ANSYS Workbench Syllabus

Total duration: 80 hours (Theory 40 Hours + Lab 40 Hours)

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Session	**Topics**
Session 1	**Chapter 1: Introduction to CAE**
	Introduction to CAE
	General working of FEA
	Stiffness matrix
	Boundary conditions
	Elements and Element Shapes
	General procedure to conduct FEA
	FEA software
	Key Assumptions in FEA
	Types of Engineering Analysis
	Classification of materials
	Chapter 2: Introduction to ANSYS Workbench
	System requirements
	Starting ANSYS Workbench 14.0
	ANSYS Workbench 14.0 GUI
	Working on a Project
	Units in ANSYS Workbench
	ANSYS Workbench Database and File format
	Changing the unit system
	Components of the system
	Chapter 3: Sketching and Part Modeling in DesignModeler
	Introduction to Modeling
	Introduction to DesignModeler Window
	Illustration1: I-section
	Illustration 2: Spring Plate
	Illustration 3: Clamp
Session 2	**Chapter 4: Solid Modeling Fundamentals**
	Overview
	Introduction, Extrusion, Revolution, Sweep,Sketching
	Chapter 5: Placed Features and Assembly
	Overview
	Introduction, Adding a hole, Adding a round, Adding a chamfer, Patterns, Assembly, Alternate solid modeler
Session 3	**Chapter 6: Modeling techniques**
	Overview
	Introduction, Parameters
	Other cad systems
	Surface and Line models
	Chapter 7: Defining Material Properties
	Introduction to Engineering Workspace
	Creating and Adding Materials
	Assigning Material to the Beam
	Assigning Material to the Clamp
	Assigning Material to the Assembly

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Session	**Topics**
Session 4	**Chapter 8: Meshing**
	Introduction
	Meshing of Plate with Holes
	Generating the mesh, optimize the model and generating the local mesh (illustration through
	Assembly Meshing
Session 5	**Chapter 9: Static Structural Analysis**
	Introduction to Static Structural Analysis
	Pre-processing, Solution, Post-processing
	Static Structural Analysis of:
	Cantilever Beam
	Plate with a central circular holes and square slot
	Pressure vessel, Bracket, Clevis assembly
Session 6	**Chapter 10: Wizard and Tools**
	Overview
	Introduction
	Static loadings-ductile materials, Brittle materials
	Fatigue loading-ductile material
	Chapter 11: Surface and Line Model
	Overview
	Introduction
	Sheet with circular hole-plane stress
	Pressure vessel and Bracket
	Line body model
Session 7	**Chapter 12: Natural Frequencies**
	Overview
	Introduction
	Performing the Modal analysis
	Specifying analysis settings
	Modal analysis :
	Cantilever beam and Simply supported beam
	Chime and Connecting rod
	Motor cover and Assembly
Session 8	**Chapter 13: Buckling Loads**
	Introduction
	Buckling analysis of
	Fixed free column (flag pole)
	Pinned-pinned column
	Built-up structure
Session 9	**Chapter 14: Thermal Analysis**
	Introduction
	Important terms used in thermal analysis
	Types of thermal analysis
	Steady state thermal analysis of
	Car Disk Brake Rotor
	Heat sink
	Transient thermal analysis of Piston
Session 10	**Chapter 15: Thermal Stress**
	Introduction
	Thermal stress-uniform temperature change
	Thermal stress in a cylinder