

**DEPARTMENT OF CIVIL ENGINEERING**

**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

COURSE PLAN – PART I			
Name of the programme and specialization	B. Tech Civil Engineering		
Course Title	Analysis of Indeterminate Structures		
Course Code	CEPC21	No. of Credits	3
Course Code of Pre-requisite subject(s)	CEPC16		
Session	July /Jan. 2018	Section (if, applicable)	A/B
Name of Faculty	Dr. K. Baskar	Department	Civil Engineering
Email	kbaskar@nitt.edu	Telephone No.	0431-2503161
Name of Course Coordinator(s) (if, applicable)			
E-mail		Telephone No.	
Course Type	<input checked="" type="checkbox"/> Core course	<input type="checkbox"/> Elective course	
Syllabus (approved in BoS)			
<p>Slope deflection method - analysis of indeterminate structures - Settlement.                      Moment distribution method - analysis of indeterminate structures - settlement of supports - sway.                      Energy methods - Kani's method - analysis of indeterminate structures - settlement of supports - sway.                      Moving loads for statically determinate structures - single load - two point loads - several points loads - maximum bending moment and maximum shear force - equivalent u.d.l. - absolute maximum bending moment.                      Enveloping curves for maximum bending moment and maximum shear force and determination of equivalent UDL, ILD for shear, moment and reactions for statically determinate beams and pinjointed trusses - Reversal of stresses under live load.</p>			
COURSE OBJECTIVES			
<ol style="list-style-type: none"> <li>1. To understand the concept of analysis of indeterminate structures by various classical methods</li> <li>2. To study the use of ILD for determinate structure</li> <li>3. To learn the concepts of moving loads and its effect on structures</li> <li>4. To understand the concept of equivalent UDL</li> <li>5. To study the reversal of stress under live load</li> </ol>			

COURSE OUTCOMES (CO)	
Course Outcomes	Aligned Programme Outcomes (PO)
1. Use various classical methods for analysis of indeterminate structures	1, 2, 3, 4, 5
2. Determine the effect of support settlements for indeterminate structures	1, 2, 3, 4, 5
3. Apply the concepts of ILD and moving loads on determinate structures	1, 2, 3, 4, 5
4. Apply the concept of equivalent UDL	1, 2, 3, 4, 5
5. Determine the reversal of stresses in trusses using ILD	1, 2, 3, 4, 5

COURSE PLAN – PART II			
COURSE OVERVIEW			
<p>This course introduces the indeterminate structures in detail and the various methods of classical analysis towards the solution of such structure. The classical methods such as slope-deflection method, moment distribution method, energy methods and Kani's method will be discussed with application on indeterminate structures such as continuous beams, portal frames and simple frames with and without settlement of supports. This course will also discuss the response of statically determinate and indeterminate structures subjected to moving loads. The development and use of ILD will also be discussed.</p>			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week/Contact Hours	Topic	Mode of Delivery
1.	1/3	Introduction Slope deflection method	Chalk and Board
2.	2/3	- analysis of indeterminate structures-	Chalk and Board
3.	3/3	Settlement.	Chalk and Board
4.	4/3	Moment distribution method -	Chalk and Board
5.	5/3	analysis of indeterminate structures -	Chalk and Board
6.	6/3	settlement of supports - sway.	Chalk and Board
7.	7/3	Energy methods - Kani's method -	Chalk and Board
8.	8/3	analysis of indeterminate structures -	Chalk and Board
9.	9/3	settlement of supports - sway.	Chalk and Board
10.	10/3	Moving loads for statically determinate structures	Chalk and Board/ppt/video



11.	11/3	-single load - two point loads - several points loads - maximum bending moment and maximum shear force -	Chalk and Board/ppt
12.	12/3	equivalent u.d.l. - absolute maximum bending moment.	Chalk and Board/ppt
13.	13/3	Enveloping curves for maximum bending moment and maximum shear force and determination of equivalent UDL, ILD for shear, moment and reactions for statically determinate beams and pinpointed trusses - Reversal of stresses under live load.	Chalk and Board/ppt/video

**COURSE ASSESSMENT METHODS (shall range from 4 to 6)**

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment - I	5		20
2	Assessment – II	10		20
3	Assignments	3, 5, 8, 10, 12		10
CPA	Compensation Assessment*	12		
4	Final Assessment *	13		50

\*mandatory; refer to guidelines on page 4

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)**

Feedback will be collected through standard questionnaire

**COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)**

**MODE OF CORRESPONDENCE (email/ phone etc)**

[kbaskar@nitt.edu](mailto:kbaskar@nitt.edu)  
9790180736

**COMPENSATION ASSESSMENT POLICY**

Pre-approved Genuine Cases (due to medical reasons / unavoidable circumstances) will be considered for Compensation Assessment

**ATTENDANCE POLICY** (A uniform attendance policy as specified below shall be followed)

- **At least 75% attendance in each course is mandatory.**
- **A maximum of 10% shall be allowed under On Duty (OD) category.**
- Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

**ACADEMIC DISHONESTY & PLAGIARISM**

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

The above policy against academic dishonesty shall be applicable for all the programmes.

**ADDITIONAL INFORMATION**

1. Institute norm shall be followed w.r.t dress code
2. Mobiles are strictly prohibited inside the class room
3. Programmable calculators are not permitted. Basic scientific calculators only shall be used


**FOR APPROVAL**



Dr. K. Baskar  
Course Faculty



Dr. G. Swaminathan  
CC-Chairperson



Dr. K. Baskar  
HOD

**Guidelines:**

- a) The number of assessments for a course shall range from 4 to 6.
- b) **Every course shall have a final assessment on the entire syllabus with at least 30% weightage.**
- c) **One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.**
- d) **The passing minimum shall be as per the regulations.**

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or class average/2 whichever is greater.		Peak/3 or class average/2 whichever is lower		40%

- e) **Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.**
- f) **Absolute grading policy shall be incorporated if the number of students per course is less than 10.**
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.