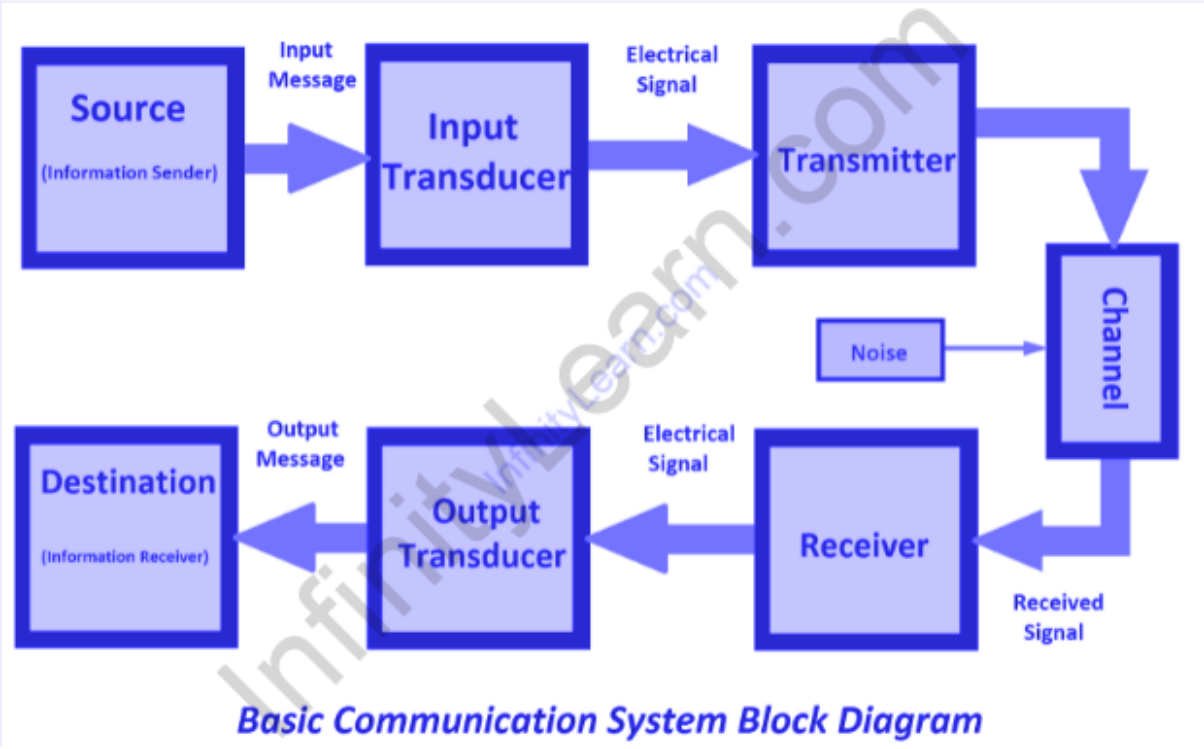
Block Diagram of Communication System

The design and circuitry of a real-world communication system are determined by its type, distance, channel, signal types, and so on. However, if we look at the fundamental components of any communication system, we can see that they are,

- Source or Information Sender
- Input Transducer
- Transmitter
- Channel
- Receiver
- Output Transducer
- Destination or Information Receiver



- Source

The source is the location from which the sender sends the physical message. It could be a voice, pictures, text, video, or something else. The communication system assumes full responsibility after the sender has sent or provided the message or

information. The communication system should now deliver those messages to their intended recipient.

- Transducer for Input

The first and most important component of a communication system is the input transducer. It converts the sender's physical messages into electrical signals. A transducer is a device that can convert physical quantities into electrical quantities or electrical quantities into physical quantities. In essence, the input transducer converts physical quantities into electrical quantities. A microphone, for example, is a transducer that converts voice into an electrical signal and is widely used in communication systems. A transducer is also something like a camera.

- Transmitter

The transmitter is a device or circuit that prepares the signal for long-distance transmission. If the communication system is large, a transmitter can be a large or complex circuit. A transmitter performs a variety of critical functions. It modulates the signal with the help of a carrier signal. It boosts the signal's strength to allow for long-distance communication. It is necessary to convert the signal. For example, if the signal is to be transmitted via electrical conductors or lines, no conversion is required; simply amplification is sufficient. However, if the signal is to be sent through space, the transmitter will convert the electrical signals into radio waves. If the signal is to be sent via fibre optic cable, the transmitter will convert the electrical signal into light or optical signal.

- Channel

The transmission channel is the medium used to send messages or information over long distances. Different types of signals are used by the various channels. If the channel is an electric conductor, information is transmitted in the form of electrical or electronic signals. If the channel is an optical fibre cable, the information is transmitted in the form of an optical signal. If the channel is empty, information travels in the form of radio waves or microwaves.

- Receiver

A receiver is a device or circuit that receives the signal after it has travelled a long distance through the channel. A receiver's input signal can take any form, such as an electrical, optical, or electromagnetic wave. However, the receiver only outputs electrical signals. A receiver's functions are to receive the signal, remove noise or distortion, demodulate if necessary, convert, and amplify.

- Transducer of Output

The electrical signal is converted by the output transducer into the actual message or information in the form of a physical quantity. The speaker, for example, converts an electrical signal into sound. As a result, the receiver at the destination station can hear what the sender at the source station is saying.

- Destination

The destination is the point at which the communication system comes to an end and the receiver receives the actual message or information.