DIPLOMA IN CIVIL ENGINEERING SOFTWARE

GRIP OF CIVIL SOFTWARE

Who can do?

- Matriculated Passed Candidates
- Civil Engineering Students
- Civil Diploma Holders
- Civil Contractors
- Civil CAD Operators
- Civil Technicians
- Those people who would like to develop their skills in Civil Engineering Software

100,000+ Students have been Trained

since 1997

Invest in People the only Asset that Appreciates

Program is offered by

3D EDUCATORS - INT

22 Years of Excellence in Training & Development

🌐 www.3dedudcators.com
✉ info@3deducators.com

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Table of Content

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Program Details

Inauguration

The Training Program will be inaugurated by a senior member of 3DEducators

Program Structure

No of classes per week	**01 Class**
Duration of each class	**02 - Hour**
Total Duration	**48 Hours**

Other Learning Activities

Classroom Assignments	**24**
Presentations by Trainees	**01**
Case Studies	**02**

About the Program Instructor

DIPLOMA IN Civil Engineering Software is the course which start from the scratch and covers so many demanding courses in civil engineering domain. All the courses shall be conducted by senior consultants and engineers who have the extensive experience relates to different national and multinational organization

✓ Senior Civil Engineers
✓ Senior Architect

Well qualified and experienced trainers with extensive hands-on and experience to groom the candidates in order to develop civil engineering software.

In Affiliation with

3D EDUCATORS
Trainers & Consultants

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Program Syllabus

Major Courses of Program

The structure of the training is as follows:

The Program consists on the following major courses

1. AutoCAD 2D/3D Civil
2. Revit Architecture
3. Revit Structure
4. Sketch Up

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AutoCAD 2D/3D

AutoCAD Civil Course Content

- **Introduction to AutoCAD Civil**
  - o Overview of AutoCAD Civil software
  - o Interface and workspace customization
  - o Basic drawing and editing tools
- **Civil Drafting Fundamentals**
  - o Creating and managing layers
  - o Drawing basic geometric shapes
  - o Using object snaps and tracking
- **Survey and Points**
  - o Importing and managing survey data
  - o Creating and editing points
  - o Point styles and labels
- **Surfaces**
  - o Creating surfaces from points, contours, and breaklines
  - o Surface analysis (slopes, elevations, and contours)
  - o Editing and styling surfaces

- **Alignments and Profiles**
  - o Creating and editing alignments
  - o Designing vertical profiles
  - o Profile views and bands
- **Parcels**
  - o Creating and editing parcel layouts
  - o Parcel labeling and tables
  - o Working with right-of-ways
- **Grading**
  - o Creating grading objects
  - o Calculating cut and fill volumes
  - o Designing finished ground surfaces
- **Corridors and Sections**
  - o Creating and editing corridors
  - o Designing cross-sections
  - o Section views and volume calculations

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- **Pipe Networks**
  - o Designing pipe networks
  - o Creating and editing structures
  - o Pipe network analysis
- **Plan Production**
  - o Creating sheets and viewports
  - o Annotating and labeling drawings
  - o Generating plan sets and layouts
- **Project Management**
  - o Data sharing and collaboration
  - o Working with external references (Xrefs)
  - o Managing project files and standards
- **Introduction to AutoCAD Architectural**
  - o Architectural software
  - o Interface and workspace customization
  - o Basic drawing and editing tools
- **Architectural Drafting Fundamentals**
  - o Creating and managing layers
  - o Drawing walls, doors, and windows
  - o Using object snaps and tracking
- **Building Design**
  - o Creating floor plans, elevations, and sections
  - o Adding and modifying architectural elements (stairs, roofs, etc.)
  - o Working with structural components
- **Annotations and Dimensions**
  - o Adding text, dimensions, and leaders
  - o Creating and managing annotation styles
  - o Using schedules and tables

- **3D Modeling**
  - o Creating 3D models of buildings
  - o Using 3D navigation tools
  - o Applying materials and textures
- **Rendering and Visualization**
  - o Setting up lighting and cameras
  - o Creating realistic renderings
  - o Exporting images and animations
- **Construction Documentation**
  - o Creating construction drawings
  - o Generating schedules and bills of materials
  - o Preparing layouts for printing

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REVIT ARCHITECTURE

Revit Architecture Course Content

1. Introduction to Revit Architecture

- Overview of BIM and Revit
- Understanding the Revit interface
- Navigating views and projects
- Customizing the workspace

2. Basic Drawing and Editing Tools

- Creating walls, floors, ceilings, and roofs
- Adding doors, windows, and components
- Using basic editing tools (move, copy, rotate, mirror, etc.)
- Working with levels and grids

3. Building Design and Modeling

- Creating and modifying building elements:
  - Walls (basic, stacked, curtain walls)
  - Floors and ceilings
  - Roofs (flat, sloped, and complex shapes)
  - Stairs, ramps, and railings
- Adding structural elements (columns, beams, and foundations)
- Using reference planes and constraints

