



**TEERTHANKER
MAHAVEER UNIVERSITY**
Accredited with NAAC A Grade
12-B Status from UGC

FACULTY OF ENGINEERING
(AICTE Approved & Established under Govt of U.P. Act No.30, 2008)
CIVIL ENGINEERING DEPARTMENT

**DEPARTMENT OF CIVIL ENGINEERING
BOARD OF STUDIES MEETING**

MINUTES OF THE MEETING OF BoS OF CIVIL ENGINEERING DEPARTMENT HELD ON JULY 14, 2023 AT 10:30HRS

VENUE: OFFICE OF THE HEAD OF THE DEPARTMENT

Agenda Points:

1. Presentation and discussion on revision in the syllabus/curriculum of Bachelor of Technology (Civil Engineering) and Diploma in Civil Engineering for the session 2023-24
2. Presentation and discussion on Short Term Training Programme (STTP) for 2023-24

Level of the program: UG and Diploma

Name of the programme: Bachelor of Technology (Civil Engineering) and Diploma in Civil Engineering

The BoS meeting of Civil Engineering Department was held on July 14, 2023 and the following members were present in the meeting:

S. No.	External Expert/Chairperson/Faculty	Designation
1	Prof. S.S. Gupta	Professor/External Expert
2	Mr. A.K. Pipersenia	Head of the Department/ Chairperson
3	Dr. Vipin Kumar	Associate Professor/Member nominated by Director
4	Prof. R.K. Jain	Professor & Member
5	Dr. Ashish Simalti	Assistant Professor/Member
6	Mr. Siddharth Mathur	Assistant Professor/Member
7	Mr. Ankit Varshney	Assistant Professor/Member
8	Mr. Amit Kumar	Assistant Professor/Member
9	Ms. Nikita Jain	Assistant Professor/Member
10	Ms. Nisha Sahal	Assistant Professor/Member



The chairperson welcomed the members for the meeting of BoS and the following points were discussed:

Agenda 1: Presentation and discussion on revision in the syllabus/curriculum of Bachelor of Technology (Civil Engineering) and Diploma in Civil Engineering for the session 2023-24

1. The syllabus of B.Tech (Civil Engineering) was presented. Some minor modifications in the curriculum of B.Tech (Civil Engineering) has been discussed and ratified. These changes are less than 20 %. The details of the changes are made in the following courses:

S.No.	Name & Code of the Courses	Deletion	Addition	Other Changes (Minor Changes)
1	ECE362 Building Planning and Drawing using CAD (Lab)		New AutoCAD commands were added session wise	
2	ECE412 Mechanics of Solids	Deflection of Beams	Columns and Struts	Course Outcomes modified
3	ECE613 Structural Analysis-II			Credit changed from 3 to 4 with addition of a Tutorial
4	ECE711 Advanced Computer Aided Design (CAD)			This course has been shifted to Programme Elective II from the mandatory core course.
5	ECE719 Earthquake Resistant Structures			This course has been shifted to the mandatory core course from Programme Elective II
6	1. ECE731 Principle of Management 2. ECE732 Industrial Sociology 3. ECE733 Engineering and Managerial Economics 4. ECE734 Solid and Hazardous Waste Management 5. ECE735 Disaster Management			These are courses under Programme Elective III (Management). Their total credits reduced from 4 to 3.

(Annexure-01)



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CIVIL ENGINEERING DEPARTMENT

2. The syllabus of Diploma in Civil Engineering was presented and discussed. The following modifications were suggested and ratified:

S. No	Name & code of the courses added	Name & code of the courses deleted	Name & code of the courses where revision is more than 20%	Name of the stakeholder from where the inputs have been received	Need/rationale to justify the revision
5	Civil Engineering Drawing-I (DCE558),	Civil Engineering Drawing-I (DCE557),	Civil Engineering Drawing-I (DCE557)-This Course is recoded as Civil Engineering Drawing- I (DCE558)	Students Faculty Alumina Professional Employers	1. Need to upgrade as per Industry demand and requirement. 2. Skill Upgradation as per the new market requirement.
2	Transportation Engineering-I (DCE 511)	Transportation Engineering-I (DCE 501)	Transportation Engineering-I (DCE 501). This Course is recoded as (DCE 511)		
3	Transportation Engineering-II (DCE 607)	Transportation Engineering-II (DCE 603)	Transportation Engineering-II (DCE 603). This Course is recoded as (DCE 607)		

Minor changes:

S.No.	Name & Code of the Courses	Deletion	Addition	Other Changes (Minor Changes)
1	DME301 Strength of Materials			Rearrangement of topics

(Annexure-02)



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Agenda 2: Presentation and discussion on Short Term Training Programme (STTP) for 2023-24

Civil Engineering Department is going to start a new Short Term Training Programme (STTP) from July 17, 2023. The topic of the STTP is "Ultra High-Performance Concrete". The schedule and the session plan were presented and discussed. After discussion the programme has been ratified.

(Annexure-03)

The meeting ended with a note of thanks.



Faculty of Engineering
Attendance Sheet for BoS

Date: 14-07-2023

Department of Civil Engineering
Attendance Sheet

S. No.	External Expert/Chairperson/Faculty	Designation	Signature
1	Prof. S.S. Gupta	Professor/External Expert	
2	Mr.A.K. Pipersenia	Head of the Department/ Chairman	
3	Dr. Vipin Kumar	Associate Professor/Member nominated by Director	
4	Prof. R.K. Jain	Professor & Member	
5	Dr. Ashish Simalti	Assistant Professor/Member	
6	Mr. Siddharth Mathur	Assistant Professor/Member	
7	Mr. Ankit Varshney	Assistant Professor/Member	
8	Mr. Amit Kumar	Assistant Professor/Member	
9	Ms. Nikita Jain	Assistant Professor/Member	
10	Ms. Nisha Sahal	Assistant Professor/Member	



Faculty of Engineering

Teerthanker Mahaveer University

Moradabad, Uttar Pradesh

Civil Engineering Department organizes

Short Term Training Programme

On "Ultra High Performance Concrete"

During July 17 to 1 August, 2022

Title: Short Term Training Program (STTP) on Ultra High Performance of Concrete.

Course Description: The Short Term Training Program on Ultra High Performance of Concrete is designed to provide participants with comprehensive knowledge and practical skills in the field of ultra-high performance concrete. The program aims to enhance the understanding of participants in areas such as material composition, mix design, testing procedures, construction techniques, and applications of ultra-high performance concrete.

