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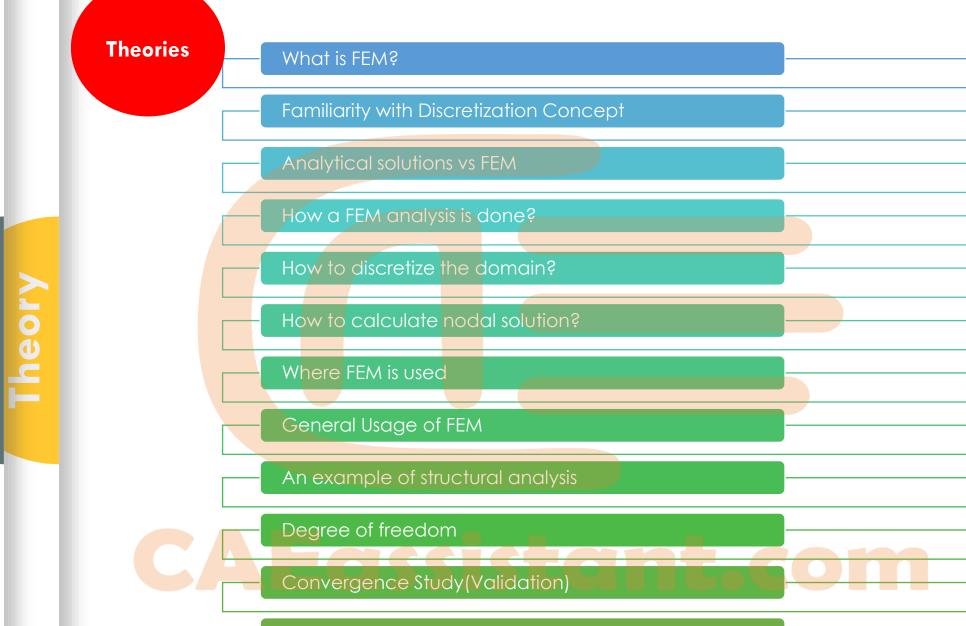
Workshop

Tips



How to see undeformed and deformed results together

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Examples

Plane stress and plane strain conditions

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Tips to start all simulations

Create points and models in 3D space

What is model tree and how to use it?

How to use Probe value option to watch some results?

How to simulate with plane stress element and usage conditions?

What are simplify conditions to model one part of model ?

How to apply uniform tension?

Using remeshing rule option to check convergency

How to get result in specific path?



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Introduction to ABAQUS Element Library

Characterizing elements

- Introduction to different Types of Elements
- Different Types of degree of freedoms
- Element and node numbering
- Element formulation
- Integration Points
- Beam Element and usage conditions

Types of Beams: Euler-Bernoulli

- Types of Beams: Timoshenko
- Beam element library of Abaqus

Preview

Workshop Tips

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Simulation with beam Element

How to specify beam orientation to watch some results

How create profile for beam section

How to see parts in different colors

How to plot moment and force with in beam model

Settings for plot(Font/Color/multiple plot/Legend ant etc.)

How to model beam with 3D element

How to define Dynamic Analysis

How to get html report from simulation steps

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Monitor difference in Implicit and Explicit

Points to Choose between Explicit & Implicit

Element library/Analysis procedures/Material models/ Contact formulation/Solution technique/ Disk space & memory in Two Solvers

Quasi static vs static vs dynamic

Story for Quasi static, static, and dynamic

Mesh refinement for two solvers

How Abaqus solve truss problem step by step with implicit solver

How Abaqus solve truss problem step by step with explicit solver

Preview

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Conditions and usage of Analytical rigid part

How to define plasticity

How to use assembly models

common contact definition

How to use test results for stress-strain input and Engineering stress(strain) vs True stress(strain)

