

Course unit title:	<b>Ground Vehicle Aerodynamics</b>		
Course unit code:	AU400		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1st Cycle)		
Year of study:	4		
Semester when the unit is delivered:	Fall		
Number of ECTS credits allocated :	6		
Name of lecturer(s):	Professor Varnavas C. Serghides		
Learning outcomes of the course unit:	The course introduces students to the topic of Aerodynamics and its broad applications. It provides an overview of the associated fundamental theories, technologies and practical methodologies that are available to Industry. It aims to demonstrate the impact of Aerodynamics on Ground Vehicle design, operation and performance and to teach students how to accurately predict Lift / Downforce and Drag in general but with a special emphasis on Automotive Aerodynamics.		
Mode of delivery:	Face-to-face		
Prerequisites:	None	Co-requisites:	None
Recommended optional program components:	None		
Course contents:	<p>Introduction and Course Overview  Aerodynamics Applications and Special Considerations  Ground Vehicle Aerodynamic Considerations  Aerodynamics Methodologies and Tools  Fundamentals of Aerodynamics  Automotive Aerodynamic Design Features  Aerofoil Design Characteristics  Wing Characteristics and Design  Lift / Downforce Estimation  Downforce Augmentation Devices and Design  Drag Estimation  Practical Lift and Drag Estimation Examples  Wind Tunnel Modelling and Testing</p>		
Recommended and/or required reading:			
Textbooks:	<p>John D. Anderson, Fundamentals of Aerodynamics, McGraw-Hill Education, 2001</p> <p>R. H. Barnard, Road Vehicle Aerodynamic Design, MechAero Publishing, 2001</p> <p>W-H Hucho, Aerodynamics of Road Vehicles, SAE International, 1998</p> <p>Joseph Katz, Race Car Aerodynamics, Designing for Speed, 1995</p> <p>John J. Bertin, Aerodynamics for Engineers, 4th edition, Prentice Hall, 2001</p> <p>Raymer, D.P., Aircraft Design – A Conceptual Approach, American Institute of Aeronautics and Astronautics, 2012</p> <p>Abott &amp; Von Doenhoff , “Theory of Wing Sections”, McGraw Hill, 1949</p>		
References:			

Planned learning activities and teaching methods:	This course is presented with the aid of several PowerPoint slides and photos, while the whiteboard is used for analytical work. Copies of all the slides presented during the course are distributed to the students in the form of hand-outs, via the University's E-learning platform. The course material is further enhanced with numerous real case studies, examples and detailed practical explanations.
Assessment methods and criteria:	<ul style="list-style-type: none"> <li>• Quizzes/Assignments                      15%</li> <li>• Mid-Term Tests                                25%</li> <li>• Final Exam                                      60%</li> </ul>
Language of instruction:	English
Work placement(s):	No