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CAREER DEVELOPMENT
CENTRE



Date: 8th September 2022.

Subject: Schedule for Technical Training – ANSYS (VAT 76)

Attention: Students of B.Tech 5th Semester (Mechanical & Mechanical Automobile Engineering)

The students are hereby informed that the Technical Training – ANSYS will be held from 13th September 2022 to 30th September 2022 for the students of B.Tech 5th Semester (Mechanical & Mechanical Automobile Engineering).

Note: It is mandatory for all the above-mentioned students to attend the training.


Career Services Cell
DIT University, Dehradun
Mr. Saurav Badoni

Incharge- CDC

To:

- All Deans / Directors
- HoDs
- Head CDC

With the request to bring the above
to the notice of the students

Copy to:

- Chairman
- Chancellor
- Vice Chancellor
- Pro Vice Chancellor
- ICT Manager – to upload on website

For information please

ANSYS TRAINING

INTRODUCTION

- About ANSYS
- ANSYS Basics
- Mechanics
- Today's Scenario & Future of FEA

----- BASICS OF FEM

- Theoretical FEM Procedure To Solve Above Mechanics Problem
- Generalized Static Equation
- Theoretical Basis: Formulating Elements Equation
- Six Steps In The Finite Element Method
- Fundamentals Of Elasticity
- Theories Of Failure
- Linear Static Analysis
- Non-Linear Static Analysis
- Thermal Analysis
- FEA Design Intent

----- GETTING STARTED WITH ANSYS APDL

- Accessing ANSYS & Understanding GUI
- Utility Menu
- Manipulating Model
- Standard Toolbar
- Command Input Window
- Riser/Hide Icon
- Reset Picking
- Contact Manager
- ANSYS Toolbar
- User Prompt Information & Current Settings
- ANSYS Main Menu

---- CAD MODELING USING ANSYS

- Units
- Co-ordinate System
- WorPlane
- 1D, 2D And 3D Modeling (2D & 3D Space)
- CAD Modeling of Bridge
- 2D Modeling Of Container (2D Space)
- 3D Modeling Of Shaft

- Methods Of Solid Modeling
- Component And Assembly Management

- IMPORTING GEOMETRY FROM OTHER CAD PACKAGES

- Understanding Different Import Features
- Importing IGES File In ANSYS
- Import Using SMOOTH Option
- Import Using FACETED Option
- Geometry Cleanup For Meshing

---- MESHING

- Introduction To Meshing
- Elements Classification
- Element Properties
- Meshing Using ANSYS
- Line Meshing Of Electric Pole (1D)
- Area Meshing Of Pad Clip (2D)
- Volume Meshing Of Vehicle Differential (3D)

---- MESHING (ADVANCE) & TECHNIQUE

- Mesh Generation: Automatic Techniques
- ANSYS Automatic Mesher Technique
- Automatic Map Meshing Of Tank
- Automatic Tri/Tet Mesh With Smart Size Algorithm
- Biased Meshing
- Refine Meshing
- 2D Map Meshing For Reduction Area
- Map Meshing For Reducing Element Transition
- 2D Map Meshing To Handle Solid Circle
- 3D Hexahedron (Brick) Manual Meshing

---- FINALIZING FE MODEL FOR ANALYSIS

- Element Quality Criteria
- Mesh Quality Check Of Support Plane
- Methods Of Creating Quality Mesh
- Creating Quality Elements
- Materials
- Boundary Conditions

---- ADVANCE BOUNDARY CONDITIONS

- Application Of Mass Elements

- Application Of Rigid Elements
- Spring & Pin Joint Simulation
- Linking Solid Faces To Beam And Shell Edges
- Simulating Bolted Joints
- Arc Weld Modeling
- Representing Weld using Shell And rigid Elements
- Torque On Solid Element
- Simulating Leakage
- Symmetry Boundary Conditions
- Mesh Generation

---- **GETTING STARTED WITH ANSYS WORKBENCH**

- ANSYS Workbench Interface
- Getting Started with ANSYS Workbench
- Project Page and File Management
- Interaction With Different Workbenches
- Toolbar position
- Toolbox Customization
- Reset workspace
- Progress toolbox
- Graphic Interactor

