



## Industry Orientation Course

### CAE Mastery

Duration: 5 Months

*(100% Placement assistance)*

---

Empowering students with practical skills through industry-led training and personalized support.

---

#### About this course:

Unlock your CAE (Computer-Aided Engineering) prowess with Artem Academy's immersive course! Crafted to equip participants with profound understanding and hands-on proficiency, our mission is to foster expertise in CAE tools for practical use. Delve into Finite Element Analysis (FEA), Computational Fluid Dynamics (CFD), and Multibody Dynamics (MBD), mastering simulations for diverse engineering realms. Whether you're a student, seasoned professional, or researcher, seize the opportunity to refine your skills in tackling intricate engineering problems. Join us in mastering CAE and stride confidently towards overcoming tomorrow's engineering challenges!

Gain expertise in structural, modal, and thermal analysis techniques across aerospace, automotive, biomedical, rail, and heavy engineering sectors. Dive into modeling components like spanners, gears, bolts, joints, pillars, discs, supporting structural, turbine components, engine blocks, universal joints, bearings, and so on mastering their functional principles and applications in real-world scenarios through comprehensive, hands-on training.

### Course Curriculum

#### 1. SoM & FEA Concepts:

- Strength of Materials deals with understanding how materials behave under various loads and stresses, while Finite Element Analysis (FEA) is a computational method for simulating and analyzing the behavior of structures and components under different conditions by dividing them into finite elements.
- Connecting the concepts to the industry's real-world projects in a way with the following:

- Material Properties
- Shear Force and Bending Moments
- Stress & Strain
- Deflection and Von-Mises
- St. venant's Rule
- Moment of Inertia
- Finite Element Theory
- Displacement Method
- Numerical Methods

## 2. ANSYS WORKBENCH

- The Ansys Workbench simulation course imparts comprehensive skills in finite element analysis, enabling engineers to tackle intricate structural, thermal and Modal challenges. Participants gain proficiency in utilizing Workbench's intuitive interface for conducting simulations, enhancing product performance and design robustness.
- Fundamentals of FEM/FEA, Design Module, Mechanical Meshing, Loads, Boundary Conditions, Analysis Settings, and Analysis.
- Engaging in projects focused on specific industry domains, such as:
  - Project Schematic
  - Modeling – DM & SpaceClaim
  - Accuracy of the meshing
  - Meshing Connectivity & Quality
  - Results interpretation
  - Linear, Static, Modal and thermal analysis

**Select any 2 CAE courses based on the domain you wish to master from Series 3 to 6, SoM & FEA concepts and Ansys Workbench are mandatory.**

## 3. ANSYS APDL

- Ansys APDL simulation course equips engineers with expertise in finite element analysis, enabling them to solve complex structural, thermal, and fluid dynamics problems. Through hands-on training, participants learn to leverage APDL's powerful scripting language for customizable simulations, optimizing product performance and design reliability.

- General Analysis Procedure, Meshing Module, Modeling, Material Properties, Model Setup, Solver Settings, Post-Processing.
- Engaging in projects focused on specific industry domains, such as:
  - Modeling
  - Meshing – 1D, 2D , 3D & special elements
  - Loads and Boundary conditions
  - Solution Options
  - Post processing
  - Verification & Validation
  - structural, thermal, and modal analysis

#### 4. **ANSYS FLUENT**

- One of the key ANSYS products focused on fluid dynamics is ANSYS Fluent. Participants learn to utilize Fluent's features and solvers to model and simulate diverse engineering applications, optimizing designs and performance.
- Its interactive solver setup, solution process, and post-processing capabilities make it straightforward to pause a calculation.
- Engaging in projects focused on specific industry domains, such as:
  - Modeling: Design Modular
  - Meshing: Mesh Module
  - Setup: Setup Module
  - Solution
  - Results: Fluent & CFD

#### 5. **HYPERMESH**

- The Hypermesh simulation course provides engineers with comprehensive training in pre-processing for finite element analysis (FEA)). You can learn to efficiently mesh complex geometries and prepare models for accurate simulations, optimizing product design and performance.
- General Meshing, 2D and 3D Meshing, Loads, Boundary Conditions, and Analysis Settings.
- Engaging in projects focused on specific industry domains, such as:
  - Introduction interface and workflow
  - Mesh generation for simple geometries like beams, plates, and solid structures

- Boundary conditions and loads
- Mesh refinement techniques for improving solution accuracy
- Basics of linear static
- Post-processing results and extracting relevant engineering data
- Surface with Shell and Solid with mixed elements

## 6. ANSA:

- The ANSA structural analysis simulation course equips engineers with essential skills in pre-processing for finite element analysis (FEA) and structural simulations. Participants learn to efficiently prepare models, mesh complex geometries, and apply boundary conditions, ensuring accurate and reliable structural analysis results.
- Engaging in projects focused on specific industry domains, such as:
  - Meshing creation & optimization
  - Existing Mesh editing
  - Mesh Connections
  - Loads & BC
  - Surface shell meshing
  - Linear static analysis

## 7. Soft Skills:

- ✓ **Presentation Skills:** Engage confidently with visuals, conveying ideas effectively to captivate audiences and leave lasting impressions.
- ✓ **Leadership Skills:** Inspire teams, making decisive decisions, fostering growth, and leading by example with empathy and integrity.
- ✓ **Time Management:** Prioritize tasks, set goals, and maintain focus to achieve objectives efficiently within designated timeframes.
- ✓ **Communication:** Articulate thoughts clearly, actively listen, and adapt communication styles to effectively convey messages and build rapport.
- ✓ **Documentation:** Maintain meticulous records, ensuring accuracy and organization for clarity, accountability, and efficient workflow management.
- ✓ **Interview Answering:** Showcase skills and experiences succinctly, confidently articulating achievements and aligning strengths with employer needs.
- ✓ **Mock Interviews:** Simulate real-world scenarios, refining interview techniques, and building confidence through practice and constructive feedback.

- ✓ **Problem-solving:** Analyze challenges, devise creative solutions, and persevere with determination, leveraging critical thinking and resilience to overcome obstacles.

**Streamline Deliveries and Tracking milestones:**

1. Explore technical workshops led by industry and academic experts covering engineering design, materials, drawing, and GD&T.
2. Gain insights and soft skills guidance through seminars facilitated by industry professionals.
3. Engage with weekly assignments tailored to real-world scenarios for hands-on learning.
4. Your progress will be tracked weekly with proactive support for success.
5. Dive into practical, skill-building tasks in each course for dynamic learning experiences.

**Benefits:**

- Industry-led training with practical skills.
- Personalized support for student success.
- Cutting-edge tools and technologies access.
- Mentorship by experienced professionals.
- Networking with industry leaders.
- Internship/job placement assistance.
- Updated curriculum reflecting industry trends.

**"Unlock your potential, embrace challenges, and become the architect of your extraordinary future. Dream big!"**

---

**Artem Academy, Hyderabad**

Ph No: +91 9666 666425, [contact@artem.co.in](mailto:contact@artem.co.in)

Visit Us: [www.artem.co.in](http://www.artem.co.in), <https://consulting.artem.co.in/>