

Communication Systems

Lecture - 3

by:

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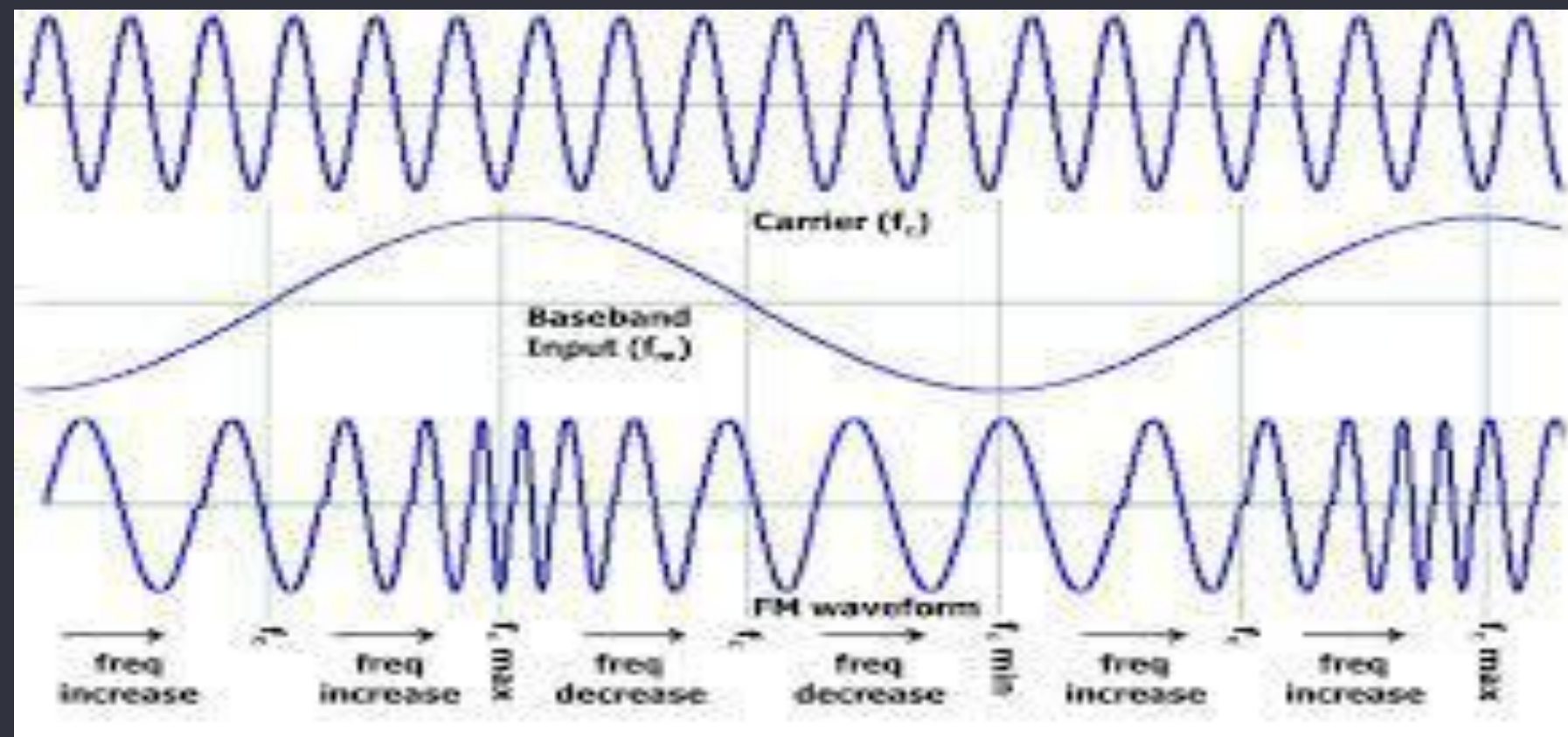
L.S College; BRA Bihar University, Muzaffarpur.

Youtube channel – [Tarun Kumar Dey](#)

Online Course Link - <https://learn.findmementor.com/course/magnetism/>

Radio signal (Radio communication)

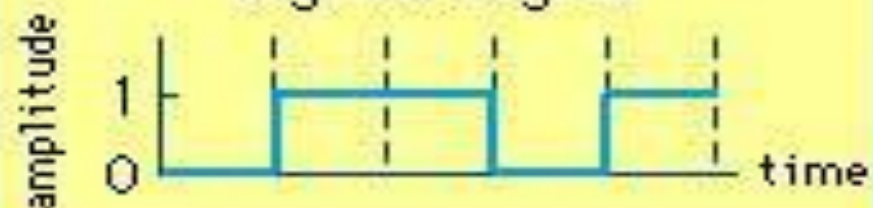
- An audio signal from a broadcasting station is sent over a great distance to a receiver .
- Audio signal can not be sent directly over the air for appreciable distance , even after converting into electrical signal .
- At audio frequencies ,the signal power is quite small and radiation is not practicable . so need of new technique to transmit the signal that is modulation .



