



**TRAINING DURATION:
160 HOURS**

SKILLS BUILDING TRAINING

Join our training program to upgrade your skills and accelerate your career growth with confidence and excellence.

Real-World Industry Experience

Professional Networking Ecosystem

Experiential Skill-Based Training

Personalized Career Roadmapping



Contact Us

+ 91- 9009015026 | 7748888320 | 9302956564

www.certedtechnologies.com

REGISTER NOW

Gwalior

Noida



FOLLOW NOW



Master Certificate in Analysis & Simulation

The Master Certificate in Analysis & Simulation is an advanced, industry-driven certification program designed for mechanical and automotive engineering aspirants who wish to specialize in virtual product validation, performance evaluation, and engineering decision-making using CAE tools.

In modern engineering industries, physical prototyping alone is no longer sufficient due to cost, time, and complexity constraints. Simulation-driven product development has become a core requirement. This program addresses that industry need by providing deep conceptual understanding and extensive hands-on experience in Finite Element Analysis (FEA), meshing, and simulation workflows used in real-world mechanical and automotive applications.

The course trains learners to digitally test, validate, and optimize components and assemblies under real operating conditions using industry-standard software tools.

About Company

Certed Technologies is a leading EdTech and corporate training organization committed to delivering industry-relevant, future-ready skill development programs. With a strong portfolio across IT, design, data, and emerging technologies, we collaborate with universities, colleges, corporates, and training institutes to deliver job-oriented training solutions.

Mission: To empower learners with practical, outcome-based training that enhances employability, creativity, and professional excellence in the digital economy.

Market Scope – Master in Analysis & Simulation

Industry Overview

The scope of this program covers end-to-end CAE simulation workflows, starting from simulation-ready CAD modeling to advanced structural and thermal analysis, enabling engineers to validate designs virtually before physical prototyping.

Industry Scope

- Automotive component validation and crash-readiness analysis
- Mechanical product design verification
- Structural safety and fatigue assessment
- Thermal behavior and heat dissipation analysis
- Lightweighting and optimization of components
- R&D, testing, and digital validation departments

Career Opportunities

With increasing emphasis on virtual testing and digital product development, engineers skilled in analysis and simulation are in high demand across industries.

Graduates of this program can find opportunities in:

- Automotive OEMs & Tier-1 suppliers
- Aerospace & defense manufacturing
- Heavy engineering & industrial machinery
- Consumer product design companies
- R&D and testing labs
- Engineering services & CAE consulting firms

Key Benefits of the Program

✓ **Industry-Aligned CAE Training**

Designed to match real engineering analysis workflows used in professional environments.

✓ **Hands-On Simulation Practice**

Practical exposure to component-level and assembly-level simulations.

✓ **Multi-Software Expertise**

Training across CAD, meshing, and analysis tools enhances employability.

✓ **Job-Oriented Curriculum**

Focus on skills required for CAE, validation, and simulation engineer roles.

✓ **Portfolio-Driven Learning**

Each learner completes multiple industry-style projects for job interviews.



Course Structure

Duration: 15 Hours

Module 1: Engineering Analysis Fundamentals

Topics:

- Introduction to CAE & simulation lifecycle
- Basics of FEA, meshing, and solver concepts
- Stress, strain, deformation fundamentals
- Boundary conditions and load case definition
- Role of CAE in product development

Module 2: CAD for Simulation (CATIA / NX CAD)

Topics:

Duration: 30 Hours

- Solid modeling for analysis-ready geometry
- Sheet metal modeling for CAE applications
- Feature simplification & defeaturing
- Geometry cleanup for meshing
- CAD-to-CAE data transfer best practices

Mini Project: Simulation-ready CAD model creation

Module 3: Meshing & Pre-Processing (HyperMesh)

Topics:

Duration: 35 Hours

- Introduction to pre-processing workflows
- 1D, 2D, and 3D meshing techniques
- Mesh quality parameters & checks
- Surface and volume meshing
- Model preparation for structural analysis
- Optimization-ready mesh creation
- **Project:** High-quality meshing of automotive component

Module 4: Structural & Modal Analysis (ANSYS)

Duration: 40 Hours

Topics:

- Static structural analysis
- Stress, strain & deformation evaluation
- Modal analysis & natural frequency extraction
- Boundary condition application
- Result interpretation & validation
- **Project:** Structural analysis of mechanical/automotive component

Module 5: Thermal Analysis & Validation

Duration: 20 Hours

Topics:

- Heat transfer fundamentals
- Steady-state thermal analysis
- Temperature distribution & heat flow
- Thermal stress considerations
- Real-world thermal validation scenarios
- Project: Thermal analysis of engineering component

Module 6: Assembly-Level Simulation & Capstone

Duration: 20 Hours

Topics:

- Assembly constraints & contacts
- Load transfer across assemblies
- Failure prediction concepts
- Report preparation & presentation
- Industry-standard CAE documentation
- **Capstone Project:**
- ✓ Assembly-level simulation for mechanical/automotive system

Outcomes of the Program

Prepare simulation-ready CAD models

Perform advanced meshing using HyperMesh

Conduct structural, modal, and thermal analysis in ANSYS

Interpret simulation results for design validation

Identify failure zones and performance limitations

Apply simulation techniques to real engineering problems

Career Roles After Completion

CAE Engineer

FEA / Structural Analyst

Simulation Engineer

Product Validation Engineer

Automotive CAE Analyst

Freelance Industries

THANK YOU!



Contact Us

 **Website**

www.certedtechnologies.com

 **Phone**

+91-89201-58923 | +91 -90090-15026



support@certedtechnologies.com

 **HQ address**

Abhilasha Bhawan, Pinto Park Tiraha,
Gwalior, 474005, Madhya Pradesh.