



**SNS COLLEGE OF TECHNOLOGY**  
**An Autonomous Institution**  
**Coimbatore-35**



Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++'  
Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**19ECB301-ANALOG AND DIGITAL COMMUNICATION**

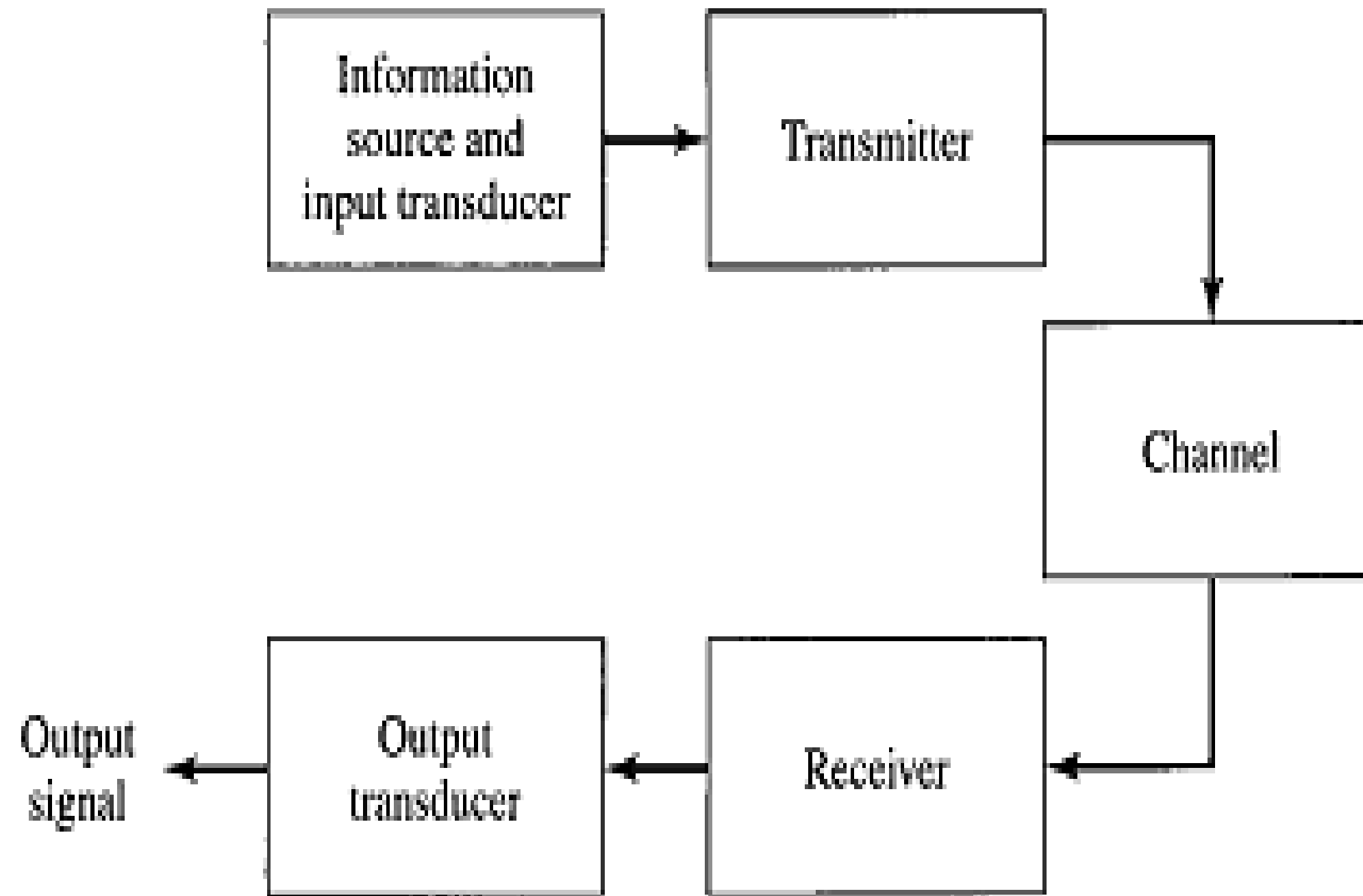
III YEAR/ V SEMESTER

**UNIT 1 – ANALOG COMMUNICATION**

**TOPIC – INTRODUCTION TO COMMUNICATION SYSTEMS**

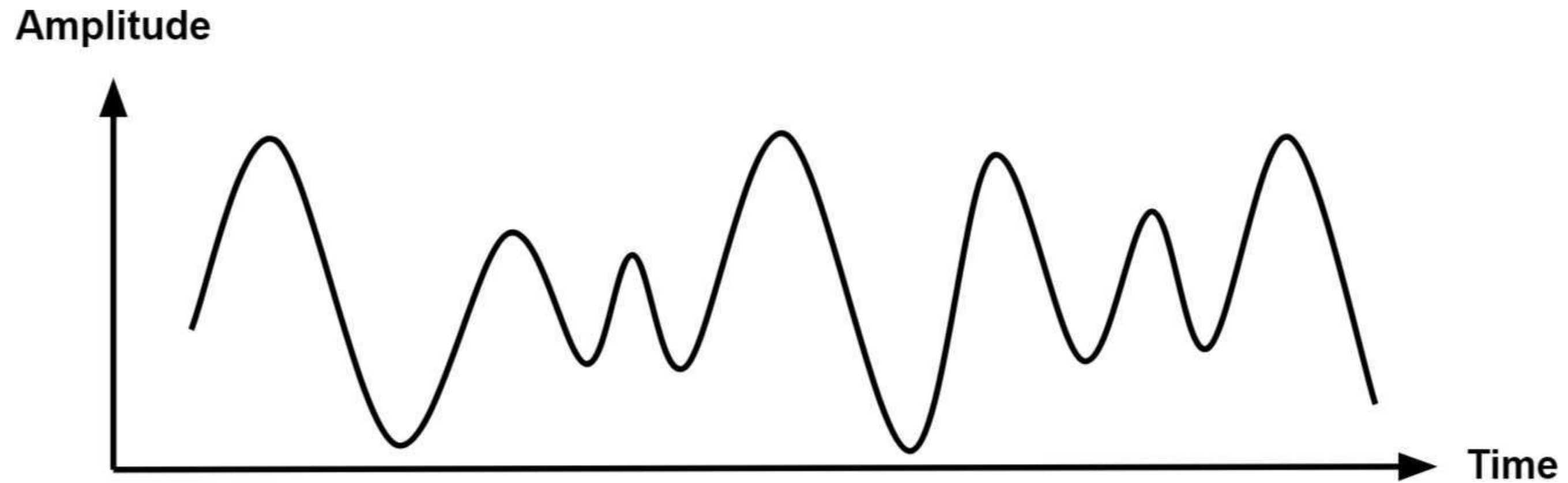


# ELEMENTS OF COMMUNICATION SYSTEM



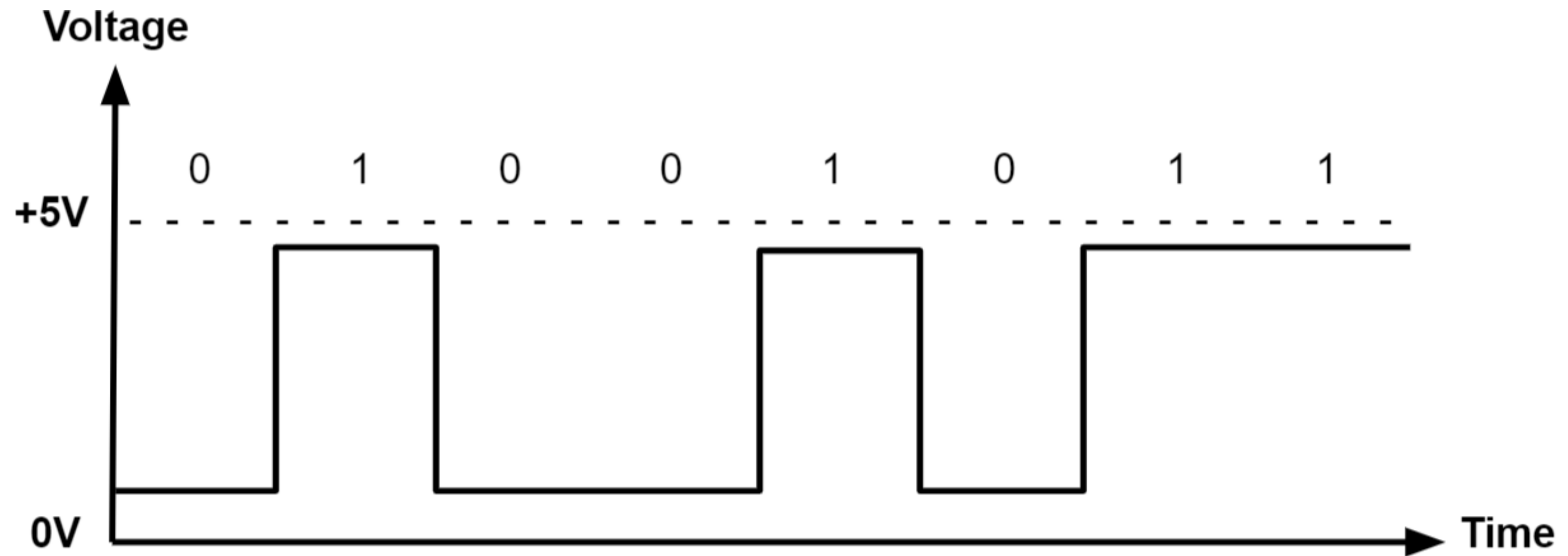


# ANALOG SIGNAL



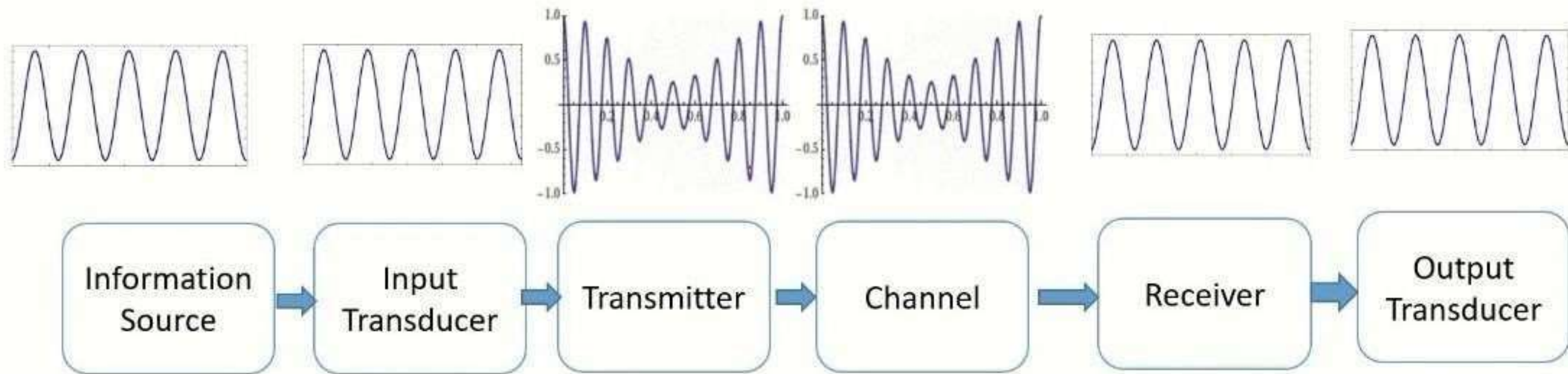


# DIGITAL SIGNAL





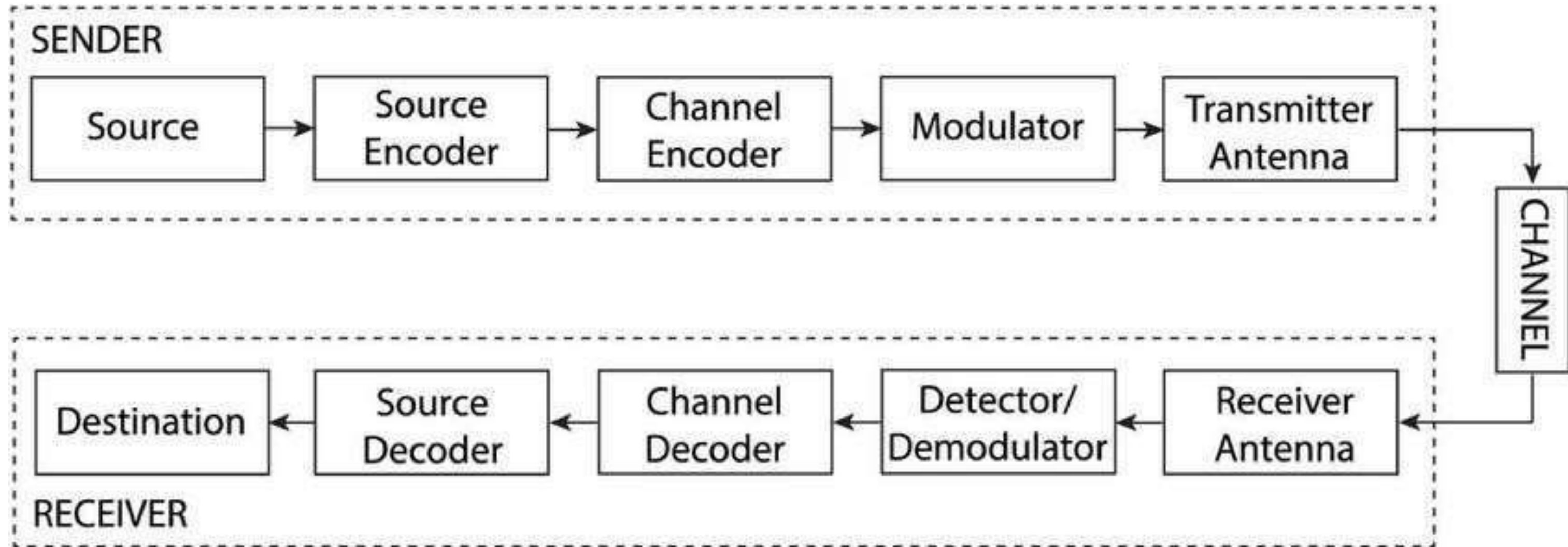