Shell simulation and conditions usage

Orthotropic Elastic material Definition

How to define Functional Loading

how to create local coordinate

Composite layup usage

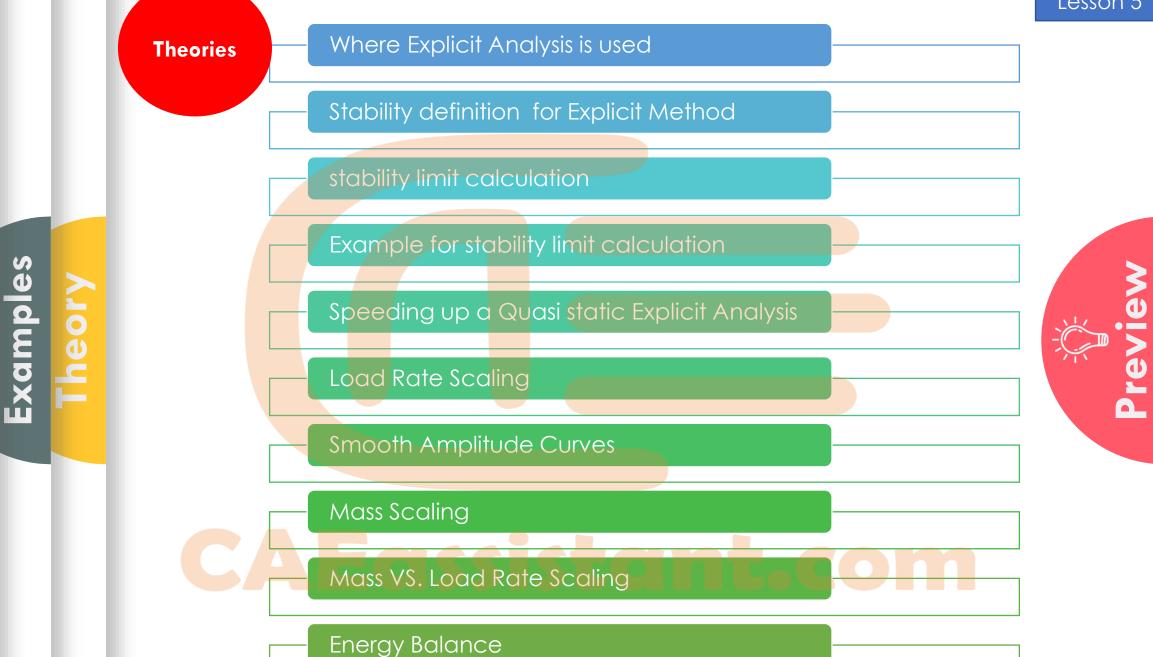
How to see layers in details in composite materials

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Using load rate scaling to increase time of computation

Ising Mass scaling to increase time of computation

Checking proper load rate scaling/mass scaling to get right result

Discrete rigid simulation and usage conditions

Plot combined curve (Load vs displacement for punch)

Plane strain simulation and condition usages

How to visualize axisymmetric element problem to 3D

How to visualize Plane strain element problem to 3D

How to use display group option to remove and hide

How to use DOF monitor

View results at the same intervals

View specific result in some node sets

How to plot ALLKE), external work (ALLWK), internal energy(ALLIE), and total energy (ETOTAL)



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Procedures Types in ABAQUS

General and Linear Procedures

Linear Perturbation

Frequency Analysis

Natural Frequencies and Mode Shapes

Simple Example for Natural Frequencies :Mass-spring system

Natural Freq. in Real Structures

Eigenvalue Extraction Methods(Natural Frequencies)

Buckling Analysis

Stiff Structures

Buckling of Euler column

How FEM software solve Eigenvalue buckling problem

Eigenvalue Extraction Method (Buckling)

Preview



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Finding optimum time period for quasi static problem with natural frequency problem

Viewing frequency mode shapes and natural frequency calculation

Viewing buckling mode shapes and critical load

Frequency analysis on a preloaded structure.

Moment of inertia calculation

Different ways to take a picture from viewport

How to see node and element numbers is different modulus

How to see thickness direction in shell model

Lesson 6

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Types of heat transfer analysis

What is uncoupled heat transfer analysis and how to use it

Heat transfer modes (convection, conduction, radiation)

Transient vs steady state analysis

What is Sequentially coupled thermal-stress analysis and how to use it

What is Fully coupled thermal-stress analysis and how to use it

What is Adaptive meshing and its advantages

What is ALE Adaptive Meshing and its advantages

What is Lagrangian method and its advantages

Lagrangian Description

What is Eulerian method and its advantages

What is adiabatic analysis and how to use it

Adiabatic formulas

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Required material inputs for uncoupled steady state

Required step settings for uncoupled steady state

Required interaction settings for uncoupled steady state

Required load settings for uncoupled steady state

Required material inputs for transient thermal analysis

Apply different types of heat modes

Required step settings for uncoupled heat transfer

Results of transient vs steady state

Required material inputs for sequentially coupled analysis

How to import result of heat transfer analysis as an input of stress analysis inputs for sequentially coupled analysis

Settings of modulus in stress analysis

How to create rigid spline geometry

Usage of axisymmetric element in forge analysis

Definition of strain-rate and temperature dependent material

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Required material inputs for fully coupled analysis for rigid parts

Required interaction settings for fully coupled analysis

What is thermal conductance and how to apply it

Required inputs in edit attribute for fully coupled analysis

Required outputs in step module for fully coupled analysis

Abaqus Settings for ALE Adaptive meshing

How to show Axisymmetric model as a full model

What is Johnson-Cook plasticity and its formula

How to define Johnson-Cook plasticity

How to calculate equivalent force during impact

Plot velocity vs time of impactor

Effect of time period in impact analysis

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What is the definition of damage and its applications?

What is the difference between microscopic and macroscopic damage in composite materials?

What is the various theories to simulate initiation damage in composite material structures?

What is the available theory to simulate progressive damage of composite material structures?

What is the elements limitations to simulate progressive damage of composite material structures?

What is Fully coupled thermal-stress analysis and how to use it

Which ways are available to add criterion to simulate composite damage?

How to use composite damage results as an initiation condition of other simulation?

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Defining Elastic property by engineering constant selection

Defining failure criterion parameters for HASHIN

Setting in field output to get required results

View results in layers for fiber and matrix separately

Recommended package to learn Composite damage simulation deeply