



# **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 ELECTRICAL AND ELECTRONICS ENGINEERING**

**COURSE NAME: 19EEB301/ CONTROL SYSTEMS**

**III YEAR / V SEMESTER**

**Unit I – SYSTEMS AND THEIR REPRESENTATIONS**

**Topic : Basic Elements in Control Systems**



# Introduction

- A Control system is a system or a set of devices that manages command and directs the behavior of other devices or systems.
- works on the principle of the input-process-output cycle. since the output is controlled by varying input.
- widely used in electronics, automation, and engineering.





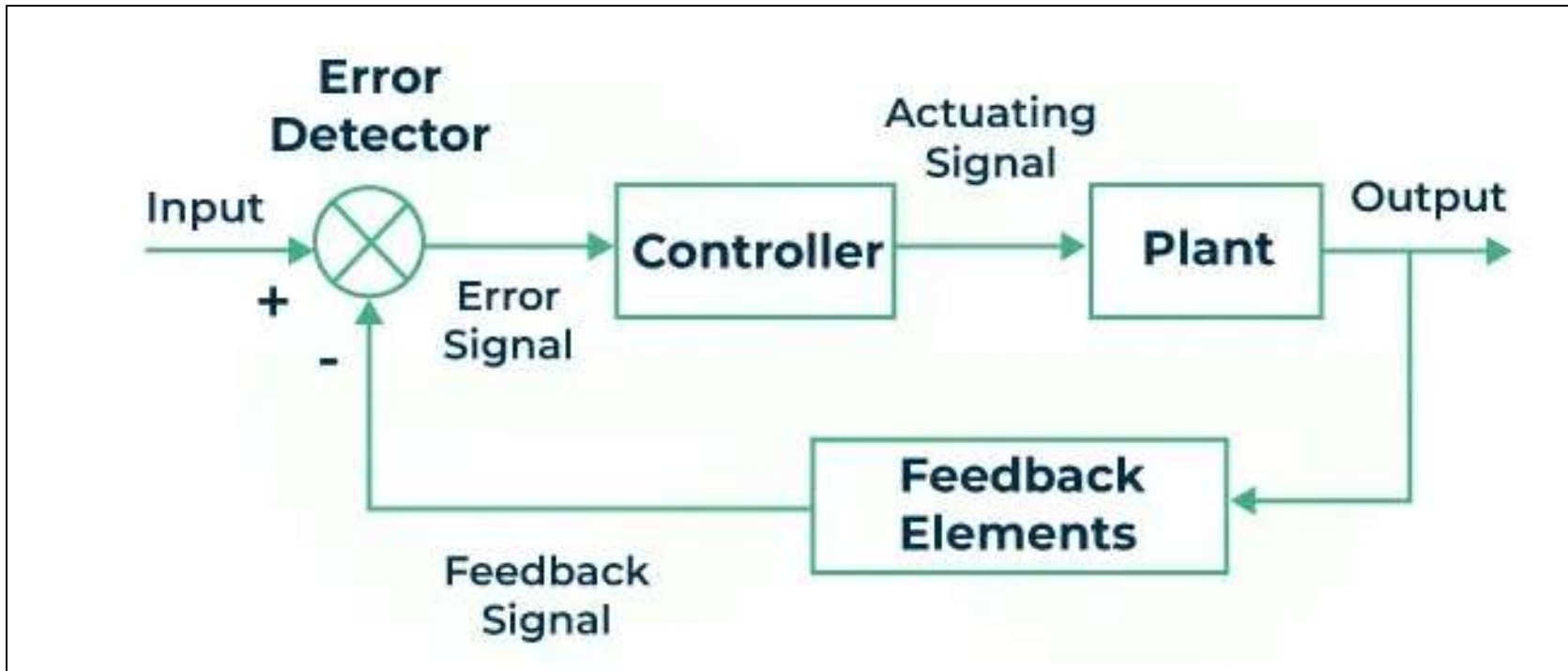
# Applications



- **Medical Equipment** – It is used to control various types of medical machines such as dialysis machine, X-ray machines.
- **Farming and Agriculture** – Control systems are used to automate and optimize various types of tasks in agricultural processes such as crop harvesting, fertilization
- **Robotics** – Here the control systems mainly used to control and automate the movements of robots for any operations.
- **Power and Energy Systems** – It optimizes power generation, consumption and distribution improving the operational efficiency of power plants.
- **Environmental Control** – HVAC systems used to regulate physical or chemical characteristics.
- **Transportation** – Control systems control various aspects of transportation such as traffic control systems, air-traffic controller, etc.
- **Industrial Automation** – They optimize production processes in mills, factories, and other manufacturing industries.
- **IoT and Home automation** – [IoT and home automation](#) used to control and automate various systems in home or building such as air conditioning, heating, and security.



# Basic Elements of Control System





# Basic Elements of Control System

- **Input signal** : Input signal represent the signal that the controller aims to regulate.
- **Controller** : The controller in the system is responsible for processing the error signal.
- **System or process** : The control output is applied to system or process that needs to be controlled.
- **Feedback** : The feedback is a process variable which is obtained from system.
- **Output** : Control output is the output signal generated by controller.



# Advantage and Disadvantage of Control System

- **Advantage**
  - Fast and error free
  - Integration with other complex system
  - Optimization
- **Disadvantage**
  - Maintenance
  - Complexity
  - Environmental Factor



# Thank You