ETSIT
Escuela Técnica Superior de
Ingenieros de **Telecomunicación**

Courses Syllabus:

Information and communications technology in automotive industry (ICTA)			
Code number:	46675	Number of ECTS:	6 ECTS
Semester:	Autumn	Language:	English

Lecturer(s) and contact:

- Dr. Juan Carlos Aguado Manzano (jaguado@tel.uva.es)
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Learning goals:

At the end of this sections, the student should be able to:

- Use commercial software tools to analysis CAN messages from car devices and car applications.
- Enumerate and describe the most important CAN protocol parameters of physical and upper layers.
- Enumerate and describe the basic communication elements of intra-vehicular network communications under CAN protocol.
- Design and program very simple pieces of code to emulate intra-vehicle communications.
- Use carmakers documentation to analyze car devices and car applications.
- Describe vehicle-to-infrastructure and vehicle-to-vehicle communication services

Contents:

1. Introduction to Vehicle Telematics.
2. Intra-Vehicular communications. CAN Bus. CANoe.
3. Programming in CAPL.
4. Intra-vehicular communications. Other standards.
5. Design of ECUs.
6. ECU diagnosis.

Lab:

1. Physical layer of the CAN bus.
2. CAN analysis: IGN signals, TeleAid Info-Call and Volume Control.
3. CAN analysis: Airbag signals.
4. CAN analysis: Real car trace.
5. Sending CAN messages using CANoe.
6. CAPL Program.
7. D2B Optical Bus Analyzer.
8. MOST Optical Bus Analyzer.
9. ECU simulation using CANister. Breathalyzer design and development.
10. Datalogger. Diagnostics.

Prerequisites:

This is an intermediate course, intended for learners with a background in computer and electrical engineering. To succeed in this course, you should have the following knowledge prerequisites:

- Intermediate programming experience, preferable in C.
- Familiarity with protocols, communications networks and telematic services.
- Basic use of laboratory equipment, mainly Oscilloscopes.