Subject	Data Acquisition System	**Course Code**	CT434	**Theoretical**	3hrs / wk
Semester	7	**Prerequisite**	CT326	**Practical**	3hrs / wk

General Objectives:

1. To understand the different types of Filters and Amplifiers.
2. To understand the signal sampling and conditioning.
3. To understand the D/A Converters.
4. To understand the data acquisition methods.
5. To understand the design of Data Acquisition systems.
6. To understand the process of signal converting devices

Program Learning Component

Week 1	**To understand the data acquisition system.**		
	Specific Learning Outcomes	**Resources**	**Practical**
	To understand the data acquisition system data acquisition methods. Analog data. Operational amplifier.	Power point Slide. White board. Comprehensive workbook for students	Present practical applications of Operation Amplifier
Week 2-5	**To understand the design of Data Acquisition systems**		
	Specific Learning Outcomes	**Resources**	**Practical**
	To understand the signal conditioning circuit: Scaling circuit Voltage to current & current to voltage circuit (V/I) & (I/V). Alarm circuit. Voltage to Frequency & Frequency to voltage circuit (V/F) & (F/V).	Power point Slide white board. Comprehensive workbook for students	Ability to design and use the Signal conditioning circuits. (V/V), (V/I), (I/V), Alarm circuit, (V/F), (F/V).
Week 6-8	**To understand the different types of Filters & Sampling / Hold techniques**		
	Specific Learning Outcomes	**Resources**	**Practical**

	Type of filters: Passive & Active filters. Selecting the filter. Using the filters in DAS Sampling theory Sample and Hold circuits Ability to design the S/H circuits.	Power point Slide white board. Comprehensive workbook for students	Ability to design and use the Filter circuits. Ability to design the S/H circuits. Analog multiplexers and demultiplexers.
Week 9-12	**To comprehend fully the concept of: ADC & DAC**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Features and specifications of A/D. Types of A/D: Counting A/D converter Successive approximation A/D Flash converter ADC features and specifications of D/A. Types of D/A: R-2R Ladder DAC. In-integrated DAC. Ability to use all types of D/A and A/D converters.	Power point Slide white board. Comprehensive workbook for students	Ability to Choose and use analog to digital (A/D) converters. Ability to Choose and use analog to digital (A/D)converters
Week 13-14			
	Specific Learning Outcomes	**Resources**	**Practical**
	Understand the: Digital sampling techniques. Multiplexing and demultiplexing of analog signals. Multi - channel data acquisition systems.	Power point Slide white board. Comprehensive workbook for students	Ability to design and use Analog multiplexers and demultiplexers. Multi - channel data acquisition systems.