CURRICULUM

Course Name	STAAD.Pro
Course Code	CE / 2020 / 012
Course Duration	60 Hours
Minimum Eligibility Criteria and Pre-requisites (if any)	10th / +2 / Diploma / Graduate
Course Objectives	Training Module has been designed for the Participants to • Analyse& Design structures Like ✓ Buildings, towers, bridges, industrial, transportation and utility structures. ✓ Tunnels, culverts, bridges, piles, petrochemical plants and building materials like timber, concrete, steel, cold-formed steel, and aluminium
Course Outcomes	At the end of the training, participants will be able to • Achieve user-specified design parameters to customize a design. • Perform code check, member selection and optimized member selection consisting of analysis/design cycles. • Design concrete beams/columns/slabs/footings as per Codal Provisions
Expected Job Roles	Structural analysis & Designer

TEACHING AND SCHEME OF EXAMINATION						
Course Code	**Course Name**	**Hours**		**Assessment Marks**		**Duration of Examination**
				Min	**Max**	
CE / 2020 / 012	**STAAD.Pro**	Theory	15	10	20	**3 Hours**
		Practical	45	40	80	
		Total	**60**	**50**	**100**	

DETAILED SYLLABUS

Unit No	Modules	No. of Hours	
		Theory	Practical
1	**INTRODUCTION TO STAAD.PRO**	02	---
1.1	Introduction & Interface Explanation		
2	**STAAD EDITOR**	01	03
2.1	How to create Nodes &Members -Repeat option- Translation repeat – Circular repeat		
3	**BEAM & COLUMN ANALYSIS**	01	05
3.1	Theory		
3.2	Analysis by using Software		
3.3	Post Processing (Review Results)		
4	**DESIGN**	02	08
4.1	Concrete Design		
4.2	Steel Design (Truss)		
4.3	Report Generation		
4.4	Full Practice & Solving Problem		
5	**FEM**	04	15
5.1	Add beam- Add Plate- Add Solid		
5.2	Move, Mirror& Rotate- Surface Meshing- One Way Slab - Analysis & Design		
5.3	Two Way Slab - Analysis & Design- Circular Water Tank Design- Rectangular Water Tank Design- Solving Problem		
6	**STAIRCASE DESIGN (WAIST SLAB)**	04	12
6.1	Rectangular Staircase- Circular staircase- Spiral Staircase- STAAD Wizard		
6.2	How to Import CAD Drawing – View- Unit Conversion- Dimension of Beam - Design of Beam & Column For Particular Plan		
7	Isolated Footing- Combined Footing- Mat / Raft Foundation	01	02
TOTAL THEORY AND PRACTICAL HOURS		**15**	**45**
TOTAL HOURS		**60**	

PRACTICAL EXERCISES (45 HOURS)	
S.NO.	**List of Experiments**
1.	Analysis and Design of a Simply Supported Beam carrying UDL
2.	Analysis and Design of a Column Carrying Axial Load
3.	Analysis and Design of Portal Frames
4.	Analysis and Design of a Steel Roof Truss
5.	Analysis and Design of a Steel Water Tank
6.	Design of a Framed Structure
7.	Design of an isolated Column Footing / Foundation

HARDWARE REQUIREMENT

SL. NO.	LIST OF TOOLS / EQUIPMENTS / MATERIALS
1.	CPU – 32 / 64 bit Intel® or AMD® multi-core processor
2.	RAM - 4 GB of RAM minimum (8 GB or more recommended)
3.	DISK SPACE -6 GB of free disk space for install
4.	VGA MONITOR
5.	USB KEYBOARD
6.	USB OPTICAL MOUSE

SOFTWARE REQUIREMENT

SL. NO.	NAME OF THE SOFTWARE
1.	STAAD.PRO V8i

REFERENCE BOOKS

SL. NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1.	Bentley Technical Reference Manual	---	November 2012
2.	STAAD.Pro EN 1993 - 1 – 1 : 2005 Implementation	---	Verification as per SCI P364

ASSESSMENT AND CERTIFICATION

S.No	Criteria for Assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical conducted internally in the CIICP Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 Word/ Objective type questions).
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the CIICP Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The passing criteria for successful completion of training is every trainee should score 50% of marks in the End Theory and Practical examination.
6.	On successful completion of training, Certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnics.

END EXAMINATION

ALLOCATION OF MARKS

S. No.	Description	Maximum Marks
1.	THEORY EXAM	20
2.	PRACTICAL EXAM	
	a. PROCEDURE	20
	b. ANALYSIS	15
	c. DESIGN	15
	d. RESULT / OUTPUT	10
	e. RECORD	20
	Total	**100**

CE / 2020 / 012 – STAAD.Pro
(Maximum Marks: 20)

(N.B: Answer any **Twenty** Questions)   **20 x 1 = 20 Marks**

1) Expand STAAD.PRO

2) What are the advantages of using STAAD.PRO?