Ultra High Performance Concrete (UHPC) in Trend: Ultra High Performance Concrete has gained significant popularity in recent years due to its exceptional mechanical properties, durability, and aesthetic potential. The use of UHPC offers numerous advantages in various construction applications, including high-rise buildings, bridges, precast elements, and infrastructure projects. Its unique combination of high strength, enhanced durability, and improved workability allows for innovative designs, reduced material consumption, and extended service life. As sustainable and resilient construction practices continue to gain importance, UHPC has emerged as a cutting-edge material with immense potential in the construction industry.

The Short-Term Training Program on Ultra High Performance of Concrete is designed to provide participants with comprehensive knowledge and practical skills in the field of ultra-high-performance concrete. The program aims to enhance the understanding of participants in areas such as material composition, mix design, testing procedures, construction techniques, and applications of ultra-high-performance concrete. The program is valid for both online and offline modes, allowing participants to choose the mode that suits their convenience.

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Schedule:**Duration: 17/07/2023 to 09/08/2023 (excluding Sundays)**

Date	Time	Session	Guest Lecturer/Faculty Member
17/07/2023	09:00-10:30	Introduction to UHPC	Dr R.K Jain
	10:45-12:30	Material Selection and Properties	Dr R.K Jain
18/07/2023	09:00-11:45	Mix Design and Proportioning	Mr Amit Kumar
	11:45-12:30	Reinforcement in UHPC	Mr Arun Kumar Pipersenia
19/07/2023	09:00-10:30	Testing and Quality Control	Mr Arun Kumar Pipersenia
	10:45-12:30	UHPC in Structural Applications	Mr Amit Kumar
20/07/2023	09:00-10:30	Case Studies and Best Practices	Mr Ashish Simalti
	10:45-12:30	Open Discussion and Q&A	Mr Ashish Simalti
21/07/2023	09:00-12:30	Practical Demonstration	Mr Ashish Simalti
24/07/2023	09:00-10:30	UHPC Manufacturing Techniques	Ms Nisha Sahal
	10:45-12:30	Advanced UHPC Applications	Ms Nisha Sahal
25/07/2023	09:00-10:30	UHPC in Precast Concrete	Mr Ankit Varshney
	10:45-12:30	UHPC in Infrastructure Projects	Mr Ankit Varshney
26/07/2023	09:00-10:30	UHPC in Sustainable Construction	Ms Nikita Jain
	10:45-12:30	UHPC in Architectural Design	Ms Nikita Jain



27/07/2023	09:00-10:30	UHPC In Repair and Rehabilitation	Ms Nikita Garg
	10:45-12:30	UHPC in Seismic Applications	Mr Arun Kumar Pipersania
28/07/2023	09:00-12:30	Practical Workshop	Mr Amit Kumar
31/07/2023	09:00-10:30	UHPC in Bridge Construction	Dr R.K JAIN
	10:45-12:30	UHPC in High-Rise Buildings	Ms Nisha Sahal
01/08/2023	09:00-10:30	UHPC in Marine Structures	Mr Ankit varshney

Fee required -Rs 1000/ 57 hour course/Student

Rs 2000/ 57 hour course/Person (Industry)

- UPI ID - amikmr514@okicici

BHIM UPI id - 7018823238@upi

Registration link - https://docs.google.com/forms/d/1gUj1u4QK5dOaT0rs_2vnc_8.../edit?usp=sharing
<https://forms.gle/1xn4jk7631LXD3PzThzw/viewform?usp=sharing>

Committee Member

Mr Arun Kumar Pipersania (HOD)

Dr R.K Jain (Coordinator)

Mr. Amit Kumar (Co-Coordinator)

Mr Ankit Varshney (Member)



Study & Evaluation Scheme

ANNETURE-D1

Semester 1

S. No	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	BSC-1	EAS116	Engineering Mathematics-I	3	1	-	4	40	60	100
2	BSC-2	EAS112/212	Engineering Physics	3	1	-	4	40	60	100
		EAS113/213	Engineering Chemistry							
3	PSC-1	EEE117/217	Basic Electrical Engineering	3	1	-	4	40	60	100
		EEC111/211	Basic Electronics Engineering							
4	AECC-1	TMU101	Environmental Studies	2	1	-	3	40	60	100
5	AECC-2	TGE103	English Communication- I	1	-	2	2	40	60	100
6	LC-1	EAS162/262	Engineering Physics (Lab)	-	-	2	1	50	50	100
		EAS163/263	Engineering Chemistry (Lab)							
7	LC-2	EEE161/261	Basic Electrical Engineering (Lab)	-	-	2	1	50	50	100
		EEC161/261	Basic Electronics Engineering (Lab)							
8	LC-3	EME161/261	Engineering Drawing (Lab)	-	-	4	2	50	50	100
		EME162/262	Workshop Practice (Lab)							
9	DGP-1	EGP111	Discipline & General Proficiency	-	-	-	-	100	-	100
Total				12	4	10	23	450	450	900

Signature

Semester II

S. No	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	BSC-3	EAS211	Engineering Mathematics-II	3	1	-	4	40	60	100
2	BSC-4	EAS212/112	Engineering Physics	3	1	-	4	40	60	100
		EAS213/113	Engineering Chemistry							
3	ESC-2	EEE217/117	Basic Electrical Engineering	3	1	-	4	40	60	100
		EEEC211/111	Basic Electronics Engineering							
4	ESC-3	ECS212	Computer System & Programming in C++	3	-	-	3	40	60	100
5	AECC-3	TGE203	English Communication- II	1	-	2	2	40	60	100
6	LC-4	EAS262/162	Engineering Physics (Lab)	-	-	2	1	50	50	100
		EAS263/163	Engineering Chemistry (Lab)							
7	LC-5	EEE261/161	Basic Electrical Engineering (Lab)	-	-	2	1	50	50	100
		EEEC261/161	Basic Electronics Engineering (Lab)							
8	LC-6	ECS262	Computer System & Programming in C++ (Lab)	-	-	2	1	50	50	100
9	LC-7	EME261/161	Engineering Drawing (Lab)	-	-	4	2	50	50	100
		EME262/162	Workshop Practice (Lab)							
10	DGP-2	EGP211	Discipline & General Proficiency	-	-	-	-	100	-	100
Total				13	3	12	22	500	500	1000

