UNIVERSITY OF DIYALA
College of Engineering

Error Control Coding

Presented by
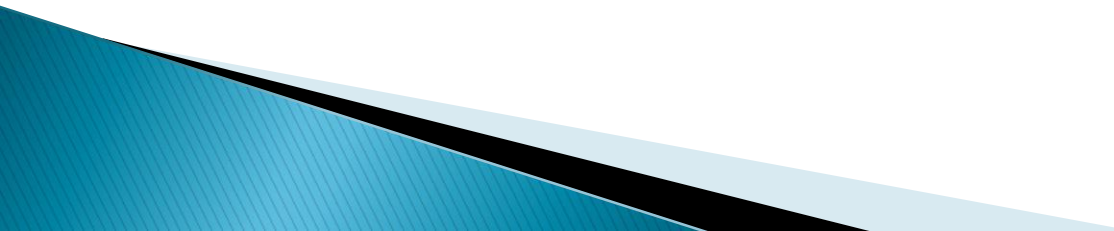
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PRESENTATION OUTLINE
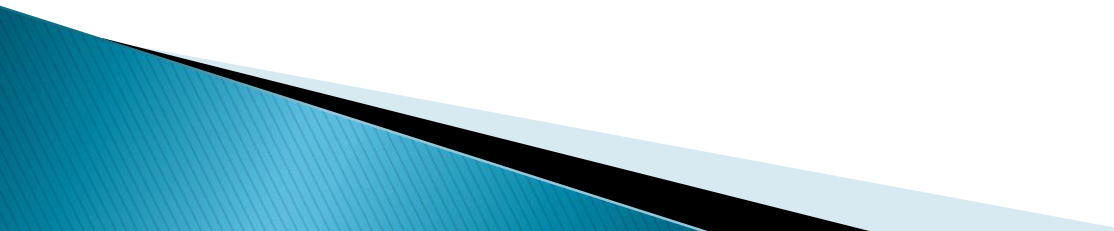
✓ OBJECTIVES

✓ INTRODUCTION

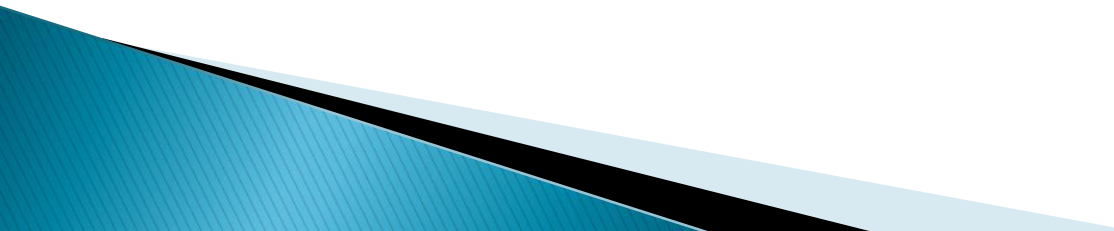✓ BLOCK DIAGRAM OF COMMUNICATION SYSTEM

✓ CHANNEL CODING

OBJECTIVES

Enable the audiences to:-

➤ Introduction to the block diagram of digital communication system.

➤ Define the function of channel coding.

➤ Recognition the channel coding techniques.

INTRODUCTION

- ✓ In the digital wireless communication system the problem of transmission still exists due to the existence of errors in the received digital signal.

- ✓ Motivation the use of error protection method for wireless communication.

- ✓ Shannon has showed that a communication system can be considered to be digital.