3) What are the methods in STAAD.PRO?

4) How to import an Auto Cad file into STAAD.PRO?

5) What are different types of load act on a structure?

6) Which units are used in STADD.PRO in India?

7) How many types of models available in structure wizard?

8) What are the different types of analysis in STAAD.PRO?

9) What is self-weight of structure?

10) What is code book for RCC design?

11) How to select nodes in STAAD.PRO?

12) What is S.C.C?

13) What is minimum steel in column?

14) What is M20?

15) What is a Duplicate beam In STAAD.PRO?

16) What is base velocity?

17) How to apply WIND load in STADD.PRO?

18) What are the different types of trusses?

19) What is purlin?

20) What is bearing capacity?

21) What are the different types of footing?

22) What is one way and two way shear?

23) What is deck slab?

24) What are the loads combinations are used in bridge?

25) Writ the full form of IRC?

CE / 2020 / 012 – STAAD.Pro
(Maximum Marks: 20)

(N.B: Answer any **Twenty**Questions)   **20 x 1 = 20 Marks**

1) Select the correct one
   a)   Structural analysis designing programme
   b)   Structural analysis and design programme
   c)   Structural analysis and drawing programme
   d)   Structural analysis design and drawing programme

2) Which company developed STAAD.PRO?
   a)   Auto desk
   b)   E-tabs
   c)   Microsoft
   d)   Bentley system

3) What type of Auto cad file can be uploaded in STAAD.PRO?
   a)   DFX
   b)   DWG
   c)   PDF
   d)   XCEL

4) In STAAD.PRO, Structure and structure elements are designed by ………………
   a)   Bending moment method
   b)   Working stress method
   c)   Limits state method
   d)   Ultimate stress method

5) Plane of axis in STADD.PRO is …………………
   a)   X-Y global
   b)   Y-Y global
   c)   Y-Z global
   d)   Z-Z global

6) Designing of concrete element in STAAD.PRO is by using ………………
   a)   IS- 875-1987
   b)   IS-456-2000
   c)   IS-2751-1988
   d)   IS 800-2007

7) Which is the code book for Design Load?
   b)   IS 875-1987
   c)   IS 456-2000
   d)   IS 800-2007
   e)   IS 1343-1980

8) How many types of Meshingis there in STAAD.PRO?
   a)   1   b) 2   c) 5   d) 4

9) You can also edit the parameters in structure wizards models.

a) True

b) False

10) Which of following function is used to create Duplicate nodes in direction of X,Y,Z?

a) Circular repeat   b) Mirror

c) Translation repeat   d) Insert nodes

11) STAAD.Pro Perform analysis means ……………..

a) Taking into consideration the displacement of nodes

b) Taking into consideration the stiffness correction

c) Multi-iteration analysis

d) None of the above

12) In concentrated load, P is ………………

a) Force direction   b) Perpendicular distance from the member

c) Value of load   d) All the above

13) In concrete design parameter, by default value for clear cover at top is ……….

e) 25mm   b) 12mm

c) 20mm   d) 30mm

14) How many models are available in the structure wizard?

a) 5   b) 8   c) 7   d) 6

15) In floor load, Y is ………………

a) Affective height   b) Floor height

c) Building height   d) All the above

16) IS criteria for Earthquake resistant of structure is ……………..

a) IS 1893-2003

b) IS 1893-2002

c) IS 1892-2005

d) IS 1892-2003

17) Pinned support will have ……………. reaction

a) 2   b) 4   c) 3   d) 6

18) In how many ways we can assign support to nodes?

a) 2   b) 3   c) 4   d) 5

19) Which of the following sub-pages are in Foundation plan pages?

a) Linear grid setting

b) Column positioning

c) Radial grid setup

d) Column dimension and width

20) The …………….. group allows you to change the display of load arrows

a) Modelling scale   b) Displacement

c) Result scale   d) Loading scale

21) Dead load in STAAD.PRO is

a) Live weight of moving items

b) Self-weight of material, components throughout its life

c) Wind force act on structure

d) None of the above

22) By default, Response Reduction Factor Value for special Moment Resisting Frame is?

a) 1

b) 3

c) 6

d) 5

23) The minimum and maximum division of each side are

a) 1 to 50

b) 0 to 100

c) 1 to 1000

d) 1 to 100

24) In meshing parametric dialog box, by default, Bias value is ………. and Divi Value is …….. ?

a) Bias is 1 division is 15

b) Bias is 1 division is 10

c) Bias is 2 division is 10

d) Bias is 1 division is 11

25) B.E.A.V.A Supports……….

a) UK BS 5400

b) IRC Chapter2

c) IS 456

d) All the above