

## COURSE DETAIL

### VEHICLE VIRTUAL DESIGN

**Country**

Italy

**Host Institution**

University of Bologna

**Program(s)**

University of Bologna

**UCEAP Course Level**

Upper Division

**UCEAP Subject Area(s)**

Mechanical Engineering

**UCEAP Course Number**

153

**UCEAP Course Suffix****UCEAP Official Title**

VEHICLE VIRTUAL DESIGN

**UCEAP Transcript Title**

VEHICLE VIRTUAL DES

**UCEAP Quarter Units**

6.00

**UCEAP Semester Units**

4.00

## **Course Description**

This course is part of the Laurea Magistrale degree program and is intended for advanced level students. Enrollment is by permission of the instructor. As a result of this course, students will know and understand the fundamentals of the virtual prototyping through the systematic approach to a complete DMU (Digital Mockup) that from the design concept leads to the engineering of a vehicle (car or motorcycle). Students will learn to work independently and apply multidisciplinary knowledge to the virtual design and optimization of systems and components in vehicle engineering. The students learn the most advanced techniques of interaction between real and virtual prototype through the principles of human-machine interaction. Students develop the ability to work within a workgroup, planning and managing the activities needed to achieve technically valid project results.

This course provides the skills and knowledge for the development of an innovative concept for new motorcycles and/or scooters. To achieve these objectives, the program includes the following activities: Definition of project objectives through Market Analysis and Competitor Analysis; Definition of Technical Specifications; Setting up the Product Architecture; Morphological matrix for the selection of integrated innovative solutions; Setting up the layout of the new motorcycle/scooter; 3D construction of the Digital Mock-up of the new motorcycle/scooter; Introduction to Aesthetics-Oriented Design; Definition of the new motorcycle vehicle concepts; Virtual and physical prototyping of the concepts.

The following prerequisites are required to participate in the course: Advanced knowledge of 2D CAD software, advanced knowledge of 3D CAD software for solid modeling, and advanced knowledge of 3D CAD (CAS) software for surface modeling. Please note that during the course, no class hours are dedicated to teaching 2D or 3D modeling software, which, as stated above, must be considered prerequisites.

## **Language(s) of Instruction**

English

## **Host Institution Course Number**

86468

**Host Institution Course Title**

VEHICLE VIRTUAL DESIGN

**Host Institution Course Details**

<https://www.unibo.it/en/study/course-units-transferable-skills-moocs/course-uni...>

**Host Institution Campus**

BOLOGNA

**Host Institution Faculty****Host Institution Degree**

LM in ADVANCED AUTOMOTIVE ENGINEERING

**Host Institution Department**

Industrial Engineering

**Course Last Reviewed**

2025-2026

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