B.Tech. (Civil Engineering)-Semester III

S. No	Category	Course Code	Course	Periods			Evaluation Scheme			
				L	T	P	Credit	Internal	External	Total
1	PCC-1	ECE311	Fluid Mechanics	3	1	-	4	40	60	100
2	PCC-2	ECE312	Surveying	3	1	-	4	40	60	100
3	PCC-3	ECE313	Building Materials & Construction	3	-	-	3	40	60	100
4	PCC-4	ECE314	Concrete Technology	3	1	-	4	40	60	100
5	ESC-4	EME311	Engineering Mechanics	3	1	-	4	40	60	100
6	LC-8	ECE360	Surveying (Lab)	-	-	2	1	50	50	100
7	LC-9	ECE361	Fluid Mechanics (Lab)	-	-	2	1	50	50	100
8	LC-10	ECE362	Building Planning and Drawing using CAD (Lab)	-	-	2	1	50	50	100
9	LC-11	ECE363	Materials Testing (Lab)	-	-	2	1	50	50	100
10	SEC-1	TGC307	Foundation in Quantitative Aptitude	-	-	2	1	50	50	100
11	DGP-3	EGP311	Discipline & General Proficiency	-	-	-	-	100	-	100
Total				15	4	10	24	550	550	1100

Following additional Course for Lateral Entry Students with B.Sc. background to be taken in III semester and all should pass with minimum of 45% marks for obtaining the degree: credits will not be added

1	LC	EME161/261	Engineering Drawing (Lab)	-	-	4	-	50	50	100
2		TMU101	Environmental Studies	2	1	-	-	40	60	100

Signature

B.Tech. (Civil Engineering)-Semester IV

S. No	Category	Course Code	Course	Periods			Evaluation Scheme			
				L	T	P	Credit	Internal	External	Total
1	PCC-5	ECE411	Geoinformatics	3	1	-	4	40	60	100
2	PCC-6	ECE412	Mechanics of Solids	3	1	-	4	40	60	100
3	PCC-7	ECE413	Engineering Geology & Soil Mechanics	3	1	-	4	40	60	100
4	PCC-8	ECE414	Transportation Engineering	3	-	-	3	40	60	100
5	LC-12	ECE461	Geoinformatics (Lab)	-	-	2	1	50	50	100
6	LC-13	ECE462	Mechanics of Solids (Lab)	-	-	2	1	50	50	100
7	LC-14	ECE463	Engineering Geology & Soil Mechanics (Lab)	-	-	2	1	50	50	100
8	LC-15	ECE464	Transportation Engineering (Lab)	-	-	2	1	50	50	100
9	SEC-2	TGC407	Analytical Reasoning	-	-	2	1	50	50	100
10	DGP-4	EGP411	Discipline & General Proficiency	-	-	-	-	100	-	100
Total				12	3	10	20	510	490	1000

*Skill based Training/Internship of 4 weeks duration from a reputed Industry/organization after completion of 4th semester end-semester examination.

Following additional Courses for Lateral Entry Students with B.Sc. background to be taken in IV semester and all should pass with minimum of 45% marks for obtaining the degree: credits will not be added

1	LC	EME162/262	Workshop Practice (Lab)	-	-	4	-	50	50	100
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B.Tech. (Civil Engineering)-Semester V

S. No	Category	Course Code	Course	Periods			Evaluation Scheme			
				L	T	P	Credit	Internal	External	Total
1	PCC-9	ECE511	Steel Structure-I	3	1	-	4	40	60	100
2	PCC-10	ECE512	Geotechnical Engineering	3	-	-	3	40	60	100
3	PCC-11	ECE513	Structural Analysis-I	3	1	-	4	40	60	100
4	PCC-12	ECE514	RCC Structure-I	3	1	-	4	40	60	100
5	PCC-13	ECE515	Hydrology & Irrigation Engineering	3	-	-	3	40	60	100
6	LC-16	ECE562	Geotechnical Engineering (Lab)	-	-	2	1	50	50	100
7	LC-17	ECE563	Structural Analysis-I (Lab)	-	-	2	1	50	50	100
8	AECC-4	ECE564	Survey Camp	-	-	-	1	50	50	100
9	PROJ-1	ECE592	Skill based Practical Training & Presentation	-	-	-	2	50	50	100
10	SEC-3	TGC507	Modern Algebra and Data Management	-	-	2	1	50	50	100
11	SEC-4	TGC502	Self-Management for Engineers	-	-	2	1	50	50	100
12	DGP-5	EGP511	Discipline & General Proficiency	-	-	-	-	100	-	100
Total				15	3	8	25	600	600	1200

MOOC Course:

1	MOOC-1	MOOC01	MOOC Program -I (Optional)	-	-	-	2	-	100	100
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B.Tech. (Civil Engineering)-Semester VI

S. No	Category	Course Code	Course	Periods			Evaluation Scheme			
				L	T	P	Credit	Internal	External	Total
1	PCC-14	ECE611	Steel Structure-II	3	1	-	4	40	60	100
2	PCC-15	ECE612	Public Health & Environmental Engineering	3	-	-	3	40	60	100
3	PCC-16	ECE613	Structural Analysis-II	3	1	-	4	40	60	100
4	PCC-17	ECE614	Estimation & Costing	2	1	-	3	40	60	100
5	PCC-18	ECE615	RCC Structure-II	3	1	-	4	40	60	100
6	AECC-5	EHM613	Human values & Professional Ethics	3	-	-	3	40	60	100
7	LC-18	ECE661	Public Health & Environmental Engineering (Lab)	-	-	2	1	50	50	100
8	LC-19	ECE662	Estimation & Costing (Lab)	-	-	2	1	50	50	100
9	SEC-5	TGC607	Advance Algebra and Geometry	-	-	2	1	50	50	100
10	SEC-6	TGC602	Workplace Management for Engineers	-	-	2	1	50	50	100
11	DGP-6	EGP611	Discipline & General Proficiency	-	-	-	-	100	-	100
Total				17	4	8	25	540	560	1100

MOOC Course:

1	MOOC-2	MOOC02	MOOC Program-II (Optional)	-	-	-	2	-	100	100
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B.Tech. (Civil Engineering)-Semester VII