4. Views and Visibility

- Creating and managing views (floor plans, elevations, sections, 3D views)
- Adjusting view properties and visibility settings
- Using view templates
- Working with camera views and walkthroughs

5. Annotations and Documentation

- Adding dimensions, text, and tags
- Creating and managing schedules (door, window, room, etc.)
- Using detail components and drafting views
- Adding legends and keynotes

6. Families and Components

- Understanding Revit families (system, component, and in-place families)
- Loading and placing family components
- Creating and modifying custom families
- Using parametric families

7. Materials and Rendering

- Applying materials to building elements
- Creating custom materials
- Setting up lighting and cameras
- Generating photorealistic renderings
- Creating solar studies and animations

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8. Collaboration and Worksharing

- Understanding worksharing and worksets
- Setting up a central model and local files
- Collaborating with team members
- Managing revisions and changes

9. Construction Documentation

- Creating sheets and adding views
- Annotating and detailing construction documents
- Generating schedules and quantity takeoffs
- Preparing and printing sheets

10. Advanced Topics

- Using design options and phasing
- Performing energy analysis and sustainability studies
- Integrating Revit with other software (e.g., AutoCAD, Navisworks, etc.)
- Automating tasks with Dynamo (visual programming)

11. Project-Based Learning

- Applying skills to real-world architectural projects
- Creating a complete building model from start to finish
- Generating construction documents and presentations

Key Features of Revit Architecture

- **BIM Workflow**: Revit emphasizes a BIM workflow, allowing users to create intelligent 3D models that contain both geometric and non-geometric data.
- **Parametric Modeling**: Changes made to the model are automatically updated across all views, ensuring consistency.
- **Collaboration**: Revit supports multi-disciplinary collaboration, enabling architects, engineers, and contractors to work on the same model.
- **Visualization**: High-quality renderings, walkthroughs, and animations help stakeholders visualize the design.

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1. Introduction to Revit Structure

- **Overview of BIM (Building Information Modeling):** Understanding the role of Revit Structure within the larger context of BIM, and how it integrates with architectural and MEP (Mechanical, Electrical, and Plumbing) models.
- **Revit Interface and Tools for Structure:** Navigating the Revit interface, including the structure-specific tools for managing structural components and views.
- **Project Setup and Template Usage:** Setting up structural templates, units, levels, grids, and coordinates for structural modeling.

2. Creating Structural Models

- **Creating and Modifying Structural Elements:** Techniques for creating key structural components like **walls**, **columns**, **beams**, and **foundations**.
- **Placing Structural Columns and Beams:** How to place and modify vertical (columns) and horizontal (beams) structural elements within the model.
- **Floors, Slabs, and Roofs:** How to model floor slabs, concrete or steel floors, and roofs. Focus on structural slab types, reinforcement, and layout.

Working with Structural Families

- **Using Predefined Families:** Working with Revit's built-in structural families such as foundation types, steel members (like I-beams), and concrete components.
- **Creating Custom Structural Families:** How to create custom families for structural elements that are not available in the default library.
- **Family Types and Parameters:** Understanding and managing parameters within structural families to customize properties.

4. Reinforcement and Detailing

- **Reinforcing Concrete Elements:** Techniques for adding reinforcement (rebar) to concrete slabs, beams, walls, and foundations.
- **Reinforcement Schedules:** How to generate and manage reinforcement schedules to ensure that all reinforcing elements are documented.
- **Structural Detailing:** Adding detailed annotations, callouts, dimensions, and tags for structural elements, such as rebar, steel connections, and beams.

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5. Structural Foundations

- **Types of Foundations:** Modeling various foundation types (e.g., slab-on-grade, spread footings, pile foundations).
- **Foundation Layouts and Grids:** How to layout and arrange foundation elements based on structural grid systems and levels.
- **Foundation Reinforcement:** Adding reinforcement detailing for different types of foundations.

6. Advanced Structural Modeling

- **Structural Framing Systems:** Modeling complex framing systems, including trusses, steel or concrete framing, and transfer structures.
- **Curtain Wall Systems for Structures:** Using curtain walls for structural facades and integrating them with structural frames.
- **Slab and Beam Systems:** Working with different slab systems (flat slabs, waffle slabs) and beam systems, including continuous and cantilever beams.
- **Load-Bearing Walls:** Modeling load-bearing walls and integrating them with other structural components.

7. Collaboration with Architecture and MEP

- **Worksharing and Collaboration:** Using Revit's worksharing features to allow multiple users to collaborate on the same model simultaneously, including structural, architectural, and MEP elements.
- **Coordination with Architecture:** Understanding how structural elements like beams, columns, and foundations integrate with architectural elements such as walls and floors.
- **Coordination with MEP:** Working with MEP elements (e.g., ducts, pipes) to ensure there are no clashes or conflicts within the model.