BLOCK DIAGRAM OF COMMUNICATION SYSTEM

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┌──────────────┐      ┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│  Source  of  │ ───► │    Source    │ ───► │Channel coding│ ───► │  Modulation  │
│ information  │      │    coding    │      │              │      │              │
└──────────────┘      └──────────────┘      └──────────────┘      └──────────────┘
                                                                          │
                                                                          ▼
                                                                  ┌──────────────┐
                                                                  │   Channel    │
                                                                  └──────────────┘
                                                                          │
                                                                          ▼
┌──────────────┐      ┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│ Destination  │ ◄─── │    Source    │ ◄─── │   Channel    │ ◄─── │ Demodulation │
│              │      │   Decoding   │      │   decoding   │      │              │
└──────────────┘      └──────────────┘      └──────────────┘      └──────────────┘
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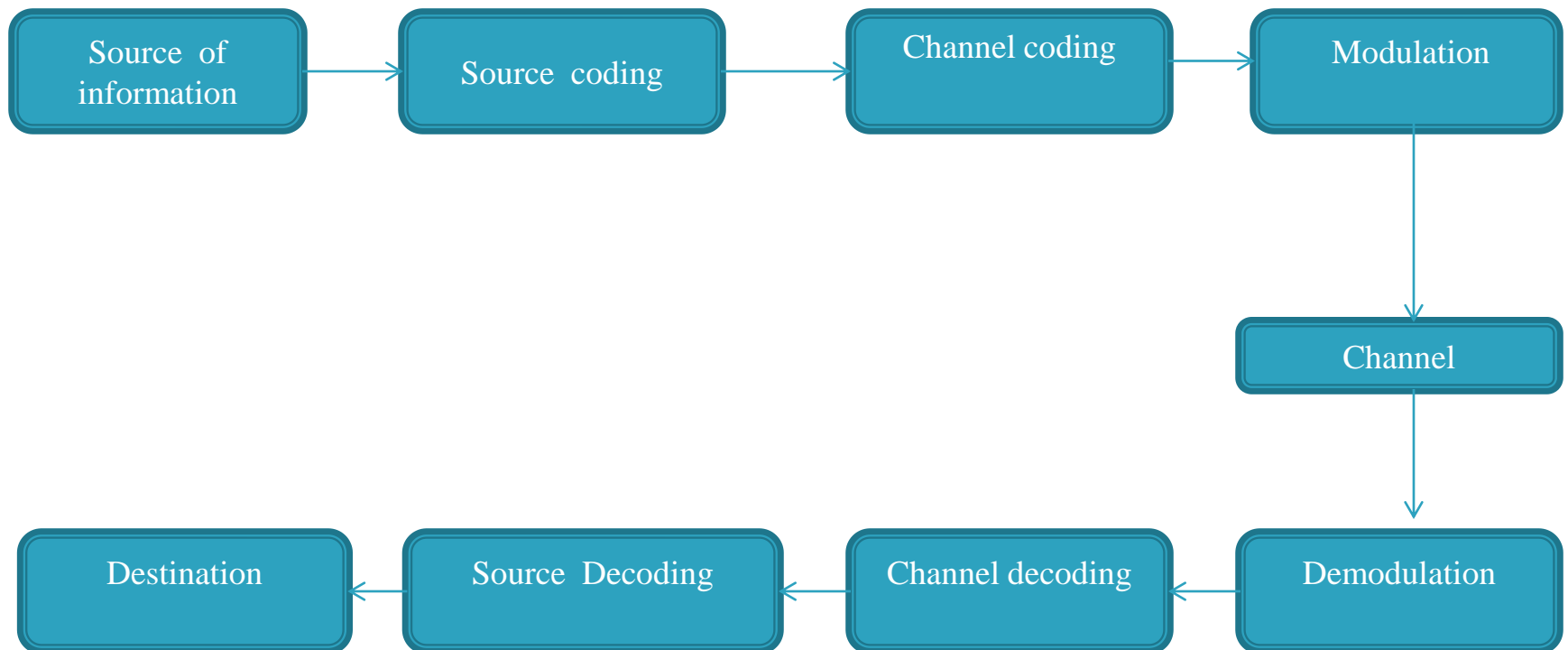
Source coding

- ➢ Source encoding or data compression.

- ➢ Lossy or lossless compression

- ➢ Transmit information in digital form.

- ➢ Two types of source encoding, fixed and variable.

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Channel coding

➢ The process of adding redundancy data to the original information to make the detection and correction possible.

➢ Statistical description of the output of source encoder.

➢ Type of channel (wireless , optical, coaxial cable, RF, satellite).

➢ Linear block code and convolutional code.

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Channel decoding

- Detection.

- Correction.

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Source decoding

- ➢ Source decoding or data de-compression.

- ➢ Original information form

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Thank you for your attention