DISENOSYS

Design your Destiny!

Who are we?

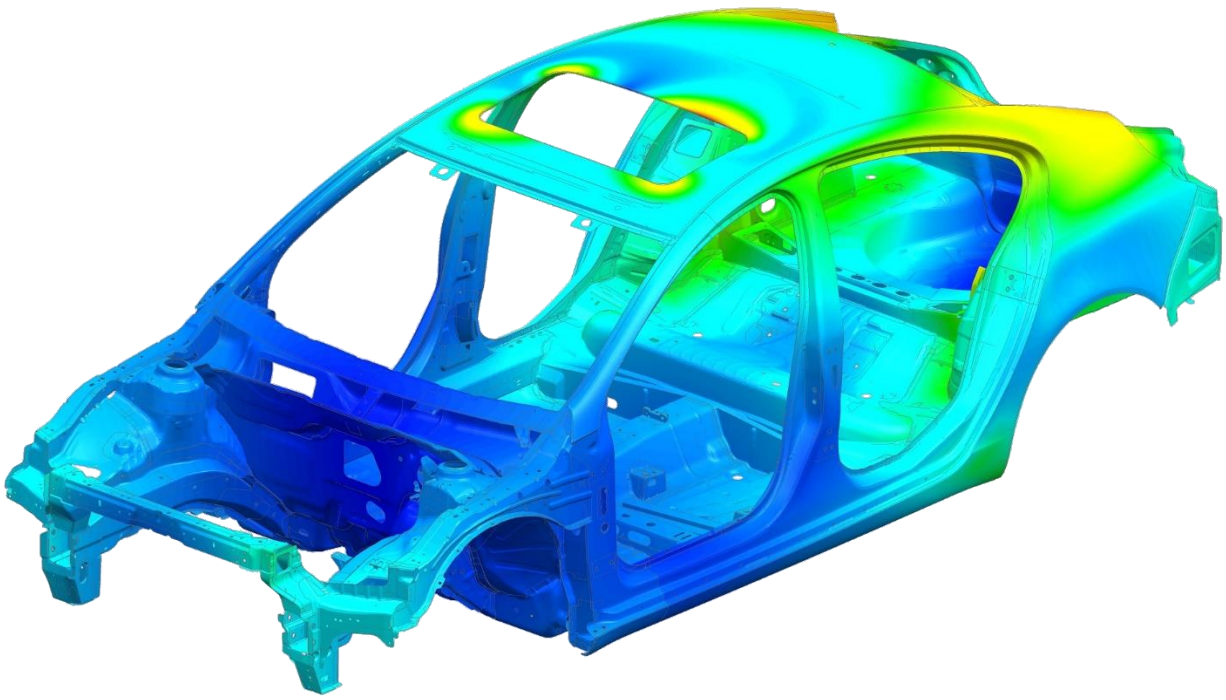
Mission: Imparting Practical Domain knowledge to Mechanical Engineering Graduates and Automotive enthusiasts by our seasoned industry experts. Empowering our students to become an expert in the domain of their choice.

3,00,000 mechanical engineers graduate every year in India and only a few get into core companies. Mechanical engineers find it difficult to get employed in the industry due to their sole focus on learning the design software, without proper domain knowledge. We Disenosys, are working to bridge this skill gap between students and the industry requirements. We have a team of industry experts, with over a decade of experience who

empower our students to land their dream jobs. We connect to our students from all the corners of the world through live, interactive and virtual classrooms.

Disenosys is bootstrapped by Praveen Kumar, who has worked with many multinational OEMs like Ford, Daimler, Ashok Leyland. Together as a team, we are constantly working to provide Automotive industrial domain training to young and aspiring design engineers around the globe.

Our students are our Hope. We are dedicated to making their dreams into reality.



DISENOSYS

CAE Career Choice

What is CAE

Computer-aided engineering (CAE) is the broad usage of computer software to aid in engineering analysis tasks It includes finite element analysis (FEA), computational fluid dynamics (CFD), multibody dynamics (MBD), durability and optimization. It is included with computer-aided design (CAD) and computer-aided manufacturing (CAM) in the collective abbreviation "CAx"

In general, there are three phases in any computer-aided engineering task:

- Pre-processing – defining the model and environmental factors to be applied to it. (typically a finite element model, but facet, voxel and thin sheet methods are also used)
- Analysis solver (usually performed on high powered computers)
- Post-processing of results (using visualization tools)

This cycle is iterated, often many times, either manually or with the use of commercial optimization software.

CAE in the automotive industry

CAE tools are very widely used in the automotive industry. Their use has enabled the automakers to reduce product development cost and time while improving the safety, comfort, and durability of the vehicles they produce. The predictive

capability of CAE tools has progressed to the point where much of the design verification is now done using computer simulations (diagnosis) rather than physical prototype testing. CAE dependability is based upon all proper assumptions as inputs and must identify critical inputs (BJ). Even though there have been many advances in CAE, and it is widely used in the engineering field, physical testing is still a must. It is used for verification and model updating, to accurately define loads and boundary conditions and for final prototype sign-off.

