Material Models In LS-DYNA

This course will allow LS-DYNA users to use the code with more understanding of the material models. The most various material models in LS-DYNA will be presented in the 16 hours. There is a workshops that will be provided with this course..

- Chapter-0 **Outline**
- Chapter-1 **Introduction & Continuum Mechanics**
  - Stresses, strains, and failure theories
- Chapter-2 **Material Constitutive Equations**
  - Introduction to Constitutive equations
  - Introduction to experimental testing
- Chapter-3 **Introduction to Plasticity**
  - Von-Mises and Isotropic hardening algorithm
- Chapter-4 **LS-DYNA Material Library**
  - List of LS-DYNA material models and their usage
- Chapter-5 **Visco-Elasticity**
  - Selected viscos models (mat 6,61,76)
  - parameter identification
  - Creep and relaxation models
- Chapter-6 **Plasticity, Plastics, and Visco-Plasticity**
  - Selected plasticity models (mat 3,24,15, 81,114,123,124)
  - Modeling plastics (mat 89, 187)
  - Anisotropic plasticity models (mat 37,122)
  - Visco-plasticity (mat 224)

- Chapter-7 **Foams and Honeycomb**
  - Classification of foams
  - Selected foam models (mat 5,38,53,57,62,63,73,75,83)
  - Similarities and differences of the models
  - Selected honeycomb models (mat 26,126)
  - Parameter identification
- Chapter-8 **Rubber**
  - Classification of rubber
  - Selected rubber models (7,27,31,77,87,127,181,183)
  - Similarities and differences of the models
- Chapter-9 **Fiber Reinforced Composites**
  - Classification of composites
  - Selected composite models (22,54,55,58,59,221)
  - Similarities and differences of the models
  - Parameter identification
- Chapter-10 **Material Failure**
  - Failure criterion
  - Mat_Add_erosion
  - Non-local formulations
  - Material and contact
- Chapter-11 **Strain Rate Models & Effect**
  - Strain rate models
  - Material characterization

- Rate effect examples

- Chapter-12 **Geotech Materials**
  - **(only description with input)**
  - Discussion of the most popular materials for soil
  - Discussion of the most popular materials for concrete
- Chapter-13 **References & Other Courses**