CSC463 EMBEDDED SYSTEMS

Learning Outcomes

- Describe the instruction set architecture and the external interface architecture of microprocessors.
- Analyze, design and implement hardware interfaces between the microprocessor and controllers & instrumentation devices.
- Design and code programs that interact with controllers and instrumentation devices, both digital and analogue.
- Describe contemporary applications of embedded systems.
- Conceive, specify and design innovative applications based on embedded systems.

Content

Generic processor programming & interfacing model; Microprocessor programming model: basic internal architecture, instruction execution model, instruction set overview including addressing modes, memory models, I/O model. Microprocessor interface model. Case study of a selected processor e.g. Intel 80X86; Programming model, instruction set architecture, assembly language programming. Interfacing concepts. Polling and interrupt based models. Design and programming or simple data acquisition and control systems. Applications; Monitoring & control, data acquisition, mobile devices, FID technology, access control & surveillance systems, etc.

Pre-requisites

- CSC121 Programming and Problem Solving
- CSC213 Computer Architecture
- CSC216 Assembly Language Programming

Delivery

Lectures, Laboratory Practicals.