ISS8AG EMBEDDED SYSTEMS AND ROBOTICS

ISS8AG **Embedded Systems and Robotics**	**ECTS Credits : 2** **Duration : 21 hours**	**Semester : S8**

Person(s) in charge :

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Keywords : critical systems, OS services, event triggered protocol, time triggered protocol, real time scheduling, energy consumption, robotics.

Prerequisites :

Objective : Provide the skills on executive supports of embedded systems

Program and contents:

This module aims to provide the students with skills in operational frameworks for embedded systems. In particular, this course presents the main embedded networks and protocols, real time operating systems and strategies for memory management that fit the real time quality of service required by applications such as ambient systems, transportation systems and wireless real time sensor networks.

Real time embedded operating systems
• Specific issues for real time guarantees, error detection, error isolation, error tolerance
• Physical time handling
• Failure handling
Real time scheduling policies: fixed priorities – dynamic priorities
Real time OS kernel (OSEK, Symbian, TinyOS…)
Real time embedded networks
priority driven protocols (example: CAN protocol)
time driven protocols (example: TTP/C, FlexRay)
Embedded middleware
specific characteristics and properties for embedded applications
case studies: AUTOSAR, TAO

Abilities :

Levels	Description and operational verbs
Know	Basic concepts of embedded systems and critical systems
Understand	Technics that allow to tackle the stakes of these systems
Apply	Application to the world of the motor car industry or robotics
Analyze	Constraints, implications and technological choices they imply
Summarise	Advocate a solution that fills the needs of regular application, users and constraints
Assess	

Evaluations :

☑ Written Test	☑ Continuous Control	☐ Oral report	☑ Project	☐ Written report