



Course: **Motion Control of Marine Surface Vehicles (4 hours)**

By A/Prof Tristan Perez^{1,2}

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The objective of this course is to introduce concepts and practices used in control system design for marine vessels (ships, offshore, and underwater vehicles). The audience targeted in this course consists of students, researchers and engineers in the areas of naval architecture, electrical, mechanical, and control engineering.

At the end of the course, participants would understand the key elements of a ship motion control system and how models are used for motion control design.

Course content

- Guidance, Navigation, and Control
- Overview of ship motion control problems
- Wave filtering
- Control allocation
- Propulsion control
- Dynamic positioning of marine vessels and offshore structures
- Ship roll stabilisation and ride control

About the Speaker: Tristan Perez's research and principal interest is in the area of Mechatronics. He is a leading researcher on the topic of vehicle motion control in marine applications. During the past four years, the focus of his research has been on the integration of hydrodynamic design and motion control of marine structures with application to surface vehicles and ocean wave-energy converters. At present, he is dedicated to research on reliability assessment of control systems with application to robust autonomy of uninhabited aircraft systems. In addition to his academic work, he is the director of Advanced Control and System Dynamics (AC-SD.com). This is a research and consultancy division of Newcastle Innovation Ltd—the commercial arm of The University of Newcastle. ACSD provides consultancy services for industry in the areas of modelling and simulation of complex systems and control system analysis and design. For further information see <http://cdsc.org.au/TP/>

Date: September 10 9.30-13.30

Location: Aula 160\1, Facoltà di Ingegneria, Università Politecnica delle Marche, Via Breccie Bianche 12, 60131 Ancona,

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