

MG2819

New sensing systems for automotive seating

Professor: Laurent Daniel

Language of instruction: French – **Number of hours:** 36 – **ECTS:** 3

Prerequisites: Basic background in Mechanics and Physics. Students will have to sign a confidentiality agreement with the industrial partner so as to protect the sensitive informations possibly released during the project.

Period: S8 Elective 13, One-week module 15-19 May IN28IS1, SEP8IS1

Course Objectives

Automotive seats have been through a strong evolution in the past years. Treated before as purely mechanical systems, they now integrate mechatronic systems for motion actuation, heating or cooling systems, or passenger security. The next generation seats will incorporate sensing functionalities, so as to collect data such as passenger complexion, position, breath or heart rythm, or steadiness. These informations can then be used to ajust comfort or security functions. The objective of this course is to design a mechatronic system able to collect such information from the passenger of an automotive seat.

On completion of the course, students should be able to

- Design a mechatronic system using their knowledge in Mechanical design, Material science and Physics.
- select and use design tools
- integrate a system into a complex environment
- handle the complexity of industrial systems
- engage in team working

Course Contents

- Solid mechanics, continuum mechanics, vibrations, electromagnetism.
- Computer Assisted Design, analytical design, numerical design.

Course Organization

The studients will work in project mode during a full week (approx. 50 h.) with daily deliverables.

Evaluation

Daily deliverables + implication + final defence