

# PRESENTED ON COMMUNICATION ENGINEERING

SUPERVISED BY

- ❑ AM.MOHIT HASSAN
- ❑ INSTRUCTOR
- ❑ ELECTRONICS DEPARTMENT
- ❑ DHAKA MOHILA POLYTECHNIC I NSTITUTE

# OUTLINE:

- ❖ WHAT IS COMMUNICATION ENGINEERING
- ❖ What ARE THE FIELDS OF COMMUNICATIONS ENGINEERING ?
- ❖ WHY IS COMMUNICATION ENGINEERING IMPORTANT ?
- ❖ BTRC,ITU,IEEE
- ❖ BASIC BLOCK DIAGRAM OF COMMUNICATION SYSTEM
- ❖ WHAT IS THE MODULATION AND DEMODULATION
- ❖ WHAT IS CHANNEL CAPACITY ?
- ❖ WHAT IS BANDWIDTH ?
- ❖ EQUATION OF CHANNEL CAPACITY

# COMMUNICATION ENGINEERING :

- ❖ The branch of engineering that deals with telecommunications and computer programming and networking.

## What are the fields of communications engineering?

- ❖ Graduates can find work in a variety of fields, including networking, telecommunications, the internet, radio, and computing technologies

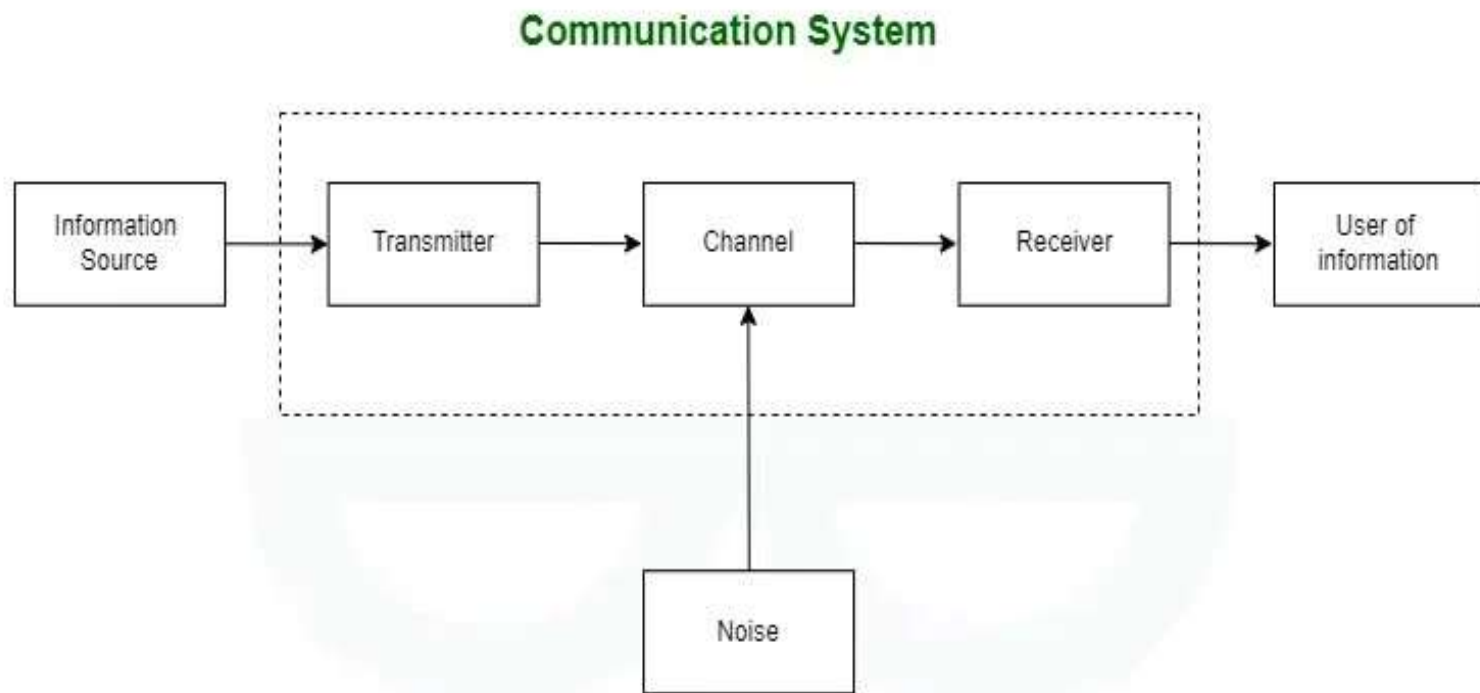
# Why is Communication Engineering important?

- ❖ The communications engineer must solve the problems depending on the situation and provide a suitable solution, using telecommunications knowledge. In addition, they examine and develop communication systems and products such as transmission equipment, satellite communications systems and wireless devices

## THE ABBREVIATION OF BTRC IUT IEEEEC:

- ❖ BTRC: BANGLADESH TELECOMMUNICATION REGULATORY COMMISSION
- ❖ IUT: INTERNATIONAL TELECOMMUNICATION UNION
- ❖ IEEEEC: INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

# BASIC BLOCK DIAGRAM OF COMMUNICATION SYSTEM



# WHAT IS THE MODULATION AND DEMODULATION

**MODULATION:** Modulation is the process of encoding information in a transmitted signal, while

**DEMODULATION :** Demodulation is the process of extracting information from the transmitted signal.

## Difference Between Modulation and Demodulation

Modulation is the process of influencing data information on the carrier, while demodulation is the recovery of original information at the distant end of the carrier.

## WHAT IS BANDWIDTH ?

- ❖ The maximum amount of data transmitted over an internet connection in a given amount of time. Bandwidth is often mistaken for internet speed when it's actually the volume of information that can be sent over a connection in a measured amount of time – calculated in megabits per second (Mbps).

## WHAT IS CHANNEL CAPACITY ?

- ❖ Channel capacity is the maximum rate of information that a channel can transmit. It is measured in bits per second (bps). Channel capacity is a rough measure because it takes into account only the total amount of data transmitted, not the quality of the communication.

# EQUATION OF CHANNEL CAPACITY

Capacity =

Maximum achievable  
data rate (in bits/sec)

$$C = B \cdot \log_2 \left( 1 + \frac{S}{N} \right)$$

Signal Power  
(in Watts)

$S$

$N$

Noise Power  
(in Watts)

SNR (Linear Scale, not in dB)

Radio Channel Bandwidth  
(in Hz)

As this gets larger, C (Capacity)  
gets larger

As this gets larger, C (Capacity)  
gets larger

Ex >  
With Diversity, you can increase  
this value

THANK YOU