



## SHORT-COURSE ANNOUNCEMENT

### Water waves for the nearshore dynamics Prof. Maurizio Brocchini

29-31 March/5-7 April, 2021, starting 9:30, Room 160/3 Polo Belluschi

#### Course description:

The course provides a description of the fundamental role of water waves in all nearshore dynamics. Focus is on wave modeling, achieved through those approaches that are at the roots of the most applied solvers in the field of coastal engineering. The interplay between fundamental physical phenomena, their mathematical description and related numerical solution will be analyzed. Specific dynamics of interest will be described through the models introduced.

Tuesday 20th	Wednesday 21st	Thursday 22nd	Tuesday 27th	Wednesday 28th	Thursday 29th
Introduction to nearshore dynamics. Formulation of the wave problem: linear waves	Depth-averaged models: nonlinearity, dispersiveness	Numerical solutions of the Nonlinear Shallow Water Equations and Boussinesq equations	Applications of depth-averaged models.	Wave-averaged models	Solutions for selected nearshore dynamics

Maurizio Brocchini is an expert in the hydrodynamics and morphodynamics of coastal and nearshore waters. His main area of research is the mathematical and numerical modeling of shallow water flows. He graduated in Theoretical Physics, with full marks and honours, in 1989 at the University of Bologna (Italy). He earned his PhD in Applied Mathematics in 1996 at the University of Bristol (UK), under the tutoring of Prof. D.H. Peregrine. Currently, he is Full Professor of Hydraulics and Fluid Mechanics at the Università Politecnica delle Marche, Ancona, Italy. He was tutor for 17 PhD theses and for over 50 MSc theses. He managed and collaborated to 11 European Union funded projects, 5 international collaborative research projects and 6 national research projects funded by the Italian MIUR. He is Associate Editor of the scientific journals: Journal of Waterways Ports Coasts and Ocean Engineering, A.S.C.E. and Journal of Ocean Engineering and Marine Energy, Springer. He is also member of the Editorial Board of the following journals: Coastal Engineering, Elsevier; Journal of Hydrodynamics, Elsevier; Mathematical Problems in Engineering, Hindawi Publishing; Ocean Engineering, Elsevier. He is author/co-author of about 170 peer-review papers appearing on Scopus/ISI-listed international journals, with total citations of about 3200 and h-index of 31 (Scopus). He was awarded by the European Community a Marie Curie Fellowship for research in the years 1993-1996.

***All interested people, particularly PhD students, are invited to attend the course***