves varying both the phase and amplitude of the waveform to represent different binary pairs 2.

DVB uses conditional access (CA) systems to prevent external piracy. Each CA system provides a security module that scrambles and encrypts data. This security module is embedded within the receiver or is detachable in the form of a PC Card. Inside the receiver, there is a smart card that contains the user's access information. DVB is an open system as opposed to a closed system. Closed systems are content provider-specific, not expandable, and optimized only for television. Open systems such as DVB allow the subscriber to choose different content providers and allow integration of PCs and televisions.