- **DESIGN MODELER**

- Why Design Modeler?
- Graphical User Interface
- Design Principles
- Parameters in Design Modeler
- Sketching Mode
- Unit
- Constraints
- Concept Modeling
- Extrude ,Revolve, Sweep , Loft
- Advanced modeling features
- Importing

- Work plane
- Primitives

-- **SIMULATION BASICS**

- Pre-Processing
- Solution
- Post Processing
- Material By library
- Material By User input
- Descritization, Mesh Control, Mesh Study, Mesh Quality.
- Boundary Conditions
- Analysis settings
- Static Structural Analysis
- Linear Buckling
- Rigid Dynamics
- Steady State Thermal Analysis
- Shape Optimization
- Explict Dynamics
- Computational Fluid Dynamics(CFD)
- CFX

---- **HANDLING PROJECTS**

- The Steps in An FEA Projects
- Integrative And Dead-end FEA

- **PROJECTS SKILLS**

- What Could Possibly Go Wrong
- How To Be A Smart FEA Shopper
- What FEA Reports And Backups Should Do
- Report Generator

---- **PROJECTS**

- Analysis Of A Piston
 - Analysis Of Bearing
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Technical Training-ANSYS for B.Tech-ME & ME-AE Students

Course:-B.Tech- ME & ME-AE 3rd Year

Venue:-Chanakya Seminar Hall

Organized By- Department of Mechanical Engineering **Date:-**13th September- 30th Sept. 2022

Duration:-40 Hrs.

Timings:-3:00 PM to 6:00 PM

Training Objective:

- The primary objective of this Ansys Mechanical Training class is to teach participants Finite Element Analysis in Ansys Mechanical Workbench.
- Thus, upon completion of this course, participants will be able to set up, solve, and diagnose their own Structural Analyses in the Ansys Mechanical Workbench.
- This is a problem-based training where the focus will be on understanding what's under the black box so as to move beyond garbage-in, garbage-out.
- Learner's practice using a common solution approach to problems involving different physics: structural mechanics, fluid dynamics and heat transfer.
- Textbook examples are solved to help understand the fundamental principles of finite-element analysis and computational fluid dynamics.
- Then these principles are applied to simulate real-world examples in the tool including a bolted rocket assembly and a wind turbine rotor.
- By working through examples in a leading simulation tool that professionals use, students learn to move beyond button pushing and start thinking like an expert.
- This training provides learners with the most flexible learning environment possible.
- It can be accessed from multiple devices which makes it easy to learn on the go.
- Trainings are pre-recorded or in slide presentation with voice-over commentary, interactive discussion boxes that foster student to student interaction, Email communication with the instructor are part of this process.

Training Overview:

- Ansys Mechanical is a finite element analysis (FEA) tool that enables you to analyze complex product architectures and solve difficult mechanical problems.

- You can use Ansys Mechanical to simulate real world behavior of components and sub-systems and customize it to test design variations quickly and accurately.

Requisite:

The program is designed for students or professionals who are:

- Having a Diploma, BE / B. Tech or equivalent in domains such as Automotive, Mechanical, EEE, ECE, Instrumentation, Mechatronics, and Aeronautics.
- Designing enthusiasts (No academic qualification mandatory)
- Working in industries such as Automotive, Auto component, Design, Manufacturing, etc.

Training Outcomes:

- The students have learnt to develop and apply new theories, concepts, and methods.
- Developed extensive knowledge and understanding of a wide range of computer modelling and simulation software.
- Have learnt to identify, formulate, and solve engineering problems.
- Applied knowledge of mathematics, science, and engineering.
- Have learnt Design and conduct experiments, as well as to analyze and interpret data.
- Big ideas in finite-element analysis and computational fluid dynamics
- Structural mechanics simulations using ANSYS Mechanical™
- Mathematical models underlying simulations
- Building simulations of real-world applications using ANSYS software
- Verification and validation of simulations including checking against hand calculations
- Build an approach within engineering analysis and simulations like an expert

