Automated CAD Drafting and Scripting for Efficiency Training Course



13 - 17 Dec 2026

Doha

5500 € (Per Person)

Ref: #CAD1678_220989

Course Introduction / Overview:

In today's fast-paced design and engineering landscape, efficiency is the ultimate competitive advantage. The ability to automate repetitive tasks and streamline complex workflows is no longer a luxury but a necessity for professionals seeking to innovate and excel. This course provides a comprehensive exploration of automated CAD drafting and scripting, transforming participants from standard CAD users into highly efficient workflow architects. Drawing upon principles of process optimization similar to those discussed by authors like Bhaskar Ghosh in "The Automation Advantage", this program delves into the practical application of scripting to solve real-world design challenges. Participants will learn to harness the power of scripting languages to create custom tools, automate drawing generation, and enforce design standards with precision. At BIG BEN Training Center, we have designed this curriculum to be intensely practical, ensuring that the skills acquired are immediately applicable, leading to significant reductions in project timelines and a dramatic increase in productivity and design quality. This course is the definitive guide for mastering the art and science of CAD automation.

Target Audience / This training course is suitable for:

- CAD Drafters and Technicians.
- Design Engineers and Mechanical Engineers.
- Architects and Architectural Technologists.
- Civil and Structural Engineers.
- CAD Managers and BIM Coordinators.
- Product Designers and Industrial Designers.
- Project Managers overseeing design teams.
- Professionals seeking to enhance their CAD productivity.

Target Sectors and Industries:

- Architecture, Engineering, and Construction (AEC).
- Manufacturing and Industrial Production.
- Automotive and Aerospace Engineering.
- Product Design and Development.
- Urban Planning and Land Development.
- Energy and Utilities Infrastructure.
- Governmental bodies and Public Works agencies.
- Consulting Engineering Firms.

Target Organizations Departments:

- Engineering and Design.
- Research and Development (R&D).
- Drafting and Technical Drawing.
- Project Management and Execution.
- Operations and Production.
- Quality Assurance and Control.
- Innovation and Process Improvement.

Course Offerings:

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

- Automate repetitive and time-consuming drafting tasks using custom scripts.
- Develop a foundational understanding of scripting logic and syntax for major CAD platforms.
- Create custom commands and tools to extend the functionality of their CAD software.
- Implement batch processing techniques to handle large volumes of drawings efficiently.
- Extract data from CAD files automatically for reports and analysis.
- Customize the CAD user interface to optimize personal and team workflows.
- Apply error-handling techniques to build robust and reliable automation scripts.
- Develop a strategic approach to identifying and solving workflow bottlenecks.
- Manage and deploy custom scripts within a team or organizational environment.
- Significantly reduce design and drafting errors through standardized automation.

Course Methodology:

The training methodology at BIG BEN Training Center is centered on active, hands-on learning to ensure deep comprehension and skill retention. This course moves beyond theoretical lectures to immerse participants in a practical, lab-based environment where they will write, test, and debug their own scripts from day one. Our approach combines expert-led instruction with interactive workshops, where participants tackle real-world automation challenges. We utilize a blend of individual exercises to build core scripting skills and collaborative group projects that simulate complex, multi-faceted design scenarios. Case studies from various industries will be analyzed to demonstrate the tangible impact of automation on project timelines and costs. Continuous feedback and personalized guidance from our experienced instructors are integral to the learning process, ensuring that every participant gains the confidence and competence to apply these techniques effectively in their professional roles. The focus is on practical application, empowering attendees to return to their workplaces with ready-to-implement automation solutions.

Course Agenda (Course Units):

Unit One: Fundamentals of CAD Automation and Scripting

- Introduction to Workflow Automation in Design.
- The Business Case for CAD Scripting: ROI and Efficiency Gains.
- Overview of Common Scripting Languages (e.g., LISP, Python, VBA).
- Understanding the CAD Application Programming Interface (API).
- Setting Up Your Development Environment for Scripting.
- Core Programming Concepts: Variables, Data Types, and Operators.
- Writing and Executing Your First Simple CAD Script.

Unit Two: Core Scripting for 2D Drafting Automation

- Automating the Creation of Geometric Objects (Lines, Arcs, Circles).
- Scripting for Layer Management, Properties, and Standards.
- Working with Text, Dimensions, and Annotations Programmatically.
- Creating and Inserting Blocks and Symbols with Scripts.
- Developing Scripts that Accept User Input and Options.
- Manipulating and Modifying Existing Drawing Objects.
- Techniques for Precise Object Selection and Filtering.

Unit Three: Advanced Scripting and Logic

- Implementing Conditional Logic (If-Then-Else Statements).
- Using Loops for Repetitive Operations and Pattern Creation.
- Building Reusable Functions and Subroutines.
- Techniques for Reading and Writing to External Files (TXT, CSV).
- Introduction to Error Handling and Script Debugging.
- Extracting Block Attribute Data and Geometric Information.
- Creating More Complex and Interactive Automation Routines.

Unit Four: Customizing the CAD Environment and Workflow

- Building Custom Commands and Toolbars.
- Automating Plotting and Publishing Routines.
- Batch Processing Multiple Drawings and Files.
- Integrating Scripts with Spreadsheet Data (e.g., Excel).
- Developing a Custom Script Library for Team Use.
- Strategies for Automating Drawing Revisions and Updates.
- Best Practices for Writing Clean, Maintainable, and Scalable Code.

Unit Five: Capstone Project and Real-World Applications

- Case Study Analysis: Automation in Architecture and Engineering.
- Case Study Analysis: Automation in Manufacturing and Product Design.
- Project Planning: Defining an Automation Goal and Scope.
- Developing a Complete Workflow Automation Solution from Scratch.
- Presenting and Demonstrating the Capstone Project.
- Strategies for Implementing Automation in a Corporate Environment.
- The Future of CAD: Generative Design and AI-Driven Automation.

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:

As CAD automation becomes more sophisticated, how might the fundamental role of the human designer evolve from a creator of drawings to a curator of automated design systems?

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

This course distinguishes itself by focusing on the strategic mindset of automation rather than just the syntax of a single scripting language. While many programs teach coding, we teach problem-solving, guiding participants to identify workflow inefficiencies and architect robust, scalable automation solutions. Our curriculum is built on platform-agnostic principles, ensuring the logic and techniques learned are transferable across various CAD environments, providing long-term value beyond a specific software version. We emphasize the development of custom tools from the ground up, empowering participants to build solutions tailored precisely to their unique challenges, rather than relying on pre-packaged plugins. The course culminates in a real-world capstone project, where participants consolidate their learning to build a tangible automation tool, ensuring they leave not just with knowledge, but with proven, practical experience. This holistic approach transforms attendees into genuine workflow optimizers, capable of delivering measurable improvements in productivity and quality.