# COURSE DESCRIPTION
# TRANSPORTATION AND MOBILITY WITH UAS

# SSD:  TRASPORTI (ICAR/05)

DEGREE PROGRAMME: TRANSPORTATION ENGINEERING AND MOBILITY (P55)
ACADEMIC YEAR 2022/2023

# COURSE DESCRIPTION

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# GENERAL INFORMATION ABOUT THE COURSE

INTEGRATED COURSE: U4955 - UNMANNED AICRAFT SYSTEMS FOR TRANSPORTATION AND MOBILITY
MODULE: U4956 - TRANSPORTATION AND MOBILITY WITH UAS
CHANNEL: FG A-Z
YEAR OF THE DEGREE PROGRAMME:   I
PERIOD IN WHICH THE COURSE IS DELIVERED: SEMESTER II
CFU: 3

## REQUIRED PRELIMINARY COURSES
*None*

## PREREQUISITES
*None*

## LEARNING GOALS
*Unmanned Aircraft Systems (UAS) may in the relatively near future become a new mode of transport to effectively address the delivery of goods and, in the long term, the mobility of people. Consequently, the modelling of UAS is expected to be progressively incorporated into transport and mobility modelling frameworks for both planning and operational purposes.*

## EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)
**Knowledge and understanding**

*Students will understand modelling methods for the assessment of single-mode and intermodal performances of the systems, as well as methods and techniques for simulating the demand for mobility, the supply of transport services, the supply/demand interaction, the economic, territorial, and environmental impacts.*

**Applying knowledge and understanding**
*Students will learn how to apply specific methodologies and tools for testing service patterns under technological, functional and economic constraints.*

## COURSE CONTENT/SYLLABUS

*The module will discuss all the issues related to the simulation for planning and operational purposes of UAS services, with specific regard to methodologies and tools for the modelling of UAS supply, demand and demand/supply interaction. Supply will be defined at both the link and the network level. The module will concentrate on the following topics:*
*1. Supply models: link-level and network-level characterization of UAS;*
*2. Demand for UAS and demand elasticity with respect to UAS performances;*
*3. Supply/demand interaction and assessment of impacts and externalities.*

## READINGS/BIBLIOGRAPHY

*Slides, lecture notes, technical papers, regulation documents.*

## TEACHING METHODS OF THE COURSE (OR MODULE)

*Lectures, laboratory activities and exercises. Proposal of practical applications of the concepts learnt through simple exercises.*

## EXAMINATION/EVALUATION CRITERIA

**a) Exam type**

☐ Written

☑ Oral

☐ Project discussion

☐ Other

**In case of a written exam, questions refer to**

☐ Multiple choice answers

☐ Open answers

☐ Numerical exercises

**b) Evaluation pattern**