S. No.	Category	Course Code	Course	Periods			Evaluation Scheme			
				L	T	P	Credit	Internal	External	Total
1	PCC-19	ECE719	Earthquake Resistant Structures	3	-	-	3	40	60	100
2	PEC-1		Program Elective	3	-	-	3	40	60	100
3	PEC-2			3	-	-	3	40	60	100
4	PEC-3			3	0	-	3	40	60	100
5	OEC-1		Open Elective	3	-	-	3	40/50	60/50	100
6	LC-20	ECE761	Analysis & Design (Lab)	-	-	2	1	50	50	100
7	PROJ-2	ECE792	Industrial Training & Presentation	-	-	-	2	50	50	100
8	PROJ-3	ECE798	Project Work Phase-I	1	-	8	5	100	-	100
9	DGP-7	EGP711	Discipline & General Proficiency	-	-	-	-	100	-	100
			Total	16	0	10	23	500/510	400/390	910

MOOC Course:

1	MOOC-3	MOOC03	MOOC Program -III (Optional)	-	-	-	2	-	100	100
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B.Tech. (Civil Engineering)-Semester VIII

S. No	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	PCC-20	ECE811	Project Planning & Control	3	-	-	3	40	60	100
2	PCC-21	ECE812	Design of Hydraulic Structures	3	-	-	3	40	60	100
3	PEC-4		Program Elective-IV	3	-	-	3	40	60	100
4	PEC-5		Program Elective-V	3	1	-	4	40	60	100
5	OEC-2		Open Elective-II	3	-	-	3	40/50	60/50	100
6	PROJ-4	ECE898	Project Work Phase-II	1	-	4	3	50	50	100
7	DGP-8	EGP811	Discipline & General Proficiency	-	-	-	-	100	-	100
Total				16	1	4	19	350/360	350/340	700

MOOC Course:

1	MOOC-4	MOOC04	MOOC Program -IV (Optional)	-	-	-	2	-	100	100
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ATIVE COURSES OFFERED

S. No	Code	Course	L	T	P	Credit
Semester VII- Program Elective I- (Remote Sensing and Transportation Engineering) -Any one						
1	ECE712	Introduction to Remote Sensing	3	0	0	3
2	ECE713	Pavement Design	3	0	0	3
3	ECE715	Transportation Systems and Planning	3	0	0	3
4	ECE717	Introduction to GIS	3	0	0	3
5	ECE718	Railway and Airport Engineering	3	0	0	3
Semester VII- Program Elective II- (Structural Engineering)- Any one						
6	ECE720	Advanced Concrete Design	3	0	0	3
7	ECE721	Pre-stressed Concrete	3	0	0	3
8	ECE711	Advanced Computer Aided Design (CAD)	3	0	0	3
9	ECE722	Finite Element Method				
10	ECE723	Building Maintenance & Repair	3	0	0	3
11	ECE724	Groundwater Management	3	0	0	3
Semester VII- Program Elective III-(Management) -Any one						
12	ECE731	Principle of Management	3	0	0	3
13	ECE732	Industrial Sociology	3	0	0	3
14	ECE733	Engineering and Managerial Economics	3	0	0	3
15	ECE734	Solid and Hazardous Waste Management	3	0	0	3
16	ECE735	Disaster Management	3	0	0	3
Semester VIII- Program Elective IV- (Environmental and Geotechnical Engineering) -Any one						
17	ECE813	Rock Mechanics	3	0	0	3
18	ECE815	Bridge Engineering	3	0	0	3
19	ECE816	Environmental Impact Assessment and Management	3	0	0	3
20	ECE817	Plastic Analysis of Steel Structures	3	0	0	3
21	ECE818	Advanced Foundation Design	3	0	0	3
Semester VIII- Program Elective V-(Any one)						
22	ECE831	Machine learning & Data Analytics	3	1	0	4
23	ECE832	Total Quality Management	3	1	0	4
24	ECE833	Entrepreneurship	3	1	0	4
25	ECE834	Marine Structures & Airport Engineering	3	1	0	4

Course Code: ECE362	B.Tech. (Civil)- Semester-III Building Planning and Drawing using CAD (Lab)	L-0 T-0 P-2 C-1
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Preparing the SITE-PLAN of a purposed residential building.	
CO2.	Preparing the ELEVATION & SECTION of the given model by using Autodesk Revit Architecture.	
CO3.	Creating a PLAN of a given 2B.H.K (Bedroom, Hall & Kitchen) model.	
CO4.	Creating of an ELEVATION & SECTION of the given 2 B.H.K (Bedroom, Hall & Kitchen) plan.	
CO5.	Creating the 2D & 3D model of the given 2B.H.K (Bedroom, Hall & Kitchen) plan.	

AutoCAD 2D Total Duration: 28 Hours	
Session	Topics
Session 1	Introduction to Engineering Drawings
	Views (Orthographic, Isometric & Perspective)
	Introduction to AutoCAD
	History, Exploring GUI
	Workspaces
	Co-ordinate systems
	File Management
	New, Open, Open, Save, Save as, Close, Exit
	Drawing settings
	Units, Limits
	Drafting settings
Session 2	Ortho, Polar, Grid, Snap, Polar Tracking, Object snap, DynamicInputs, Quick Properties, Selection Cycling
	Drawing Tools
Session 3	Line, Circle, Arc, Ellipse, Donut
	Polygon, Rectangle, Point, Multiline, Spline, Xline, Ray, Wipeout, Revision cloud
Session 4	Modify Tools
	Erase, Oops, Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet, Divide, Measure, Point Style, offset
Session 5	Display Control
	Zoom, Pan, Redraw, Regen, Clean Screen, Steering wheels
	Object Properties
Session 6	Color, Line type, Ltscale, Line weight, Match Properties, Transparency, List
	Layer Management
	Layer Properties Manager
Session 6	Layers and Layer Properties

