

BIOMEDICAL SYSTEM DESIGN

PURPOSE:

To enhance students knowledge and educate real time system development

INSTRUCTIONAL OBJECTIVES:

1. To develop professionals with practical knowledge
2. To develop programming and problem solving skills
3. To develop industrial competent people.
4. To re-engineer and improve their ability in embedded system design

UNIT I - GRAPHICAL PROGRAMMING LANGUAGE LabVIEW

(6 HOURS)

Navigating Graphical System Design Software Platform LabVIEW - Developing modular applications - Managing file and hardware resources - Implementing design patterns - Overview of a DAQ system - Bio-medical signal conditioning

UNIT II - INTEGRATED REAL-TIME DESIGN

(6 HOURS)

Getting started with labVIEW FPGA - Programming using labVIEW FPGA - Synchronizing FPGA loops and I/O- Sharing physiological data like ECG, EEG etc..., on FPGA - Communicating between the FPGA and host

UNIT III – BUILDING BIOMEDICAL SYSTEM DESIGN

(8 HOURS)

Creating and investigating a NI myRIO project - Exploring the myRIO FPGA personality - Communication between RT target and HOST - Development of full prototype model of any biomedical system

ASSESSMENT & EXAM

- A. Objective type written exam will be conducted at the end of the course
- B. Design problem will be given and students has to build a complete system

OUTCOME

- Doing experiments beyond the curriculum
- Ability to connect theory with real time applications
- Ability to learn, simulate, prototype and deploy using Integrated platform

REQUIREMENTS

- Computer lab with 30 systems
- Graphical system design software with biomedical signal and image processing toolkits – 30 users
- FPGA based real time prototyping and system design hardware – 10 units
- Biomedical sensors like ECG, EEG, EMG, Heart rate monitors etc...

RESOURCE PERSON

From National Instruments & NI Authorized Technology partners

VENUE

Department of Biomedical Engineering, SRM University, Kattankulathur Campus

ELIGIBILITY OF PARTICIPANTS

- CGPA Of 7.5 and above
- Students in the III year (5th semester and above) from BME,ECE,EIE
- Batch size limited with 30

PAYMENT TERMS

Yet to discuss

REFERENCES

Title: [Digital Signal Processing System-Level Design Using LabVIEW](#)

Author: Nasser Kehtarnavaz

Publisher: Newnes

ISBN: 0-7506-7914-X

Publication Date: 6/17/2005

Title: [Applications in LabVIEW](#)

Author: Leonard Sokoloff

Publisher: Prentice Hall

ISBN: 0-13-833949-X

Publication Date: 12/24/2003

Jaakko Malmivuo & Robert Plonsey: Bioelectromagnetism - Principles and Applications of Bioelectric and Biomagnetic Fields, Oxford University Press, New York, 1995.

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