Value added course Details (Academic Year: 2022-23)

VAT Course Name: Ansys Training

VAT Code: VAT 76

Duration in Hours: 40

Number of Students Enrolled: 38

Number of Students Completed: 35

Grades:

G= GOOD ; S = Satisfactory ; P = Poor ; W = Withdraw

Student ID	Student Name	Program/Course	Passing Grade
160113014	Yash Virmani	Bachelor of Technology in Mechanical Engineering	G
180106026	SUMIT SINGH	Bachelor of Technology in Mechanical Engineering	S
200106012	SHAURYA JOSHI	Bachelor of Technology in Mechanical Engineering	S
200113004	UJJWAL MISHRA	Bachelor of Technology in Mechanical Engineering	S
200106011	AGASTYA CHAUHAN	Bachelor of Technology in Mechanical Engineering	G
200106002	ABHIJEET SINGH	Bachelor of Technology in Mechanical Engineering	G
200106001	ADITYA RAWAT	Bachelor of Technology in Mechanical Engineering	G
200106003	KUSHAGRA NIGAM	Bachelor of Technology in Mechanical Engineering	G
200113002	AKHAND PRATAP SINGH	Bachelor of Technology in Mechanical Engineering	P
200113003	AMBUJ SINGH	Bachelor of Technology in Mechanical Engineering	S
200106004	PRIYANSHU CHHETRI	Bachelor of Technology in Mechanical Engineering	G
200106007	MOHAMMAD HAMZA	Bachelor of Technology in Mechanical Engineering	S
200106008	SUCHIR GARG	Bachelor of Technology in Mechanical Engineering	G
200106006	DARSHIL DHIREN SHAH	Bachelor of Technology in Mechanical Engineering	G
200113001	PANKAJ SINGH MANRAL	Bachelor of Technology in Mechanical Engineering	S
200106013	PRATYUSH ANAND BURNWAL	Bachelor of Technology in Mechanical Engineering	P
200113007	DEEPANSHU RAWAT	Bachelor of Technology in Mechanical Engineering	S
200113006	ABHISHEK AGARWAL	Bachelor of Technology in Mechanical Engineering	G
200106014	ANIL KUMAR GAUTAM	Bachelor of Technology in Mechanical Engineering	G
200106031	SOURABH KUMAR SINGH	Bachelor of Technology in Mechanical Engineering	G
200106015	KARAN SIYAG	Bachelor of Technology in Mechanical Engineering	G
200113009	TUSHAR KUMAR	Bachelor of Technology in Mechanical Engineering	G
200106022	ADITI RATURI	Bachelor of Technology in Mechanical Engineering	S
200106021	KULDEEP SINGH	Bachelor of Technology in Mechanical Engineering	G
200113010	BHAVESH SINGH BISHT	Bachelor of Technology in Mechanical Engineering	S
200106041	KHAGENDRA YADAV	Bachelor of Technology in Mechanical Engineering	G
210106900	GYANENDRA KUMAR	Bachelor of Technology in Mechanical Engineering	G
210106901	PRANJAL CHAUHAN	Bachelor of Technology in Mechanical Engineering	S
210106908	PRIYANSHU GUPTA	Bachelor of Technology in Mechanical Engineering	S
210106903	ABHISHEK KUMAR DHANGAR	Bachelor of Technology in Mechanical Engineering	S
210106904	AKSHAT BHIDOLA	Bachelor of Technology in Mechanical Engineering	P
210113900	SHIV SINGH NEGI	Bachelor of Technology in Mechanical Engineering	G
210113901	MANISH ADHIKARI	Bachelor of Technology in Mechanical Engineering	G
210106905	PIYUSH SINGH	Bachelor of Technology in Mechanical Engineering	G
210113902	ANUJ KUMAR	Bachelor of Technology in Mechanical Engineering	G
210106906	SIDDHARTH TYAGI	Bachelor of Technology in Mechanical Engineering	S
210106909	SURAJ KUMAR MUNDA	Bachelor of Technology in Mechanical Engineering	G
210106907	SAGAR SARKAR	Bachelor of Technology in Mechanical Engineering	S