	New Property Filter
	Clipboard Copy, Copybase, Copylink, Pasteclip, Pastespecial, Pasteblock, Paste original Mstyle, Mledit, Pedit, Splinedit, Edit Array, Grip Editing
Session 7	Annotation Tools Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Jogged radius, Ordinate dimensions, CentreMark, Centerline Dimension Style, Dimension Edit
Session 8	Annotation Tools Leader, Qleader, Mleader, Mleader style, Add leader, Alignleaderlines, Collect Leader
Session 9	Annotation Tools Text, Style, Mtext, Scale text, Spell, Table, Table style, Tabledit Hatching Objects Hatch, Gradient, Hatchedit
Session 10	Object Selection Methods Select, Qselect, Filter Block, Wblock, Insert Attribute (Attdef, Attedit, Eattedit, Attidisp, Attidia, Atttext, Eatttext)
Session 11	Parametric Modeling Geometric Constraint, Dimensional Constraint, Design Centre, ToolPalette
Session 12	Isometric View Drawings
Session 13	Hyperlink, Data Link, Group Etransmit, Publish, Publish to Web Introduction to plotting, Layout, Viewports, Mview, Page setup, Plot Styles, Plot External references - Xref, Xbind

Experiments:	Note: All experiments should be performed:
Experiment-1:	To create a PLAN of a given 2B.H.K (Bedroom, Hall & Kitchen) model.
Experiment-2:	To create an ELEVATION & SECTION of the given 2 B.H.K (Bedroom, Hall & Kitchen) plan.
Experiment-3:	To create the TOP & SIDE view of the given dining table.
Experiment-4:	To create the ONE-POINT Perspective View of the given modular kitchen.
Experiment-5:	To create the ELEVATION of a building by TWO-POINT Perspective View.
Experiment-6:	To prepare the SITE-PLAN of a purposed residential building.
Experiment-7:	To create a 2D plan of 2B.H.K (Bedroom, Hall & Kitchen) with complete interior i.e. - table, chair, bed, sofa...etc
Experiment-8:	To create the 3D model of the given 2B.H.K (Bedroom, Hall & Kitchen) plan.
Experiment-9:	To create the 3D model of 2B.H.K (Bedroom, Hall & Kitchen) plan on Autodesk Revit Architecture.

Experiment-10:	To prepare the ELEVATION & SECTION of the given model by using Autodesk Revit Architecture.	
Reference Books:	1. "Auto CAD", Auto Desk, Reference Guide, CADD CENTRE. 2. "Revit Architecture", Auto Desk, Reference Guide, CADD CENTRE. * Latest editions of all the suggested books are recommended.	

Evaluation Scheme of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 4-point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (35 MARKS)				ON THE DAY OF EXAM (15 MARKS)		TOTAL INTERNAL (50 MARKS)
EXPERIMENT (5 MARKS)	FILE WORK (10 MARKS)	VIVA (10 MARKS)	ATTENDANCE (10 MARKS)	EXPERIMENT (5 MARKS)	VIVA (10 MARKS)	

External Evaluation (50 marks)

The external evaluation would also be done by the external Examiner based on the experiment conducted during the examination.

EXPERIMENT (20 MARKS)	FILE WORK (10 MARKS)	VIVA (20 MARKS)	TOTAL EXTERNAL (50 MARKS)
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Signature

Course Code: 611	B.Tech. (Civil)- Semester-IV Mechanics of Solids	L-3 T-1 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	<i>Understanding the behaviour of materials under different stress and strain conditions.</i>	
CO2.	Understanding the concept of Hoop and Longitudinal stresses.	
CO3.	Applying bending moment, Shear force, bending stress and Shear stress distribution diagrams for beams.	
CO4.	<i>Analyzing the beams and columns for different loading conditions.</i>	
CO5.	<i>Evaluating the thin walled cylinders subjected to internal pressures.</i>	
Course Content:		
Unit-1:	Simple Stresses and Strains Definitions; Elastic, plastic and rigid materials; Stress, strain- Tensile and compressive stresses; Shear stresses; Elastic Limit- Hooke's Law-Stress-Strain curve for mild steel- Yield point- Modulus of Elasticity-Modular ratio; Modulus of rigidity; Bars of varying sections; Lateral Strain; Poisson ratio; volumetric strain; Bulk modulus; Relation between the elastic constants.	8 Hours
Unit-2:	Shear Force, Bending Moment and Axial force Conception of shear Force and Bending Moment- Sign conventions- Sagging and hogging moments- shear force and bending moment diagrams for simply supported beams and overhanging beams. Beams subjected to various types of loading- point load, distribution loads, couples, Maximum bending moment for a beam, point of contra flexure.	8 Hours
Unit-3:	Stresses in Beams Definitions- Pure or Simple bending- Theory of simple bending- Neutral axis- Bending stress- Bending stress distribution- Moment of resistance, Derivation of Bending Equation- Assumption in the theory of bending- section Modulus, Section modulus for different shapes of beam sections- Rectangular, Circular, L and T section; Shear stress distribution for a beam section for Rectangular.	8 Hours
Unit-4:	Principal stresses and strains- Determination of normal stress, tangential stress, Principal stresses, Principal planes and obliquity by analytical method. Direct and Bending stresses Introduction-Stress distribution for an eccentrically loaded rectangular and circular section; the middle third rule; Core or Kern of a section.	8 Hours
Unit-5:	<i>Columns and Struts: Types of columns, Euler's method, Factor of safety, Buckling of columns for different end conditions.</i> Thin cylinders & spheres: Introduction, difference between thin walled and thick-walled pressure vessels. Thin walled cylinders, hoop and longitudinal stresses and strains, volumetric strain.	8 Hours
Text Books:	1. S. Ramamrutham & Narain "Strength of Materials", Dhanpat Rai Publishing Company.	
Reference Books:	1. Timoshenko S, D. H. Young, "Elements of Strength of Materials", East West Press. 2. Kazami S.M.A., "Mechanics of Solids", McGraw Hill Education. 3. Rajput R.K., "Strength of Materials: Mechanics of Solids", S. Chand Limited. *Latest editions of all the suggested books are recommended.	
Electronic reference material:	1. https://www.youtube.com/watch?v=pQ16tJSt1FQE 2. https://www.youtube.com/watch?v=DRM1n51-kY 3. https://www.youtube.com/watch?v=408Y39UIC-o 4. https://www.youtube.com/watch?v=T5CVUvK1.8D0 5. https://www.youtube.com/watch?v=hYG0s7skoS0 6. https://www.youtube.com/watch?v=x3pVE3pkbAA	