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Module 1: Introduction to SketchUp

- SketchUp and Its Applicationss
- SketchUp Interface and Workspace
- Differences: SketchUp Free vs. SketchUp Pro

Module 2: Getting Started with Basic Tools

- Navigating within the SketchUp Environment Orbit, Pan, and Zoom
- Selection Techniques
- Selecting Edges
- Faces
- Entities
- Basic Drawing Tools
- Lines
- Rectangles
- Circles
- Polygons

Module 3: Building Basic 3D Models

- Using the Push/Pull Tool for Creating 3D Forms
- Moving, Rotating, and Scaling Objects
- Offset and Follow Me Tools

Module 4: Working with Components and Groups

- Benefits of Grouping Objects
- Creating, Editing, and Importing Components
- Utilizing the 3D Warehouse

Module 6: Cameras and Views

- Setting Up and Saving Views
- Creating Scenes for Presentations
- Using the Walk-through and Look-around Camera Tools

Module 7: Lighting and Shadows

- Adjusting Time of Day and Year for Realistic Shadows
- Introduction to Artificial Lighting and Effects
- Using the Geo-Location Feature for Site Context

Module 8: Extensions and Plugins

- Overview of the Extension Warehouse
- Recommended Extensions for Beginners
- Installing and Managing Extensions

Module 9: Basic Rendering Techniques

- Introduction to Rendering in SketchUp
- Choosing and Adjusting Styles for Desired Effects
- Exporting Images and Animations

Module 10: Layout and Presentation

- An Introduction to SketchUp Layout
- Setting Up Pages and Title Blocks
- Exporting 2D Drawings
- Plans
- Sections
- Elevations

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TERMS & CONDITIONS

WITHDRAWAL FROM THE DIPLOMA/CERTIFICATION

Students are not allowed to withdraw from the Diploma. If a student cannot continue the Diploma his/her fee will be forfeited.

CONDUCT AND DISCIPLINE

A disciplinary action, leading to rustication, will be taken against students whose conduct is found objectionable at any time during the course of study. Reference will be made to 3D Educators code of conduct.

EVALUATION AND GRADING

The performance of students is evaluated through continuous observation of a student's performance in the Diploma – class participation, submission of assignments, quizzes and exercises.

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The student will be examined through three hourly exams conducted at the midterm and a final exam at the end of the program. Total marks for passing the Diploma will be 60 out of a total of 100.

Students who do not meet the attendance or any other eligibility criteria will not be allowed to appear in the final examination.

The following grading plan will be applicable for the Diploma:

A	87 - 100
B+	81 -86
B	72 - 80
C+	66 - 71
C	60 - 65
F	below 60

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Students who are unable to appear for the final exam are required to submit a written application stating the reason for not appearing for the exam. 3D Educators reserves the right to approve or deny such applications. If approved, the student will be allowed to sit for the exam within one month. Failure to do so, the student will be resubmit the examination fee and sit the future schedule exam. Without passing of the exams no certification will be awarded.

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ONLINE LIVE CLASSES FACILITY AVAILABLE

- Instructor Led Training
- Real Time Presentations
- Interactive Classes
- Complete Notes and Other Stuff shall be provided through our Secure Student Login Member's Area
- For Online Live Classes, you may please download the Admission Form through our website http://www.3deducators.com. Fill it properly and attached the required document along with Picture and send back to info@3deducators.com with scanned fee submitted voucher in the bank.
- For Pakistan you may submit the fee at any MCB Branch with the title of "3D EDUCATORS-TRAINERS & CONSULTANTS".
- If you are outside Pakistan then you may transfer via Bank to Bank or any western union, Fast Track, Money Gram or else International Transfer Body.
- After Admission, if you don't have GMAIL Account then you are requested to kindly make one GMAIL Account and shared it info@3deducators.com. Then further correspondence shall be made by our institute official.
- Extra Bandwidth Charges shall be incurred.

DISTANCE NOT MATTER

You can join in the live classes Sessions of 3D EDUCATORS – TRAINERS & CONSULTANTS from anywhere of the world.

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PRECAUTIONARY MEASURES

- During Classes, you are requested to make sure that you are in isolated room, where no noise should be there except your voice.

- Kindly Switch Off your Cell Phone during the class, because it will disturb the quorum of class.

- If you have taken the admission in the course online lonely, then ethically it is recommended and suggested that you alone in the class.

- Recording of Lectures are not allowed at your end.

This world is emerging and growing in the 21st Century very rapidly because of latest and remarkable technologies and its advancement. Due to advancement of technology, we 3D EDUCATORS offer Live Interactive class sessions

3D EDUCATORS believe on Information Technology and its systems. Now you can also avail this facility at your home.

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