

Online Training

**TEKLA**

OpenAPI

**Master Course**

with **Grasshopper**

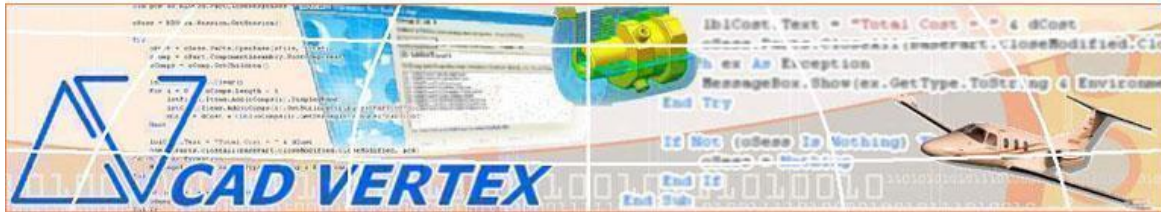
Visual Programming

- Flexible timings.
- CSharp programming included.
- Personal coaching, no videos.
- Weekend batches available.

 **9890611694**

  
CADVertex.com

**Download this PDF**  
**9 pages**



## CADVertex Solutions

A-16 . Whispering Wind . Pashan-Baner Link Road . Pashan . Pune . 411021  
www.CADVertex.com [info@cadvertex.com](mailto:info@cadvertex.com) Phone :+91 9890611694

# Tekla Open API

Language: **CSharp**

### Training Structure

- Module 1: **CSharp Programming** – In depth with OOPs.
- Module 2: **Tekla Open API** – Deep Dive.
- Module 3: Drawing Creation, Grasshopper Visual Programming, Industry Techniques and Applications.

### Fees

Check website: <https://www.cadvertex.com/training.htm>

**Phone/WhatsApp** +91 9890611694  
**eMail:** [info@CADVertex.com](mailto:info@CADVertex.com)

### Features:

- ✓ Personal coaching - no recorded videos.
- ✓ Flexible timings, weekend batches are also conducted.
- ✓ CSharp programming – in depth training included!
- ✓ Unlimited support after training - at no extra cost!

### Training Highlights



Online Training



Flexible Timings



Trainer: 25 yrs Exp.



Duration: 6 Wks



1 Hour Daily



Basic to Advanced



10 Industry Projs



Certificate



Support after Training



CuttingEdge Tech

## **Module 1: CSharp Programming**

### **1. Installing Visual Studio**

- Installing an older version.
- Setting the default language.
- Setting the environment and preferences.
- Customizing the layout.
- Solution Explorer, output and error windows.

### **2. Console applications and introduction to programming**

- Selecting a project template.
- Setting up user interaction and collecting inputs.
- Mathematical libraries, calculations and display outputs.
- Using the .Net Math library functions.
- Various files and their meaning in the project structure.
- Separating source code from the executable.

### **3. Creating a Windows Forms Application**

- Setting dialog box properties.
- Toolbox and the Properties window.
- Adding controls: Button, TextBox, Label, Checkbox, RadioButton.
- Adding images to PictureBox and other controls.
- Aligning text and images on controls.
- Composite controls: ListBox and ComboBox.
- Adjusting various properties for each type of control.
- Variable types - Double, Integer, String and Boolean.
- Acquiring user input from textboxes into variables.

### **4. File Open dialog and File Save dialogs**

- Creating basic, compound and composite file filters.
- Dialog properties and startup paths.
- Reading single and multiple files from a file dialog.
- Opening various type of files using a file dialog.

### **5. Folder Selection Dialog**

- Getting files from folder.
- Filtering file types in a folder dialog.
- IO.Directory functions.
- Anchoring controls to the Form.

## **6. Message Boxes**

- Configuring single line and multiline messages.
- Button and icon selection.
- Using If-Then-Else statements.
- Checking message box responses.

## **7. Arrays**

- Filling arrays and reading array elements.
- Filling ListBoxes with array elements.
- For Loop and ForEach loop.
- ArrayLists and Lists - advantages and limitations.

## **8. Functions and Subroutines**

- Arguments in functions.
- Return types in functions.
- ref and out clauses.
- Enums and constants.

## **9. Object Oriented Programming**

- Creating a class.
- Adding member functions.
- Static and non-static methods.
- Class constructor and object variables.
- Public and Private methods.
- Adding member variables.
- Derived class.
- Inheritance.
- Encapsulation.
- Polymorphism and function overloading.
- DLL and EXE, differences and usage.

## **10. Multi-Form Projects**

- Adding Forms to a project.
- Adding Forms to a console application.
- Form objects and invoking Forms.
- Default constructor and modified constructor.
- Exchanging data between Forms.
- Default values in forms.
- Storing and retrieving data.
- Events and Event Handling.

## Module 2 : Tekla Open API

### 11. Tekla Open API Overview

- Tekla API hierarchy.
- Tekla object model.
- Using the object browser.

### 12. Getting Started

- Connect to Tekla Structures.
- Tekla model and Connection Status.
- Tekla interface elements - message boxes and prompts.
- Model name and path.

