# SHORT-COURSE ANNOUNCEMENT

## Nonlinear waves
### Prof. Alex Sheremet

### 4-8 june 2018, starting 10:30 (wednesday, starting 14:30), Aula 160/3

**Course description:**
The course is an introduction to nonlinear dynamical systems encountered in the study of water waves. Although the focus of the course is the evolution of water waves, the systems discussed are quite general and arise in many problems, from plasma to brain physics. We use the general equations for irrotational inviscid flow of an inviscid fluid with a free surface to illustrate the interplay between wave dispersivity and nonlinearity. Three fundamental systems are used as paradigms: the Shallow Water, the Korteweg-DeVries, and the Nonlinear Schrodinger equations. We discuss their properties and highlight the effects dispersion and nonlinearity. We conclude with the Hamiltonian formulation for water waves, and the derivation and analysis of the kinetic Zakharov equation.

| Monday 4th | Tuesday 5th | Wednesday 6th | Thursday 7th | Friday 8th |
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| Linear waves, asymptotic expansions. The dispersion relation. | Non-dispersive waves: the shallow water equation | Weakly dispersive dispersive waves: the KdV and permanent form solutions. | Strongly dispersive systems: the Nonlinear Schrodinger Equation | Hamiltonian formulation: the Zakharov equation and equilibrium spectra |

Alex Sheremet graduated from University of Bucharest, Romania, in 1982, and earned his PhD degree from Technion, Israel, in 1996. After a postdoctoral tenure at Scripps Institution of Oceanography, UC San Diego, he accepted the position of Assistant Professor at the Coastal Studies Institute, Louisiana State University. In 2005, he moved to University of Florida, where he currently is Professor in the Civil, Coastal and Oceanographic Engineering Department. Dr. Sheremet's research interests focus on nonlinear dynamical systems, with applications to nonlinear ocean waves, wave interaction with sediment, meteotsunamis and ship waves, and to brain dynamics. He has extensive field work experience, having participated in several large field experiments organized and funded by the US Office of Naval Research, and the Navy Research Laboratory. His work, funded by US federal agencies such as the US National Science Foundation, the US Office of Naval Research, National Oceanic and Atmospheric Administration, and the US Army Corps of Engineers, has resulted in over 40 research papers. Dr. Sheremet has mentored 9 PhD students. He is currently the leader of the Coastal Engineering, and the Coastal Ecosystem Dynamics groups in the Engineering School for Sustainable Infrastructure and Environment (ESSIE) at university of Florida.

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