

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

[Print](#)