Who can take this course?

- 3rd and Final year B.E/B.Tech students in Mechanical/Automobile and Aerospace discipline.
- M.Tech students in Mechanical/Automobile and Aerospace discipline.
- Working professionals who are looking for better job opportunities in CAD, CAM, CAE, Auto Cad, Autodesk Domain.
- Automotive enthusiasts.

Prerequisite: **Working knowledge of ANSYS**

Why should I take the CAE Career Choice Program with Disenosys?

Top benefits of CAE Career Choice Program:

- After completion of this course, you will gain insights into how to evaluate the design**.**
- **You will study the components, analyze and interpret the results.**
- Get trained by seasoned industry **experts working in OEMs**.
- We help **in building your resume** after completion of the course.
- Get a **course completion certificate** from Disenosys.
- **Mock interviews** will be conducted after completion of the course, to clear Industrial Technical rounds for placement.
- Excellent performers will be **referred to top OEMs** through our internal contacts
- you will acquire technical knowledge and experience to analyse the design for its failures and optimise the design.
- Stand out among your peers in getting a job as a CAE Engineer.

OUR TRAINERS

Our team comprises of design experts, working in top OEMs around the globe. We stand apart from others with the quality we deliver to our students. Our seasoned industry experts impart their knowledge for the betterment of the future generation.

Course Duration

1 month Live, Online and Interactive Sessions

Certification

- **A digital certificate will be provided by Disenosys after successful completion of the course.**

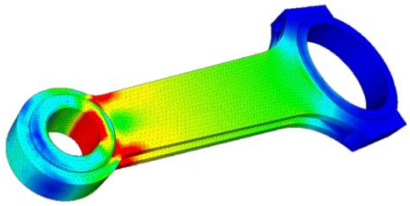
Course Curriculum

AGENDA FOR CAE FAST TRACK PROGRAM

- Finite Element Analysis
- Endurance and Durability Analysis
- Temperature-Dependent Analysis
- Frequency Response Analysis
- Time-Dependent Analysis
- Multiphysics Analysis
- Multibody Dynamics
- Explicit Analysis
- CFD (External, Internal and Multiphase)

FINITE ELEMENT ANALYSIS

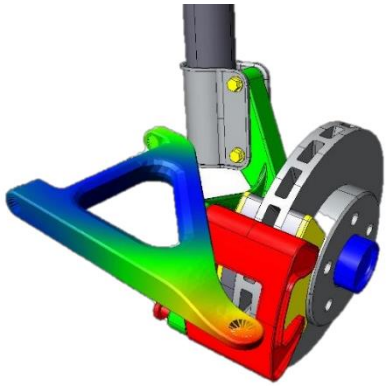
- What is FEA?
- Why We need FEA?
- Scope of Real-Time Industrial Problems.
- General Procedure to Conduct FEA.
- Inputs required to perform FEA.
- Working with Units.
- Materials and Its Strength.
- Finite Element Modeling.



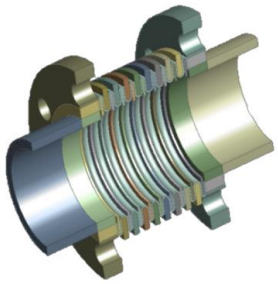
- Elements and Its Degrees of Freedom.
- Types of loads and boundary condition.
- Engineering Analysis and its Limitation.
- Why we need Geometry Cleanup?
- Verification Methods and Results Validation.
- Important Terms and Definitions.

ENDURANCE AND DURABILITY ANALYSIS

- Linear Static Analysis
- Pressure Vessel Modeling Using Shell.
- Sub-Modeling.
- Bolt-Modeling.
- Hydrostatic Pressure Analysis.
- Composite Modeling.
- Advance Metal Plasticity.
- Viscoelasticity and Viscoplasticity.
- Hyperelasticity.
- Contact Modeling and Algorithms.
- Non-Linear Buckling Analysis.
- Weld Modeling and Stress linearization.
- Fatigue Analysis.
- Convergence Issues and troubleshooting

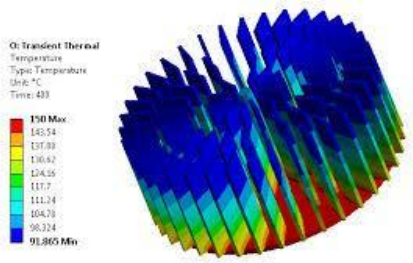


- **Project 1**: Structural Integrity of Roof Access Platforms.
- **Project 2:** Validation of Nozzle in Pressure Vessel as per ASME Standards.
- **Project 3**: FE Analysis of Silo with Wind Load.
- **Project 4**: Buckling Analysis of Metal Expansion Joints.
- **Project 5**: Air Spring Analysis.
- **Project 6**: Fatigue Analysis of Connecting Rod.
- **Project 7**: Structural validation of Composite Skate Board.