# BLOCK DIAGRAM OF ANALOG COMMUNICATION SYSTEM







# BLOCK DIAGRAM OF DIGITAL COMMUNICATION SYSTEM





## ADVANTAGES OF ANALOG COMMUNICATION SYSTEM



- Analog signals are easier to process.
- Analog signals best suited for audio and video transmission.
- Analog signals are much higher density, and can present more refined information.
- Analog signals use less bandwidth than digital signals.
- Analog signals provide a more accurate representation of changes in physical phenomena, such as sound, light, temperature, position, or pressure.
- Analog communication systems are less sensitive in terms of electrical tolerance.



## DISADVANTAGES OF ANALOG COMMUNICATION SYSTEM



- Data transmission at long distances may result in undesirable signal disturbances.
- Analog signals are prone to generation loss.
- Analog signals are subject to noise and distortion, as opposed to digital signals which have much higher immunity.
- Analog signals are generally lower quality signals than digital signals.





## ADVANTAGES OF DIGITAL COMMUNICATION SYSTEM



- Digital signals can convey information with less noise, distortion, and interference.
- Digital circuits can be reproduced easily in mass quantities at comparatively low costs.
- Digital signal processing is more secure because digital information can be easily encrypted and compressed.
- Digital systems are more accurate, and the probability of error occurrence can be reduced by employing error detection and correction codes.
- Digital signals can be easily stored on any magnetic media or optical media using semiconductor chips.
- Digital signals can be transmitted over long distances.



## DISADVANTAGES OF DIGITAL COMMUNICATION SYSTEM



- A higher bandwidth is required for digital communication when compared to analog transmission of the same information.
- DSP processes the signal at high speeds, and comprises more top internal hardware resources. This results in higher power dissipation compared to analog signal processing, which includes passive components that consume less energy.
- Digital systems and processing are typically more complex.