Applied CAD for Mechanical and Product Design Professionals Training Course

Ref: #CAD1945

Course Introduction / Overview:

This training course is designed to equip mechanical engineers, product designers, and CAD technicians with the strategic and technical skills needed to master CAD for mechanical design. The ability to create detailed, precise models is a critical factor for successful product development, from concept to manufacturing. This program, offered by BIG BEN Training Center, provides a comprehensive framework for understanding the core principles of Computer-Aided Design, from various 3D modeling techniques and assembly design to technical drawings and data management. We will explore key concepts such as parametric modeling, surface modeling, and the use of product lifecycle management (PLM) tools. The curriculum is informed by the academic work of authors like P. M. S. Kumar, whose book, Product Design and Manufacturing, provides a foundational and detailed understanding of the principles behind effective mechanical design. This course goes beyond a simple overview of software to provide a deep understanding of how to implement real-world solutions that ensure design accuracy, operational efficiency, and project profitability. We prepare participants to be leaders who can build more efficient and innovative design initiatives.

Target Audience / This training course is suitable for:

- Mechanical engineers.
- Product designers.
- CAD technicians and drafters.
- Manufacturing engineers.
- R&D specialists.
- Industrial designers.
- Project managers.
- Government agencies and equivalents.

Target Sectors and Industries:

- Manufacturing.
- Automotive and Aerospace.
- Consumer Products.
- Machinery and Heavy Equipment.
- Biomedical.
- Energy.
- Robotics.
- Government and public administration agencies.

Target Organizations Departments:

- Engineering.
- Design and Drafting.
- Research and Development (R&D).
- Manufacturing.
- Quality Assurance.
- Project Management Office (PMO).
- Product Development.
- Supply Chain.

Course Offerings:

By the end of this course, the participants will have able to:

- Apply core CAD principles for mechanical design.
- Master 3D modeling techniques.
- Perform assembly design.
- Create accurate technical drawings.
- Utilize parametric modeling for flexible designs.
- Ensure data management and version control.
- Apply GD&T standards.
- Optimize designs for manufacturing.

Course Methodology:

This training course uses a highly practical and case-study driven methodology. The program is built on real-world examples of successful mechanical design projects. Participants will work in teams to design a product from a conceptual sketch to a final manufacturing file, applying the tools and frameworks learned in the course. We will use interactive workshops to practice skills like surface modeling and creating bills of materials (BOM). The curriculum is designed to be a collaborative experience where participants can share their unique challenges and innovative solutions. Our trainers, with extensive experience in the field, will provide direct feedback and guidance throughout the course. BIG BEN Training Center is committed to providing a dynamic and practical learning environment, ensuring that participants leave with the skills and confidence to effectively perform CAD for mechanical design.

Course Agenda (Course Units):

Unit One: Foundations of Mechanical CAD

- The role of CAD in product design.
- Understanding the design of lifecycle.
- Introduction to 3D modeling.
- The importance of parametric modeling.
- Basic part design commands.
- Case studies in product design.
- The value of a structured approach.

Unit Two: Part and Surface Modeling

- Advanced 3D modeling techniques.
- Working with surface modeling.
- Creating complex geometries.
- Best practices for robust models.
- Using features and sketches effectively.
- Fillets, chamfers, and shell commands.
- Ensuring design accuracy.

Unit Three: Assembly and Collaboration

- The principles of assembly design.
- Adding components and constraints.
- Performing a basic motion study.
- Data management and version control.
- Working with external references.
- Collaborating on a shared project.
- Managing a bill of materials (BOM).

Unit Four: Technical Drawings and Documentation

- Creating technical drawings.
- Understanding views and sections.
- Applying GD&T standards.
- Adding dimensions and annotations.
- Creating templates and title blocks.
- Plotting and sharing documents.
- Ensuring manufacturing accuracy.

Unit Five: Strategic Application and Industry Trends

- Applying PLM principles.
- Workflow optimization.
- The future of CAD technology.
- Generative design overview.
- Career pathways in mechanical design.
- Leadership in product development.
- The value of integrated design.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can a deeper understanding of CAD for mechanical and product design and a proactive approach to parametric modeling empower professionals to move beyond basic part creation and become strategic leaders in creating more accurate, efficient, and innovative products?

What unique qualities does this course offer compared to other courses?

This training course is unique because it provides a dedicated, strategic focus on CAD for mechanical and product design professionals. While other programs may cover general software use, our curriculum is designed to empower professionals with the specific skills needed to address the unique challenges of product development, from mastering 3D modeling techniques to creating technical drawings for manufacturing. The program is a hands-on experience, with exercises that directly simulate the challenges and decisions involved in a real-world design scenario. We go beyond theoretical concepts to provide a clear, actionable roadmap for balancing the demands of a complex project with the imperative of delivering a successful and well-documented product. This course is for professionals who want to lead their organizations toward a more efficient, profitable, and innovative future.