### 13. Modeling API

- Using Tekla Geometry 3D and creating aliases.
- Creating beam and column objects.
- Beam geometry, profile, material and class.
- Inserting the beam and committing changes.
- Picker class, picking single points and objects.
- Filtering objects in the model.
- Selecting multiple objects in the model.
- Object enumerator and ArrayList of model objects.
- Using the ForEach loop to enumerate model objects.

### 14. Object Creation and Modification

- Creating contour plate.
- Multiple point picking.
- Contour points
- Cut plane, axes and orientation.

## Module 3 : Drawing Creation and Advanced Techniques

### 15. Drawing Handling

- Creating Drawings of models.
- Accessing current drawing and sheets.
- Access sheet and placing views.
- Inserting single prt drawings.

### 16. User Defined Properties

- Setting, retrieving properties.
- Inspecting and exporting UDAs.

### 17. Debugging Techniques

- Debugging techniques in Tekla apps.
- Adding breakpoints and inspecting values.
- Determine source of error.
- Troubleshooting and fix errors in the code.

### 18. Excel Automation and Integration

- Integrating Tekla API with Excel.
  - Reading data from Excel and creating objects in Tekla.
  - Writing out Tekla model data to Excel sheets.
  - Invoking Excel from CSharp.
  - Creating new workbook.
  - Connecting to Excel.
  - Connecting to existing worksheets.
  - Accessing range and cells.
  - Writing and reading values from cells.
  - Formulas and results.
  - Formatting cells - font and layout.
  - Excel Macro recording and integration.
  - Tekla macro recording.
  - Save and replay macros in Tekla.
- 
- ❖ [Industry Project](#) - Writing Tekla Information to Excel.
  - ❖ [Industry Project](#) - Reading from Excel into Tekla.

## 19. Grasshopper – Visual Programming

- Creating Visual Scripts
  - Tekla Grasshopper Component
  - Anatomy of nodes
  - Moving, Copying, and Spacing nodes
  - Searching nodes in the UI
  - Points and Lines blocks
  - Linking Grasshopper and Tekla
  - Panel node
  - Deconstruction and Construct nodes
  - Single and Multiple Linking
  - Numerical nodes - Integer and Doubles
  - Configuring slider range and settings
  - Graphical and notation settings
  - Node nomenclature and Parameters
  - Beam and Column nodes
  - Curve, profile catalogs, and materials
  - Part attributes, position, class, and deformation
  - Adding Reinforcements
  - Using Tekla Custom Components in Grasshopper
  - Creating Plugins in Grasshopper
  - Recomputing
  - Saving and reusing Attributes
  - Cambering and Deformation
  - Grouping Parameters
  - Group naming conventions
- 
- ❖ [Project](#) - Automatic Column with Rebar and Foundation.
  - ❖ [Project](#) – Create Plugin for Custom Component.

## Other eBooks and Training Programs from CADVertex:

- ❖ CATIA Automation: VB.Net or CSharp or Python
- ❖ SolidWorks Automation: VB.Net or CSharp or Python
- ❖ Solid Edge Automation: VB.Net or CSharp or Python
- ❖ Inventor Automation: VB.Net or CSharp or Python
- ❖ NX Open: VB.Net or CSharp with Win Forms
- ❖ NX Open: VB.Net or CSharp with Block UI Styler
  
- ❖ Knowledge Fusion
- ❖ Knowledge Fusion with Block UI Styler
  
- ❖ [Revit Automation Master Course using CSharp.Net and Python](#)
- ❖ [Tekla Automation using CSharp.Net + Grasshopper Programming](#)
  
- ❖ cMayoCAD: Learn to build a new CAD program from scratch using a Geometric Modeling Kernel and CSharp
  
- ❖ Machine Learning for Engineers with Python
  
- ❖ CATIA Automation with Python and Machine Learning
- ❖ NX Automation and Machine Learning with Python
- ❖ Solid Edge Automation with Python + Machine Learning
- ❖ SolidWorks Automation with Python + Machine Learning
- ❖ Inventor Automation with Python + Machine Learning
  
- ❖ Fast track course in Python with Machine Learning for VB.Net experts
- ❖ Fast track course in Python with Machine Learning for CSharp experts

## Free weekly Tips and Tutorials

- ✓ CAD API
- ✓ BIM API
- ✓ Python Programming Tips
- ✓ Dynamo Programming Tips
- ✓ Grasshopper Tips
- ✓ CSharp Programming Tips
- ✓ VB.Net Programming Tips



Subscribe:

**[CADVertex - Newsletter](#)**





Join  
CADVertex

[CAD-BIM Automation Group](#)  
**WhatsApp**



Join  
CADVertex

[CAD-BIM Automation Group](#)  
**Telegram**



Follow

[CADVertex on LinkedIn](#)



Follow

[CADVertex on Facebook](#)



Follow

[CADVertex on Instagram](#)

**Phone & Chat**

**+ 91 9890611694**

**eMail**

[info@CADVertex.com](mailto:info@CADVertex.com)

**Website**

[www.CADVertex.com](http://www.CADVertex.com)