OBJECTIVE: This course covers the main tools for Structural Analysis on a single part. Throughout this course, you will learn how to perform a basic static analysis using the finite elements method. Upon completion of this course you will be able to: Define and customize material properties, Apply pressure, acceleration and force density loads; define virtual parts, Apply pivot, ball-joint, and user-defined restraints, Compute a frequency analysis for a single part, Create planar sections with which to visualize internal result values, Compute and refine a mesh using adaptive meshing in order to achieve a pre-defined accuracy.

DURATION 3 DAYS

STUDENT PROFILE: CATIA V5 MECHANICAL DESIGNERS **PRE-REQUISITES: V5 FUNDAMENTALS**

TOPIC & DETAILS	TOPIC DURATION
Generative Part Structural Analysis Fundamental	1 Day

Introduction to Finite Element Analysis

- What is Finite Element Analysis,
- Why to Use Finite Element Analysis
- Application of Finite Element Analysis

Introduction to GPS Analysis

- Accessing the Generative Part Structural Analysis Workbench
- The Generative Part Structural Analysis Interface
- The GPS General Process
- The Generative Part Structural Analysis Tree Structure

GPS Pre-Processing

- Managing Mesh-Part,
- Defining Restraints, Defining Loads

Computation

- Specifying the External Storage
- Computing a Static Case

TOPIC & DETAILS	TOPIC DURATION

Generative Part Structural Analysis Fundamental (cont'd)

GPS Post-Processing

- Results Visualization
- Results Management
- Refinement

Managing Analysis

- About Saving an Analysis Document,
- About Save As
- How to Use Save Management

SAVING DOCUMENT USING 'SEND TO' MECHANISM, USER SETTINGS

Generative Part Structural Analysis Expert — 1 Day

This course will focus on advanced Finite Element Analysis pre-processing techniques and post-processing tools, including the concept of virtual parts to avoid excessive geometric modeling. It will teach you how to perform a frequency analysis on a single part, and the use of adaptive meshing to achieve pre-defined accuracy.

GPS Advanced Pre-Processing Tools

- Advanced Pre-Processing Tools
- Frequency Analysis

Computation

- Computing a Frequency Case
- Computing with Adaptivity
- Historic of Computation

GPS Advanced post-Processing Tools

- Results Visualization
- Results Management

REFINEMENT

TOPIC & DETAILS	TOPIC DURATION
Generative Assembly Structural Analysis This course will focus on advanced Finite Element Analysis pre-processing techniques and post-processing tools, including the concept of virtual parts to avoid excessive geometric modeling. It will teach you how to perform a frequency analysis on a single part, and the use of adaptive meshing to achieve pre-defined accuracy. **Introduction to GAS** • Generative Assembly Structural Analysis Overview • Hypotheses Used for Analysis **Analysis Connections** • Analysis Connection using Assembly Constraints • General Analysis Connection • Defining Line Analysis Connections • Defining Point Analysis Connections, Defining Surface Analysis • Connections Points to Points Analysis Connection • Set of Analysis Connections **GAS Connection Properties** • Face to Face Connection Properties • Distant Connection Properties • Welding Connection Properties • Nodes to Nodes Connection Property **Compute a Static Analysis for an AssemblyAnalysis Assembly Management** CREATE AND MANAGE AN ANALYSIS ASSEMBLY MODEL USING EXISTING MESHED PARTS	1 Day