

## ALE and fluid-structure coupling using LS-DYNA

The ALE and fluid-structure interaction capabilities in LS-DYNA, suitable for application areas such as metal forming, defence, underwater shock propagation, airbag deployment, bird strike events and many more, have undergone a strong development over the past two years.

**Prior knowledge:** The class is designed for both beginners and experienced users. New options including the latest capabilities in LS-DYNA and possible areas of application are covered in detail.

### Course outline:

- Lagrangian formulation
  - o governing equations
  - o discretization in space and time
  - o bulk viscosity
  - o hourglass control
- Single material Eulerian and ALE-formulation
  - o advection methods
  - o smoothing algorithms
- Multi-material Eulerian and ALE-formulation
  - o interface reconstruction
  - o various methods for the ALE-mesh motion
- Fluid-structure interaction
  - o constraint based method
  - o penalty formulation leakage control
- News and ongoing development
- Workshop and examples of application

The course is given by the staff of Engineering Research Nordic AB. The number of accepted course attendees is limited to 12.

**Place:** ERAB's office, Garnisonen, Linköping.

A roadmap is available on <http://www.erab.se>.

**Date:** See <http://www.erab.se/courses>

**Schedule:** The course starts at 09<sup>00</sup> the first day and 08<sup>30</sup> the following days. The course ends at approximately 17<sup>00</sup>. On the last day of the course, the course ends at 16<sup>00</sup>.

**Course fee:** The course fee includes course notes, lunches, refreshments and one evening meal, excluding VAT. See <http://www.erab.se/courses> for actual course fee. Hotel accommodation is not included in the course fee

**Registration:** Online registration at <http://www.erab.se/courses>

**Confirmation:** A confirmation will be sent out by e-mail upon registration.

**Cancellation:** Classes can be cancelled up to 10 days before course start if the number of attendees is too small. Any fees paid to ERAB will be returned if the class is cancelled. For cancellations by attendees received later than two weeks before course start the attendee will be invoiced 50% of the course fee.

**Questions:** E-mail [course@erab.se](mailto:course@erab.se)