

## 97-1 大葉大學 選課版課綱

### 基本資訊

課程名稱	智慧型汽車之控制設計:TWN ITS-1	科目序號 / 代號	1148 / EGR5352
開課系所	電機工程學系碩士班	學制 / 班級	研究所碩士班1年1班
任課教師	吳幸珍	專兼任別	專任
必選修 / 學分數	選修 / 3	畢業班 / 非畢業班	非畢業班
上課時段 / 地點	(三)234 / H371	授課語言別	中文

### 課程簡介

This course is to provide graduate student the systematic design of the automatic driving system embedded in the smart car Taiwan ITS-1. Taiwan ITS-1 is a heterogeneous system including various sensors, core controller, interfacing and mechanisms to carry out automatic driving. A hierarchical-control autonomy structure to achieve integrated longitudinal and lateral control on highway and urban-road environments. Upper-level control analyzes the traffic situation, determines a driving mode and reference signals. Vehicle-body control executes real-time control-signals tracking. Both human intelligence and behaviors are integrated into vehicle-body control. Collision warning and avoidance maneuvers are embedded in this car. Furthermore, passengers' comfort is also considered in design.

### 課程大綱

- I. Introduction
  1. Mastering Simulink
  2. Introduction to CarSim
  3. Vehicle Dynamics Simulation using CarSim
    - Scene Setup
    - Scene Setup
  4. Introduction to Automatic Driving System
- II. Autonomous Driving System
  5. Vehicle Overview
  6. Lane-keeping Design
    - ? Vision-based system
    - ? DSP-based system
  7. Lane-changing Design
  8. Car-following Design
    - ? ICC mode
    - ? ACC mode
    - ? Platoon mode
    - ? Stop-and-Go
      - . Driving Assistance System
  9. Collision Warning/Avoidance Maneuver

10. Comfort Estimation 11. Integrated Lateral and Longitudinal Controller Final Examination (CarSim Demo)
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基本能力或先修課程
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