Course Code: ECE613	B.Tech.- Semester-VI Structural Analysis-II	L-3 T-1 P-0 C-4
Course Outcomes:	On completion of the course, the students will be :	
CO1.	Remembering analysis of indeterminate structure.	
CO2.	Understanding behaviour of arches and cables.	
CO3.	Applying internal forces and reactions in determinate and indeterminate structures subjected to moving loads.	
CO4.	Analyzing Indeterminate structures.	
CO5.	Evaluating moments and forces on two hinged three hinged circular and parabolic arches.	
Course Content:		
Unit-1:	Slope Deflection Method- Continuous beams and rigid frames (with and without sway), Symmetry and anti-symmetry - Simplification for hinged end - Support displacements.	8 Hours
Unit-2:	Moment Distribution Method: Distribution and carry-over of moments, Stiffness and carry over factors - Analysis of continuous beams with sinking of supports, single-story Portal frames with and without sway.	8 Hours
Unit-3:	Arches: Introduction to Arches; Types of arches; Analysis of Arches- three hinged, two hinged, parabolic and circular arches; Settlement and temperature effects on three hinged and two hinged arches.	8 Hours
Unit-4:	ILD for statically indeterminate beams: Muller Breslau's principle, steps for obtaining ILD for reaction and internal forces in propped cantilever and continuous beams, ILD for three hinged and two hinged arches.	8 Hours
Unit-5:	Suspension Bridges: Analysis of cables with concentrated and continuous loadings, Basics of two and three hinged stiffening girders, Influence line diagrams for maximum bending moment and shear force for stiffening girders.	8 Hours
Text Books:	1. Ramamrutham, S., "Theory of Structures", Dhampat Rai Publishing Company Pvt. Ltd. 2. C. S. Reddy "Structural Analysis", Tata Mc Graw Hill Publishing Company Limited, New Delhi.	
Reference Books:	1. Timoshenko, S. P. and D. Young, "Theory of Structures", Tata Mc- Graw Hill Book Publishing Company Ltd., New Delhi. 2. Dayaratnam, P. "Analysis of Statically Indeterminate Structures", Affiliated East-West Press. 3. Hibbeler, R. C., "Structural Analysis", Pearson Prentice Hall. 4. Gere & Weaver, "Matrix Analysis of Framed Structures", CBS Publications. 3. Jain, A. K., "Advanced Structural Analysis", Nem Chand & Bros., Roorkee. 4. Jain, O. P. and B. K. Jain, "Theory and Analysis of Structures", Nem Chand & Bros., Roorkee.	



Diploma in Civil Engineering Curriculum

Diploma – Semester I

S. N	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	CC-1	DIP111	Applied Mathematics – I	4	0	0	4	40	60	100
2	CC-2	DIP112/ DIP113	Applied Physics/ Applied Chemistry	4	0	0	4	40	60	100
3	CC-3	DIP104/ DIP105	Basics of Electrical & Civil Engineering / Basics of Electronics & Mechanical Engineering	4	0	0	4	40	60	100
4	CC-4	DIP131/ DIP107	Computer Fundamentals, Internet & MS-Office/ Applied Mechanics	4	0	0	4	40	60	100
5	AECC-1	TGE103	English Communication-I	1	0	2	2	40	60	100
6	CC-5	DIP181/ DIP182	Physics Lab/Chemistry Lab	0	0	2	1	50	50	100
7	CC-6	DIP153/ DIP154	Electrical Engineering Lab / Electronics Engineering Lab	0	0	2	1	50	50	100
8	CC-7	DIP155/ DIP156	Information Technology Lab / Applied Mechanics Lab	0	0	2	1	50	50	100
9	CC-8	DIP187/ DIP188	Workshop Practice / Engineering Drawing	0	0	4	2	50	50	100
Total				17	0	12	23	400	500	900

Signature

Diploma in Civil Engineering Curriculum

Diploma – Semester II

S. N	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	CC-9	DIP201	Applied Mathematics – II	4	0	0	4	40	60	100
2	CC-10	DIP203/ DIP202	Applied Chemistry/ Applied Physics	4	0	0	4	40	60	100
3	CC-11	DIP205/ DIP204	Basics of Electronics & Mechanical Engineering / Basics of Electrical & Civil Engineering	4	0	0	4	40	60	100
4	CC-12	DIP207/ DIP231	Applied Mechanics / Computer Fundamentals, Internet & MS-Office	4	0	0	4	40	60	100
5	AECC-2	TGE20 4	English Communication-II	1	0	2	2	40	60	100
6	CC-13	DIP252/ DIP281	Chemistry Lab/ Physics Lab	0	0	2	1	50	50	100
7	CC-14	DIP254/ DIP253	Electronics Engineering Lab / Electrical Engineering Lab	0	0	2	1	50	50	100
8	CC-15	DIP256/ DIP255	Applied Mechanics Lab / Information Technology Lab	0	0	2	1	50	50	100
9	CC-16	DIP288/ DIP257	Engineering Drawing / Workshop Practice	0	0	4	2	50	50	100
Total				17	0	12	23	400	500	900



Diploma in Civil Engineering Curriculum

Diploma – Semester III

S. N	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	DSC-1	DCE301	Surveying – I	3	1	0	4	40	60	100
2	DSC-2	DCE303	Building Materials	3	1	0	4	40	60	100
3	CC -17	DME301	Strength of Materials	4	0	0	4	40	60	100
4	CC-18	DME302	Hydraulics	4	0	0	4	40	60	100
5	DSC-3	DCE351	Surveying Lab – I	0	0	4	2	50	50	100
6	DSC-4	DCE356	Building Materials Lab	0	0	2	1	50	50	100
7	CC-19	DCE357	Strength of Materials and Hydraulics Lab	0	0	4	2	50	50	100
8	SEC-1	DCE358	Minor Project	0	0	6	3	50	50	100
9	SEC-2	TDC301	Soft Skills for Technical Supervisors	0	0	2	1	50	50	100
10	SEC-3	TDC302	Elementary Arithmetic & Reasoning	0	0	2	1	50	50	100
11	SEC-4	DDGP301	Discipline & General Proficiency	0	0	0	0	100	0	100
Total				14	2	20	26	560	540	1100

*Additional course for Lateral entry students with 10+2/Intermediate background.

