STAAD.Pro - Syllabus

STAAD.Pro CONNECT EDITION

Day	*Topics*
1	Introduction to the new STAAD and various geometry tools · Introduction to STAAD.Pro · STAAD.Pro- Static and Dynamic Analysis Capabilities · Structural Idealization: Types (Truss, Plane, Floor & Space) with DOF & Behavior, Elements · Graphical Environment Layout · Workflow of Structural Analysis and STAAD.Pro
2	· Working on grid . Pre-processor through adding beams, Nodes in details
3	. Add plates, solids, copying / mirroring, rotating, panning / zooming, spreadsheets, page control . Creating & assigning properties and assigning methods , Beta angles

4	. Prismatic properties, material constants . Defining supports: Support types · Member & Element releases, Member offsets, Tension/Compression-only Members
5	· Applying Loads: Load Cases, Load Items, Load Combinations · Performing general Static analysis · Graphical Post-processor for verifying and validating analysis results
6	Design of Beams, Columns and Slabs as per IS-456: · Load List & TRACK Commands · Using the Graphical Post-processor for Customizing Reports, Plotting Result Diagrams, Creating Stress Contours etc. · Viewing Beam Results, Nodal Displacements and Reactions
7	Design of Plates, Slabs as per IS-456: · Slab Design and Plate Stresses

8	· Steel Design Parameters as per IS 800: . Transmission tower Design
9	. Wind Loading on Transmission Tower · Use of third party Word Processor, CAD application.
10	· Load Definitions: Seismic Loads Interpreting Results, post-processing and forces · Viewing Input with Editor & Output files · Structure Optimization by analyzing results · Using the Graphical Post-processor for Customizing Reports, Plotting Result Diagrams, Creating Stress
11	Dynamic Analysis using IS 1893:2016 · Introduction to Dynamic Analysis: Response Spectrum method · How to incorporate various clauses of new IS 1893:2016 in STAAD Model

12	· Introduction to STAAD.Foundation` · Transferring Nodal Reactions from STAAD.Pro to STAAD.Foundation . Manual Creation of columns position and Nodal Reactions
13 to 15	· Foundation design using STAAD.Foudation

OPENROADS DESIGNER

Training Curriculum of OpenRoads BY INNOVATIVE SYSTEL

TOPICS		DESCRIPTION
Introduction to open roads	1	Understanding Open Road User Interface and Using survey data as input
	2	Importing Terrain and creating Terrain Using different data formats
Editing Input Model	3	Introduction to tools being used for editing the input model
	4	Use Of Design Codes-As per IRC
Creating Geometry , modeling parts, generating reports, and performing earthwork take-offs	5	Creating horizontal and vertical geometry
	6	Modeling carriageway according to alignment and profile
	7	Calculating super elevation and integrating it into carriageway
	8	Performing earthwork calculations & Cost Calculation
	9	Pavement Layer Design-Rigid/Flexible as Per IRC STANDARDS
	10	Alignment Check-Civil Standards
	11	Sight Visibility Check- ISD/OSD/SSD
Pavement materials and their take-offs,3D Modeling	12	Defining pavement materials and Generating material reports
	13	3d Visualization/Modeling using LUMENRT Tool

Bentley Channel Partner

Course Curriculum: OpenFlows Water

Module 1: Introduction to OpenFlows Water

- Overview of Bentley OpenFlows suite (WaterGEMS, WaterCAD, HAMMER, SewerGEMS, etc.)
- Applications in water distribution, planning, and operations
- Integration with CAD/GIS and Bentley platforms (MicroStation, ArcGIS, AutoCAD, OpenFlows FLOOD, ProjectWise)
- User interface & project setup

Module 2: Fundamentals of Hydraulic Modeling

- Basics of water distribution systems
- Hydraulic principles: flow, head loss, energy, continuity
- Pipe networks, pumps, valves, tanks, reservoirs
- Data requirements and assumptions
- Model building workflows

Module 3: Building and Managing Models

- Creating network topology (pipes, junctions, nodes)
- Assigning demand and consumption patterns
- Defining pump curves and control rules
- Modeling tanks, reservoirs, and pressure zones
- Model calibration and validation with field data

Module 4: Hydraulic Analysis Techniques

- Steady-state analysis (EPS)
- Extended period simulation (EPS)
- Pressure-dependent demands (PDD)
- Fire flow analysis and hydrant testing
- Scenario management (what-if analysis)

Module 5: Advanced Hydraulic and Energy Analysis

- Pump optimization and energy cost reduction
- Pressure zone management and DMA (District Metered Area) setup
- Leakage detection and NRW (Non-Revenue Water) management
- System resilience and reliability analysis
- Pipe criticality and consequence modeling

Module 6: Water Quality Modeling

- Modeling water age, chlorine decay, and constituent tracking
- Source tracing and contamination event simulation
- Flushing strategies for water quality improvement

Module 7: Integration with GIS and BIM

- Importing and exporting GIS data (Shapefiles, ArcGIS, CAD)
- Model interoperability with Bentley iTwin and OpenRoads
- Asset management integration with Bentley AssetWise

Module 8: Scenario Planning and Decision Support

- Demand forecasting and growth scenarios
- Planning for new developments and network expansion
- What-if analysis for drought and supply reduction
- Reliability and redundancy planning

Module 9: Hands-On Case Studies

- Real-world project examples:
    - Urban water distribution system design
    - Fire flow compliance for a city network
    - NRW reduction strategy in a municipal system
- Group project: building a complete water network model

Module 10: Reporting, Visualization, and Outputs

- Hydraulic profiles and contour mapping
- Graphs, thematic mapping, and dashboards
- Preparing reports for stakeholders and authorities
- Exporting results for integration with other platforms

Module 11: OpenFlows HAMMER (Optional Advanced Track)

- Fundamentals of transient (surge) analysis
- Water hammer causes and mitigation
- Surge tank and air valve modeling
- Case study: transient protection strategy

Module 12: Certification & Wrap-Up

- Review of core topics
- Knowledge check and assessment
- Certification exam (if applicable)
- Future learning resources and support

✅**Duration:** 30–40 hours (can be structured as 5-day intensive or 6–8 week online program)
✅**Delivery:** Classroom, Online Instructor-Led, or Corporate Training
✅**Audience:** Civil Engineers, Water Utility Professionals, Consultants, Planners