

## LTCC Advanced Course

**Title: Nonlinear Free Surface Flows with Gravity and Surface Tension**

**Basic Details:**

- Core Audience: 1st, 2nd and 3rd year app.
- Course Format: Extended: 5 x 2hr lectures

**Course Description:**

- Keywords: free surface flows, gravity, surface tension.
- Syllabus: This course is concerned with the computation of nonlinear free surface flows. Both the effects of surface tension and gravity are included in the dynamic boundary condition. Special attention is devoted to the singular behaviour at the points where free surfaces intersect rigid walls. Applications to bubbles rising in a fluid, flows emerging from a nozzle and cavitating flows are presented. It is shown how physical solutions are selected in the limit as the surface tension tends to zero.
- Recommended reading:  
J.-M. Vanden-Broeck, Gravity-Capillary Free Surface Flows. Cambridge University Press.

**Lecturer Details:**

- Lecturer: Professor Jean-Marc Vanden-Broeck
- Lecturer home institution: UCL
- Lecturer e-mail: j.vanden-broeck@ucl.ac.uk