1	VAC-1	DIP359*	Concepts of Information System Lab	0	0	2	0	50	50	100
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Diploma in Civil Engineering Curriculum

Diploma – Semester IV

S. N	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	DSC-5	DCE401	Soil Mechanics & Foundation Engineering	3	1	0	4	40	60	100
2	DSC-6	DCE402	Public Health Engineering – I	3	1	0	4	40	60	100
3	DSC-7	DCE403	Concrete Technology	4	0	0	4	40	60	100
4	DSC -8	DCE404	Irrigation Engineering	3	1	0	4	40	60	100
5	AECC-3	DIP403/ DIP308	Environment Studies	4	0	0	4	40	60	100
6	DSC-9	DCE451	Soil Mechanics & Foundation Engineering Lab	0	0	4	2	50	50	100
7	DSC-10	DCE452	Public Health Engineering Lab	0	0	2	1	50	50	100
8	DSC-11	DCE453	Concrete Technology Lab	0	0	2	1	50	50	100
9	SEC-5	TDC401	Soft Skills for Workshop for Technical Supervisors	0	0	2	1	50	50	100
10	SEC-6	TDC402	Progressive Algebra & Data Management	0	0	2	1	50	50	100
11	SEC-7	DDGP401	Discipline & General Proficiency	0	0	0	0	100	0	100
Total				17	3	12	26	550	550	1100

* Students will go for Summer/Industrial Training for 6 to 8 weeks



Diploma in Civil Engineering Curriculum

Diploma- Semester V

S. N	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	DSC-12	DCE511	Transportation Engineering – I	3	1	0	4	40	60	100
2	DSC-13	DCE502	Surveying – II	3	1	0	4	40	60	100
3	DSC-14	DCE509	Construction Management	3	1	0	4	40	60	100
4	AECC-4	DIP505	Human Values and Professional Ethics	4	0	0	4	40	60	100
5	DSEC-1	-	Discipline Specific Elective Course – I	4	0	0	4	40	60	100
6	GEC-1	-	Generic Elective Course– I	3	0	0	3	40	60	100
7	DSC-15	DCE551	Transportation Engineering Lab	0	0	4	2	50	50	100
8	DSC-16	DCE552	Surveying Lab – II	0	0	4	2	50	50	100
9	DSC-17	DCE558	Civil Engineering Drawing – I	0	0	4	2	50	50	100
10	SEC-8	DCE555	Industrial Training (Evaluation)	0	0	0	8	50	50	100
11	SEC-9	DDGP501	Discipline & General Proficiency	0	0	0	0	100	0	100
Total				20	3	12	37	540	560	1100

Diploma in Civil Engineering Curriculum

Diploma- Semester VI

S. N	Category	Course Code	Course	Periods			Credit	Evaluation Scheme		
				L	T	P		Internal	External	Total
1	DSC-18	DCE608	Design of Reinforced Cement Concrete (RCC) Structure	3	1	0	4	40	60	100
2	DSC-19	DCE602	Design of Steel Structures	3	1	0	4	40	60	100
3	DSC-20	DCE605	Estimating, Costing and Valuation	3	1	0	4	40	60	100
4	AECC-5	DIP605	Entrepreneurship	4	0	0	4	40	60	100
5	DSEC-2	-	Discipline Specific Elective Course – II	4	0	0	4	40	60	100
6	GEC-2	-	Generic Elective Course– II	3	0	0	3	40	60	100
7	DSC-21	DCE654	Reinforced Cement Concrete (RCC)	0	0	2	1	50	50	100
8	DSC-22	DCE656	Civil Engineering Drawing -II	0	0	4	2	50	50	100
9	SEC-10	DCE657	Major Project	0	0	12	6	50	50	100
10	SEC-11	DDGP601	Discipline & General Proficiency	0	0	0	0	100	0	100
Total				20	3	18	32	490	510	1000

Diploma in Civil Engineering Curriculum

ELECTIVE COURSES OFFERED

Generic Elective Courses (GEC)

(Student can select any one Generic elective offered by university)

S. No	Code	Course	L	T	P	Credit
Semester V (Any one)						
1	DGEC501	Non-Conventional Energy Sources	3	0	0	3
2	DGEC502	Power Plant Engineering	3	0	0	3
Semester VI (Any one)						
1	DGEC601	Non-Conventional Energy Sources	3	0	0	3
2	DGEC602	Power Plant Engineering	3	0	0	3

Discipline Specific Elective Courses (DSEC)

S.No	Code	Course	L	T	P	Credit
Semester V (Any One)						
1	DCE505	Public Health Engineering – II	4	0	0	4
2	DCE508	Construction Accounts	4	0	0	4
3	DCE510	Building Construction	4	0	0	4
Semester VI (Any One)						
1	DCE604	Earthquake Engineering	4	0	0	4
2	DCE607	Transportation Engineering -II	4	0	0	4
3	DCE609	Disaster Management	4	0	0	4

Note :

L- Lecture	T- Tutorial	P- Practical	C- Credits
1 L = 1 Hour	1T = 1 Hour	1P = 1 Hour	1C = 1 Hour L or T 1C = 2 Hour P

Course Code: DME301	Diploma in Civil Engineering - Semester-III Strength of Materials	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be :	
CO1.	Understanding Moment of Inertia and concept of centroid for different section. Concept of SFD and BMD, Concept of column different end condition.	
CO2.	Analyzing SFD, BMD and bending strength of beams.	
CO3.	Applying the behavior of members of structure to avoid failure.	
CO4.	Analyzing & Applying the beams for slope and deflection.	
CO5.	Evaluating critical loads for beams and columns for different end conditions.	
Course Content:		
Unit-1:	<u>Moment of Inertia, Concept of centroid and second moment of area, Radius of gyration, Theorems of parallel and perpendicular axes, Second Moment of area for sections: rectangle, triangle, circle, Tee, I, Channel and compound sections.</u>	8 Hours
Unit-2:	Bending Moment and Shear Force: Concept of a beam and supports (Hinged, Roller and Fixed), Types of Beams: Simply supported, cantilever, fixed, overhang and continuous beams, Types of loads (distributed and point), Concept of Bending Moment & Shear Force, Sign conventions, Bending moment and shear force diagrams for cantilever and simply supported beams subjected to uniformly distributed and concentrated loads.	8 Hours
Unit-3:	Bending Stresses: Assumptions of theory of simple bending, Derivation of the equation, $M/I = F/Y = E/R$, Moment of resistance, section modulus and permissible bending stresses, bending stresses in rectangular sections.	8 Hours
Unit-4:	Slopes and Deflections of Beams: Definition of slope and deflection, sign convention, Circular bending, Calculation of maximum slope and deflection for the following standard cases. (1) Cantilever having point load at the free end, Cantilever with uniformly distributed load over the entire span. (2) Simply supported beam with point load at centre of the span. Simply supported beam with U.D. load over entire span. NOTE: All examples will be for constant moment of inertia <u>using direct formula</u> without derivation	8 Hours
Unit-5:	Columns & Struts: Definition of long column, short column and strut, slenderness ratio, equivalent length, critical load, collapse Load, End conditions of column. Application of Euler's formula (no derivation), simple numerical problems based on Euler's formulae.	8Hours
Text Books:	1, Rajput R. K., <i>Strength of Materials</i> , S.Chand & Co. Ltd., Delhi.	



