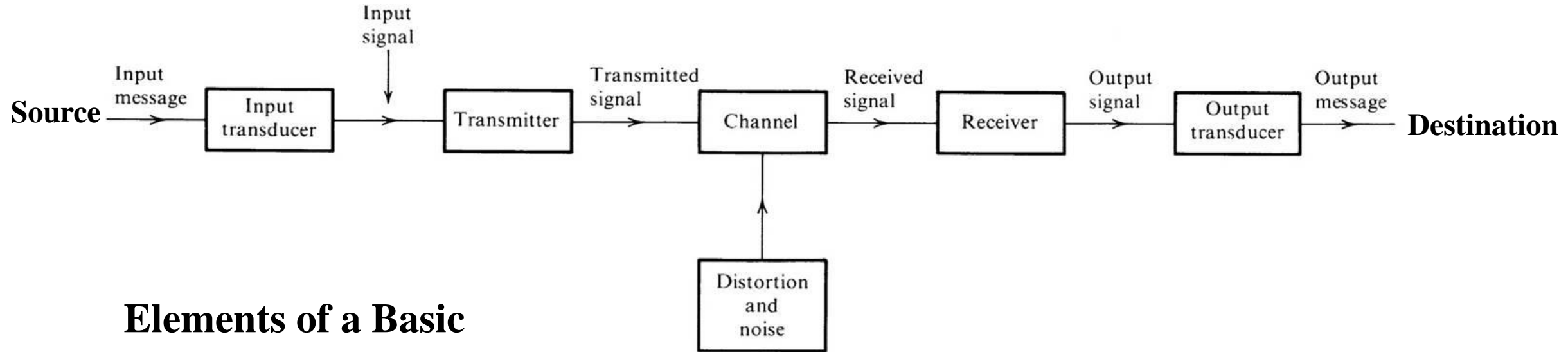


EEE 315
Communication Engineering I

Topic 2: Communication Systems

(Ref: Modern Digital and Analog Communication Systems – B. P. Lathi
Chapter 1: Page 1-3)

Overview of Communication System



Elements of a Basic Communication System

- ✓ Input transducer
- ✓ Transmitter
- ✓ Channel
- ✓ Receiver
- ✓ Output transducer

Source:

The source originates a message such as human voice, television picture, email message, data or image.

Elements of Communication System

Input Transducer:

- Converts the non-electric message to electrical signal (referred to as baseband signal).
- Example: Microphone, keyboard, camera etc.
- Bandwidth of the baseband signal – depends on the type of input message.

Transmitter:

- Modifies the baseband signal to a suitable form for efficient transmission through a channel.
- Consists of several sub-systems: A/D converter, modulator, encoder etc.
- May include oscillators, amplifiers, tuned circuits, filters and other circuits.

Elements of Communication System

Channel:

- Transmission medium that conveys the transmitted electrical signal to receiver.
- Channel types: wired or wireless .
- Wired: twisted copper wire (telephone, DSL), coaxial cable (television, internet), optical fiber.
- Wireless: Microwave (Satellite and cellular), RF wave.

Elements of Communication System

Receiver:

- Reprocesses the received signal from the channel by reversing the signal modifications made at the transmitter and removing the distortions made by the channel so that the input signal can be recovered.
- Consists of several reversed sub-systems of transmitter: D/A converter, demodulator, decoder etc.

Output transducer:

- Converts the demodulated signal into its original form – the message.
- Headphone, television etc. are the output transducer.

Destination:

- The destination is the unit to which the message is communicated.