



About the Course

This course takes a holistic view of Cyber Physical Systems, with a focus on various computational features for engineering disciplines such as complex communications, control and information fusion for Industrial Application. The course also aims to provide adequate practical exposure to hardware and software co-design in the development of Cyber Physical Systems for industries.



Key Topics

Embedded Systems | ARM Processors | Embedded C | Cyber Physical Systems | Micro Python

Course Objectives

Main objective of this course is:

- ▶ Explain the basic concepts of Cyber Physical Systems (CPS) and its components, such as sensors, actuators, processors, communication devices
- ▶ Develop prototypes for applications in embedded system using Software platforms such as IAR embedded Workbench, STM32Cube Integrated Development Environment, Arduino IDE, Thonny IDE
- ▶ Illustrate CPS application in Engineering fields such as Biomedical Engineering, Smart Civil Engineering, Smart Cities, Mechatronics, Hybrid Electric Vehicles, Robotics

Learning Outcomes

Upon completion of this course, the learner will be able to

- ▶ Solve problems in Cyber Physical Systems design paradigms, architectures, and problems, both in terms of software and hardware.

- ▶ Program ARM microcontrollers using Embedded C and Micropython Programming for various embedded applications
- ▶ Analyse the CPS' specification and implement the same for real time industrial applications through project-based learning.
- ▶ Design and develop prototypes for embedded applications using Software Platforms such as IAR embedded Workbench, STM32Cube Integrated Development Environment, Arduino IDE, Thonny IDE
- ▶ Appraise application of CPS in in Engineering fields such as Biomedical Engineering, Smart Civil Engineering, Smart Cities, Mechatronics, Hybrid Electric Vehicles, Robotics.