EM 840: Data Acquisition and Control (3-0)

Text Book:

- Transducers and Instrumentation, D.V.S. Mury, Prentice-Hall International, Inc.
- Digital Control System Analysis And Design by C. L. Phillips and H. T. Nagle, Jr., 3rd edition, Prentice-Hall International Inc.

Reference Books:

- Electronics with Digital and Analog Integrated Circuits by Richard J. Higgins Prentice-Hall International, Inc
- TMS320C3x DSP Starter Kit User's Guide by Texas Instruments

Objective:

The objective of this course is to impart theoretical and practical knowledge of advanced data acquisition and control to graduate students.

Course Outcome:

Students after successfully completing of this course will be able to demonstrate:
i. Understanding of all the components required for data acquisition systems.
ii. Knowledge of analyzing the system speed, resolution and accuracy.
iii. Knowledge of designing an efficient data acquisition system for the required applications
iv. Knowledge to use controller design techniques to make the system behavior satisfy specified design objectives
v. Ability to evaluate and test the system performance using digital simulations.

Course Outline:

Topics	Allocated Periods
1. Introduction to Data acquisition 2. Passive and Active Electrical Transducers 3. Signal Conditioning Circuits 4. Digital Interfacing 5. Data Communication and Networks 6. ADC and DAC, Timers And Counters 7. Digital measurements and control programming for real time systems 8. Introduction to Digital Control Systems 9. Digital Controller Design	45