StressCheck v10.3 Training Outline

Advanced Training in Nonlinear Analysis

Objectives:

1) StressCheck Nonlinear analysis types (material and general)
2) Planar nonlinear events (coldworking)
3) Nonlinear load step analyses
4) 2D fastener elements and fastener links
5) 3D nonlinear events (overload, unload and reload)
6) Material nonlinear effects in multi-body contact
7) Normal springs to simulate 3D contact

Session I   2D Material and General Nonlinear, Nonlinear/Excel COM

❑ Lecture: "Nonlinear Analysis" (Lecture Nonlinear.pptx)

❑ Exercise: Build, solve and post-process problem #1. Save as MaterialNLEx1.scp.
Compare against 1) Extrude 2) 2D automesh version

  1. Reference: NonlinearTraining.pdf, pages 14-18

❑ Exercise: Solve and post-process problem #2 and discuss nonlinear events/steps

  1. Reference: NonlinearTraining.pdf, pages 22-31

❑ Exercise: Build, solve and post-process problem #4 "Cantilever Beam"

  1. Reference: NonlinearTraining.pdf, pages 43-47

❑ Exercise: Solve and post-process Tutorial Handbook file SingleLapJoint.sci

  1. Reference: NonlinearTraining.pdf, pages 51-54

❑ Demo: "Nonlinear Analysis via Excel COM" (Nonlinear.xlsm)

Session II   Fastened Connections, 3D Material and General Nonlinear

❑ Lecture: "Fastened Structural Connections" (Lecture Fastened Connections.pptx)

❑ Exercise: Build, solve and post-processing problem #7 "6-Fastener Splice Plate".
Replace rigid connections with links and re-solve problem #7.

  1. Reference: AdvTraining Nonlinear.pdf, pages 59-70

❑ Exercise: "Performing 3D Nonlinear Events" (Performing Nonlinear Events.pptx)

❑ Exercise: "Contact with Plasticity Analysis" (ContactPlasticity.pptx)

❑ Demo: "Simulating Contact via Normal Springs" (ContactNormalSprings.pptx).
Demonstrate differences between material and general nonlinear.