CURRICULUM

Course Name	ETABS
Course Code	CE / 2020 / 011
Course Duration	40 Hours
Minimum Eligibility Criteria and Pre-requisites (if any)	Diploma/Graduates
Course Objectives	Training Module has been designed for the Participants to • Detail steel member selection • Drift optimization and stress checking processes • Design steel connections • Analyse large deformation nonlinear time analysis.
Course Outcomes	At the end of the training, participants will be able to • Work with people spanning in different disciplines with productive, innovative, and communicative skills. • Create one model of the floor systems and the vertical and lateral framing systems and analyse and design the entire building due to the integrated system of ETABS.
Expected Job Roles	• Project manager • Structural Analysis & Designer

TEACHING AND SCHEME OF EXAMINATION						
Course Code	**Course Name**	**Hours**		**Assessment Marks**		**Duration of Examination**
				Min	**Max**	
CE / 2020 / 011	**ETABS**	Theory	10	10	20	**3 Hours**
		Practical	30	40	80	
		Total	**40**	**50**	**100**	

DETAILED SYLLABUS

Unit No	Modules	No. of Hours	
		Theory	Practical
1	**INTRODUCTION & MODELLING**	02	07
1.1	Introduction- Objective		
1.2	File operation- Creating basic grid systems- Creating structural model- Defining storey data- Add structural objects using templates/ Manually		
1.3	Add structural objects using templates/ Manually		
2	Drawing of point, Line& area objects- Reference lines & planes- View section options - View management- Object selection- Options & preferences- Assign model properties for Beams/ Columns/ Slabs etc.,	02	05
3	**LOAD CASE**	02	08
3.1	Objective- Define static load case assignment- Point object assignment- Line object assignment- Self weight multiplier- Modify an existing static load case- Delete existing static load case- Load combination		
4	**ANALYSIS THE MODEL**	02	04
4.1	Model analysis with various combination		
4.2	Analysis option		
4.3	Analysis log		
4.4	Locking & unlocking the model		
5	**RESULTS GRAPHICAL OUTPUT(ANALYSIS OUTPUT)**	02	06
5.1	Study of Bending, Shear &Torsion for Beam Members		
TOTAL THEORY AND PRACTICAL HOURS		**10**	**30**
TOTAL HOURS		**40**	

PRACTICAL EXERCISES (30 HOURS)	
S.NO.	**List of Experiments**
1.	Analyze indeterminate structure by using slope and deflection method
2.	Analyze indeterminate structure by moment distribution method
3.	Analyze indeterminate structure by Stiffness method
4.	Determine Collapse load for Single and Multiple span beams
5.	Determine Deflection of Statically Determinate Structure using Virtual Work Energy Method
6.	Determine Statically Determinacy and Indeterminacy and to Identify them as Statically Determinate and Indeterminate Structure
7.	Introduction to Plastic Theory
8.	Determine Kinematic Determinacy and Indeterminacy of Structure and to identify them as Kinematic Determinate and Indeterminate Structure
9.	Analyze two hinged Parabolic Arch
10.	Analyze Indeterminate Structure by Flexibility Method

HARDWARE REQUIREMENT

SL. NO.	LIST OF TOOLS / EQUIPMENTS / MATERIALS
1.	CPU – 32 / 64 bit Intel® or AMD® multi-core processor
2.	RAM - 2 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.	ETABS

REFERENCE BOOKS

SL. NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1.	ETABS 2016 Black Book	Gaurav Varma	----
2.	CSI Reference Manual for ETABS	----	Berkeley, California

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 / 011 – ETABS
(Maximum Marks: 20)

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

1) Expand E-TABS.

2) Which method is used to analysis a structure in E-TABS?

3) How to define the material properties of structure in E-TABS?

4) Write the work procedure in E-TABS?

5) How to assign the support in E-TABS?

6) How to find the maximum bending moment in E-TABS?

7) Write the step-by-step procedure to define the Deck/slab?

8) How to add load combination in E-TABS?

9) What are the load combination act on high rise building?

10) What is the difference between STAAD.PRO to E-TABS?

11) What is mean by deck slab?

12) What are the IS-code used in E-TABS?

