



## **Mastering S-FRAME I - Course Description**

This course is designed for first-time and returning users of S-FRAME and S-STEEL and assumes no prior knowledge of the programs. Format is 'hands-on' with maximum time devoted to undertaking practical tutorials, enabling students to build understanding through experience and investigation. Tutorials are interspersed with periods of demonstration and discussion with the Trainer. Students work at individual PC's and full course notes are provided.

### **Course Topics**

#### **➤ Introduction & Fundamentals – 2D Modeling**

- S-Frame versions and capabilities; Preferences, Settings, 2D and 3D Mode switching; interface conventions, graphical modeling tools, spreadsheet input, selecting and unselecting, measuring and adding dimension lines
- Key modeling tools Grids and Folders; default grids, creating grids, model edits with the grid, Cartesian and cylindrical grid systems; creating folders, saving selection to folders; opening 2D models in 3D mode

#### **➤ 3D Modeling Options**

- Group Folders, Using Views, 2D-Plane toggle, Construction Planes and UCS's in 3D models; combining views with UCS's and Grids
- Member axis conventions and member axis orientation
- Using the Gid in 3D; User Coordinate Systems in 3D, creating and using; assigning Joint Displacement Directions

#### **➤ 3D Worked Example #1: Physical Member Modeling**

- Model types; Analytical, Physical, Design and Fabrication Model information; typical steel frame bay model
- Orientation in 3D interface; working with physical members; modeling tools; joist tool; applying model attributes; releases and supports; the Section Properties Tool
- Area Loads and Panels; defining Area Load Members; applying span directions; verifying tributary areas; applying area loads
- Analysis and Verification; viewing deflections, decomposed loads and summed reactions; introduction to Freebody forces; finding results; key points, member force diagram options, member force summaries

#### **➤ Steel Design Mode – Code Checking**

- Linking to S-Steel; setting preferences and active design code; defining the Design Model; effective lengths and bending coefficient settings for beam bending checks
- Performing Code checks and viewing results; deflection check; setting deflection limits and options
- The Scratch Pad; detailed interactive member design

#### **➤ 3D Physical Model Worked Example #2**

- Physical modeling of steel warren roof truss; truss wizards; member grouping; graphical editing methods; member types; adding member loads
- Troubleshooting analysis problems; DOF conventions and solver messages; Result filtering; producing force envelopes; points of interest and key analysis results
- Printing from S-Frame; working with Reports; exporting diagrams and text reports to Word/TEDDS

#### **➤ S-Steel for Auto-Design**

- Design model input; effective lengths for members subject to axial load and bending; code checks and governing results
- Auto design options; defining design groups; admissible lists and selection criteria; Design Group governing members; the design-analysis loop
- S-Steel Output; Spreadsheet, Export to Word/TEDDS & Key Results

#### **➤ 3D Structure/Building Features**

- Modeling options for buildings; panels; area loads; rigid and flexible diaphragms; storeys and drift; automatic Notional Lateral loads
- Verifying loading and results; freebody tool for floor and storey loading and column tributary areas
- Rigid Diaphragm Panels; generating diaphragm Master Joints; creating and loading the building master stack
- Introduction to flexible diaphragms; meshing panels; element types; subdivide meshing options; diaphragm forces