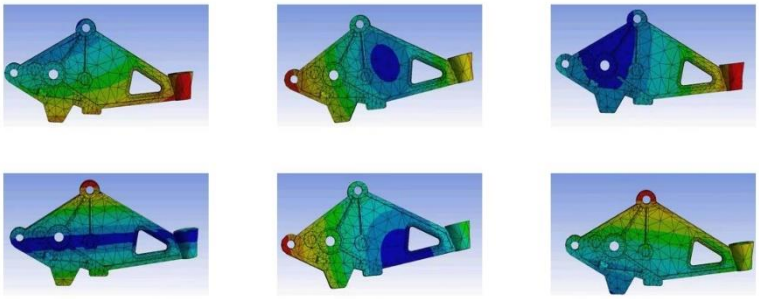


TEMPERATURE DEPENDENT ANALYSIS

- Conduction
- Convection
- Radiation
- Insulation
- Thermal Contact
- Transient Thermal Analysis
- **Project 1**: Thermal Analysis of PCB Enclosure.
- **Project 2**: Thermal Analysis of CPU Fins with Convection.
- **Project 3**: Thermal Validation of Soldering rod
- **Project 4**: Heating Coil Analysis with Radiation.

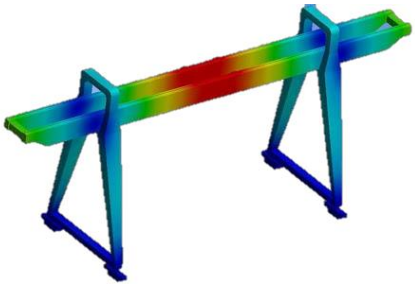


FREQUENCY RESPONSE ANALYSIS



- Free Vibration Analysis.
- Forced Vibration Analysis.
- Damping Analysis.
- Pre-stress Analysis.
- Critical Speed Analysis.
- Campbell Diagram.
- Harmonic Frequency Analysis.
- Response Spectrum Analysis.
- Random Vibration.
- **Project 1**: Vibration Analysis of Engine Mount.
- **Project 2**: Harmonic Analysis of Fixed-Fixed Beam.
- **Project 3**: Spectrum Response Analysis of Bridge.
- **Project 4**: Random Vibration Analysis of Hydraulic Oil Cooler for Seaway motion.
- **Project 5**: Critical Speed Analysis of High-Speed Shaft for Boiler Feed Pump.

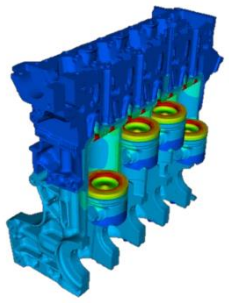
TIME DEPENDENT ANALYSIS



- Non-linearity in Transient Dynamic Analysis.
- Load Steps and Sub-steps
- Automatic Time Steps
- Newton Raphson Method
- Large Deformation Problems.
- **Project 1**: Dynamic Analysis of Gantry Crane.

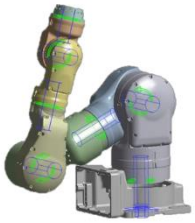
- **Project 2**: Dynamic Analysis of Caster Roller.
- **Project 3**: Impact Analysis of Cricket Bat with Ball.
- **Project 4**: Shock Analysis of Machine Base.
- **Project 5**: Transient Analysis of Rotor Assembly
- **Project 6**: Dynamic Transient Analysis of Gear Mesh.

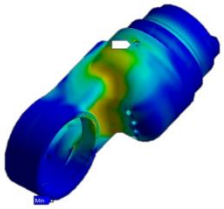
MULTIPHYSICS ANALYSIS



- Thermal Stress Analysis
- Fluid-Structure Interaction
- **Project 1**: Thermal Stresses on the Engine casing
- **Project 2**: Structural validation of Brake Disc
- **Project 3**: Pipe Support Analysis of Feed line to Boiler
- **Project 4**: Validation of Heat Exchanger impingement Rod

MULTIBODY DYNAMIC AND EXPLICIT ANALYSIS





- Mechanism
- Joints
- Spring modelling
- Drop test
- Impact analysis
- **Project 1**: Force Calculation of Crankshaft Assembly
- **Project 2**: Joint Load Calculation of Robot Arm

- **Project 3**: Drop test of Medical Devices
- **Project 4**: Frontal Crash Analysis of Automotive Bumper Cover

CERTIFICATE

CONTACT US

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