NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF CIVIL ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	M.TECH STRUCTURAL ENGINEERING		
Course Title	BRIDGE ENGINEERING		
Course Code	CE623	No. of Credits	3
Course Code of Pre-requisite subject(s)	NA		
Session	~~July~~ / January 2020	Section (if, applicable)	NA
Name of Faculty	DR. K. BASKAR	Department	CIVIL ENGINEERING
Official Email	kbaskar@nitt.edu	Telephone No.	2503161
Name of Course Coordinator(s) (if, applicable)	NA		
Official E-mail		Telephone No.	
Course Type (please tick appropriately)	[X] Elective course		

Syllabus (approved in Senate)

Components of Bridges – Classification – Importance of Bridges – Investigation for Bridges – Selection of Bridge site – Economical span – Location of piers and abutments – Subsoil exploration – Scour depth – Traffic projection – Choice of bridge type.

Specification of road bridges – width of carriageway – loads to be considered - dead load – IRC standard live load – Impact effect.

General design considerations — Slab Bridge – Design of T-beam bridge – Prestressed concrete bridge – continuous bridge – Arch Bridge – Box girder bridge decks.

Evaluation of sub structures – Pier and abutments caps – Design of pier – Abutments – Type of foundations.

Importance of Bearings – Bearings for slab bridges – Bearings for girder bridges – Electrometric bearing – Joints – Expansion joints. Construction and Maintenance of bridges – Lessons from bridge failures.

COURSE OBJECTIVES

1. To learn the components of bridges, classification of bridges, importance of bridges.
2. To understand the investigation for bridges, subsoil exploration, choice of bridge type.
3. To study the specification of road bridges, loads to be considered.
4. To familiarize students with various types of bridges such as slab-bridge, T-beam bridge, pre-stressed concrete bridge, continuous bridge, arch bridge, box girder bridge decks.
5. To get exposure to evaluation of sub structures, type of foundations, importance of bearings, lessons from bridge failures.

MAPPING OF COs with POs	
Course Outcomes: At the end of the course student will be able	**Programme Outcomes (PO)** (Enter Numbers only)
1. To be familiar with the components of bridges, classification of bridges, importance of bridges.	**1, 2, 3, 4, 5**
2. To understand the investigation for bridges, subsoil exploration, choice of bridge type.	**1, 2, 3, 4, 5**
3. To understand the specification of road bridges, loads to be considered.	**1, 2, 3, 4, 5**
4. To be familiar with various types of bridges such as slab-bridge, T-beam bridge, pre-stressed concrete bridge, continuous bridge, arch bridge, box girder bridge decks.	**1, 2, 3, 4, 5**
5. To get exposed to evaluation of sub structures, type of foundations, importance of bearings, lessons from bridge failures.	**1, 2, 3, 4, 5**

COURSE PLAN – PART II

COURSE OVERVIEW

Students get exposure to the introduction on components of bridges, classification of bridges, and importance of bridges. Students will understand the investigation for bridges, subsoil exploration, choice of bridge type. Students must study the specification of road bridges, loads to be considered. Students will know about familiarize students with various types of bridges such as slab-bridge, T beam bridge, pre-stressed concrete bridge, continuous bridge, arch bridge, box girder bridge decks. Students will know about evaluation of sub structures, type of foundations, importance of bearings, lessons from bridge failures.

COURSE TEACHING AND LEARNING ACTIVITIES (Add more rows)

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	8	Components of Bridges – Classification – Importance of Bridges – Investigation for Bridges – Selection of Bridge site – Economical span – Location of piers and abutments – Subsoil exploration – Scour depth – Traffic projection – Choice of bridge type.	Chalk and Board, PPT
2	8	Specification of road bridges – width of carriageway – loads to be considered - dead load – IRC standard live load – Impact effect.	Chalk and Board, PPT
3	8	General design considerations — Slab Bridge – Design of T-beam bridge – Prestressed concrete bridge – continuous bridge – Arch Bridge – Box girder bridge decks.	Chalk and Board, PPT

4	8	Evaluation of sub structures – Pier and abutments caps – Design of pier – Abutments – Type of foundations.	Chalk and Board, PPT
5	8	Importance of Bearings – Bearings for slab bridges – Bearings for girder bridges – Electrometric bearing – Joints – Expansion joints. Construction and Maintenance of bridges – Lessons from bridge failures.	Chalk and Board, PPT

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment-1	7th week	1 hour	20
2	Assessment-2	13th week	1 hour	20
3	Assignement	3rd,5th,7th,9th week		20
CPA	Compensation Assessment*	14th week	1 hour	20
6	Final Assessment *	As per	3 hours	40

***mandatory; refer to guidelines on page 4**

COURSE EXIT SURVEY
course feedback will be collected from students and will be evaluated to re-design the course.

COURSE POLICY (including compensation assessment to be specified)

1. Assessment-1, Assessment-2 and all assignments are compulsory.
2. Only for genuine cases (with prior information and approval) Compensation Assessment will be conducted.
3. At least 30% mark shall be taken in end assessment to get pass
4. Overall, 40% mark shall be taken by the student to get pass in subject

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, IF ANY

FOR APPROVAL

Course Faculty _____ CC- Chairperson _____ HOD _____

Dr. K. Baskar Dr. R. Gandhimathi Dr. G. Swaminathan