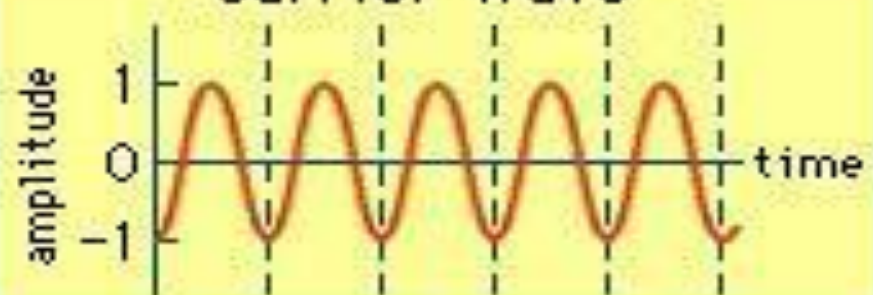
binary digits

0	1	1	0	1
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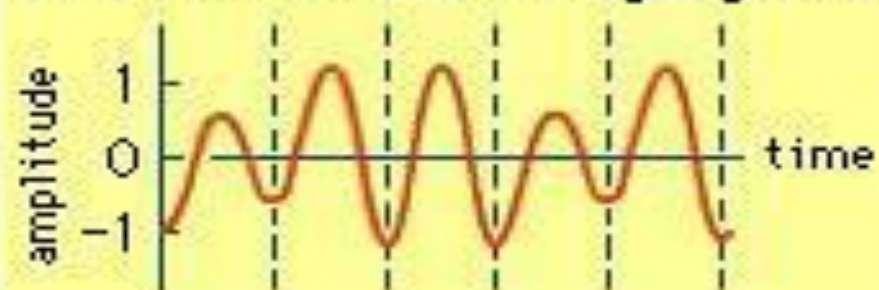
digital signal



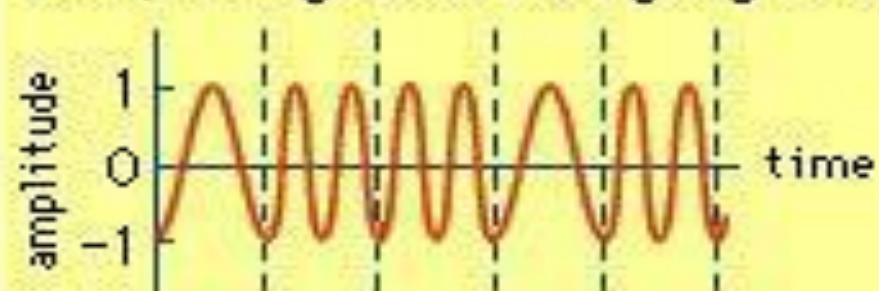
carrier wave



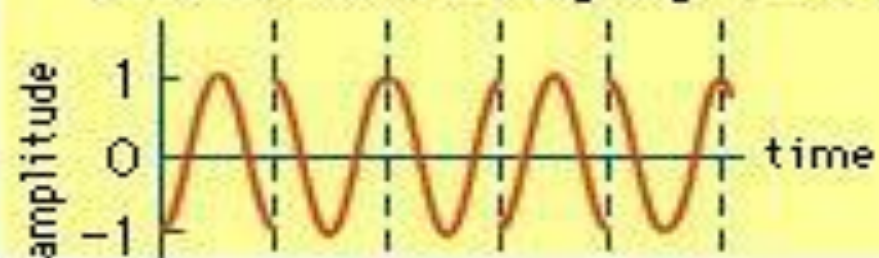
amplitude-shift keying (ASK)



frequency-shift keying (FSK)



phase-shift keying (PSK)



Terminology of communication

- Transducer : An electrical transducer is a device that converts physical quantities such as pressure , displacement , force , temperature etc. into corresponding variations in the electrical signal at its output .
- (Transmitter : It processes the incoming message signal and makes it suitable for transmission through channel and subsequent reception .

- Receiver : It extracts the desire message signals from the received signals at the output of the channel .
- Antenna : Antenna or aerial radiates or receives radio waves . Any conductor behaves as an antenna with proper design .
- Attenuation : The weakening of a signal as it propagates through a medium due to energy loss is called attenuation .
- Noise : Unwanted voltages and currents which disturb the transmission and processing of message signals called Noise .

- Distortion : The extent to which a system fails to reproduce accurately at its output the characteristics of the input is called distortion. Perturbation of wave form is also called distortion.
- Range : The largest distance between the source and receptor of information (i.e., destination) upto which the signal has sufficient strength is called range of the signal.
- Bandwidth : The range of frequencies a signal occupies or over which an equipment operates is called bandwidth.

- Repeater : To extend the range ,use is made of a repeater , which is a combination of a receiver and transmitter .A repeater picks up the signal from the transmitter ,amplifier it and then transmits to the next receiver .
- Amplification : The process of increasing the amplitude and consequently the strength of a signal is called amplification .
- Channel : It is the link between the transmitter and the receiver , The channel may be in the form of wires or cables connecting the transmitter or the receiver or it may be wireless .