13) Write E-TABS output convention to shell Elements?

14) What are the key features in E-TABS?

15) How to find the support reaction of structure by E-TABS?

16) Write the objectives of analysis a structure in E-TABS?

17) What are the stages in structural design in E-TABS?

18) What are the philosophies in Design of reinforced concrete structure?

19) What are functions keys used in E-TABS?

20) What are the reasons for defining a grid system for model?

21) What are the advantages of using E-TABS?

22) How to over write an error in E-TABS?

23) How staircase is analysis in E-TABS?

24) How to assign property of Beam and column in E-TABS?

25) What kind of structures can't design in E-TABS?

CE / 2020 / 011 – ETABS
(Maximum Marks: 20)

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

1. Expansion of E-TABS

a) Extended three dimensional analysis of building system

b) Examine two dimensional and building system

c) Extended three dimensional and building system

d) Extended design and analysis of building system

2. Which software is used to analysis the structure in E-TABS?

a) Staad.pro

b) Finite element system

c) Conjugate load system

d) None of these

3. How many progress in Analysis and Design of structure in E-TABS?

a) 1   b) 2   c) 3   d) 5

4. How many ways to open a new file in E-TABS?

a) 1   b) 3   c) 4   d) 5

5. What are the components designed in E-TABS?

a) Foundation

b) Column

c) Beam

d) Deck slab

e) All the above

6. In how many ways to assign material property to structure?

a) 1   b) 2   c) 3   d) 4

7. Which type of Auto cad file import to E-TABS?

a) DWG

b) PDF

c) JPGE

d) DFX

8. IS Code book used in E-TABS for Seismic force

a) IS-800-2007

b) IS-456-2000

c) IS 1893-2002

d) SP-16

9. Stability of structure means

a) To prevent overturning, sliding or buckling

b) To resist safely the stress induced by load

c) To ensure satisfactory performance under service load

d) None of these

10. The structure element cant designed in STAAD.PRO over E-TABS

a) Beam
b) Deck slab
c) Stair case
d) B and C

11. The ratio of Long span to short span in Two way slab in E-TABS

a) Less than or Equal to 2
b) More than 2
c) Equal to zero
d) None of these

12. Load combination to design the structure in E-TABS

a) Dead load
b) Live load
c) Service load
d) Seismic load
e) A,B and C

13. Which method of design mainly used for Water retaining structure?

a) Limit state method
b) Working stress method
c) Ultimate moment method
d) Finite element method

14. E-TABS can import file from

a) AUTO CAD
b) STAAD.PRO
c) SAP
d) Frame work
e) All the above

15. Abbreviation of DBE

a) Design of Building Element
b) Design Basis of Earthquake
c) Design of Book of Elements
d) None of these

16. Maximum plastic deformation in

a) Positive in all direction
b) Negative in all direction
c) Each the positive and negative direction
d) Zero

17. How many stages in structural design in E-TABS

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

18. AASHTO

a) American Association of State Highway and Transport officials
b) American Analysis and Structures, High way Transport office
c) Analysis And Stability of Highway Transport Organization
d) None of these

19. How to Add Beam and Column in E-TABS

a) Define-material properties-Add beam& column
b) Define-Frame section- Add beam & column
c) Both A and B
d) None of these

20. Which code book for Design Load

a) IS 875-1987   b) IS 456-2000
c) IS 800-2007   d) IS 1343-1980

21. In concrete design parameter, by default value for clear cover at top

a) 25mm
b) 12mm
c) 20mm
d) 30mm

22. Significant options of E-TABS

a) Replication Features
b) Curved Shear Wall
c) Auto Gravity load auto Lateral Wind and seismic
d) All the above

23. Alternate software for design Deck slab other than E-TABS

a) STAAD.pro
b) SAP
c) Frame Work
d) Rivet Structure

24. How to assign support in E-TABS

a) Select support point- Assign- Joint/point- Restrains
b) Select support point- Material properties- Assign- support
c) Select support point – Assign- Support type
d) None of these

25. Post processing in E-TABS

a) Define element- Result interpretation
b) Result Interpretation- Design
c) Load application- Run Analysis
d) All the above