**Reference
Books:**

1. Ramamarutham S., *Strength of Materials*, Dhanpat Rai & Sons, Delhi.
2. Kapoor J.K., *Strength of Materials*, Asian Publication, Muzaffarnagar
3. Punmia B.C., *Strength of Materials*, Laxmi Publication, Delhi.

* Latest editions of all the suggested books are recommended.

Course Code: DCE511	Diploma in Civil Engineering - Semester-V Transportation Engineering- I	L-3 T-1 P-0 C-4
Course Outcomes:	On completion of the course, the students will be :	
CO1.	Understanding historical development, classification and planning of roads in India.	
CO2.	Analyzing the various road construction materials & theory for geometric design of highways and expressways.	
CO3.	Applying the design of flexible and rigid pavements.	
CO4.	Evaluating the traffic volume	
CO5.	Creating various methods for minimizing the traffic congestion.	
Course Content:		
Unit-1:	Highways Introduction: (i) Importance of Highway transportation. (ii) Functions of IRC. (iii) IRC classification of roads. (iv) Organization of state highways department. Road Geometries: (i) Glossary of terms used in geometrics and their importance; Right of way, formation width, road margin, road shoulder, carriage way, side slopes, kerb, formation levels, camber and gradient Super elevation. (ii) Drawing of typical cross-sections in cutting and filling on straight. (iii) Underpass & over pass (flyovers and bridges). Highway Surveys and Plans: (i) Basic considerations governing alignment for a road in plain and hilly area. (ii) Highway location.	8 Hours
Unit-2:	Marking of alignment Road Materials: (i) Different types of road materials in use; soil, aggregates binders. (ii) Function of soil as Highway sub grade. (iii) C.B.R; Method of finding. CBR value and its significance. (iv) Aggregates: Availability of road aggregates in India, requirements of road aggregates as per IS specifications. (v) Binders: Common binders; cement, bitumen and Tar, properties as per IS specifications, penetration and viscosity test, procedures and significance, cut back and emulsion and their uses.	8 Hours
Unit-3:	Road Pavements; Types and Their Construction: (i) Road pavement: Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components. (ii) Sub-grade preparation - Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profiles of embankment, construction of embankment, compaction, stabilization, preparation of sub grade. Methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for sub grade preparation. (iii) Flexible pavements: sub base necessity and purpose. Stabilized sub base;	8 Hours



	purpose of stabilization. Types of Stabilization: (a) Mechanical stabilization. (b) Lime stabilization. (c) Cement stabilization. (d) Fly ash stabilization. (e) Granular sub base. (iv) Base course: (a) Brick soling. (b) Stone soling. (c) Medaling: water bound macadam and bituminous macadam, Methods of construction as per Ministry of Shipping and transport (Government of India). (v) Surfacing: Types of surfacing: (a) Surface dressing. (b) (i) Premix carpet. (ii) Semi dense carpet (S.D.C) (c) Asphalt concrete. (d) Grouting. Methods of constructions as per Ministry of Surface and Transport. Government of India, specifications and quality control; equipment used. (vi) Rigid pavements: Construction of concrete roads as per IRC specifications: Form laying, mixing and placing the concrete, compacting and finishing, curing, joints in concrete pavement, equipment used.	
Unit-4:	Traffic Engineering: (i) Traffic control devices - Signs, markings and signals, their effectiveness and location, installation of signs, IRC standards. (ii) Segregation of traffic. (iii) Types of intersections and how to choose them. (iv) Accidents: Types, causes and remedies.	8 Hours
Unit-5:	Road maintenance: (i) <u>Common types of road failures-their causes and remedies.</u> (ii) <u>Maintenance of bituminous roads such as patch work and resurfacing.</u> <u>Maintenance of concrete roads-filling cracks, repairing joints, maintenance of shoulders (berms).</u> <u>maintenance of traffic control devices.</u> Arboriculture: Names of trees used in arboriculture, distance of trees from centre of roads and distance between centre to centre of trees, tree guards, maintenance and revenue from trees.	8 Hours
<u>Text Books:</u>	1. Gupta B.L., <i>Road, Railway, Bridges, Tunnels & Harbour Dock Engineering</i> , Standard Publishers Distributors, Delhi.	
<u>Reference Books:</u>	1. Khana S.K. & Justo, <i>Highway Engineering</i>, Nem Chand & Bros., Roorkee. 2. Ahuja & Birdi, <i>Road, Railway, Bridges & tunnels Engineering</i>, Standard Books House, Delhi. 3. Rangwala S.C., <i>Highway Engineering</i>, Charotar Publishing House (P) Ltd., Anand. *Latest editions of all the suggested books are recommended.	

Course Code: DCE607	Diploma in Civil Engineering - Semester-VI/ Elective II Transportation Engineering – II	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be :	
CO1.	Remembering the concepts of the Permanent way section of the Indian Railway.	
CO2.	Understanding the problems regarding the geometric design of the railway track.	
CO3.	Applying the concepts of the various signaling systems, the safety aspects and the modernization of the Indian Railway.	
CO4.	Evaluating the problems related to structural design of the flexible and the rigid runway and taxiway pavements.	
Course Content:		
Unit-1:	Railways Introduction: Railways - An important system of communication in India. Permanent Way: Definition of a permanent way; components of a permanent way, sub grade, ballast, sleepers, rails, fixtures and fastenings, Concept of gauge and different gauges prevalent in India, Suitability of these gauges under different conditions.	8 Hours
Unit-2:	<u>Track Materials: (i) RAILS: Function of rails. Different types of rail sections- double header, bull headed and flat footed their standard length, weights and comparison. Welded rails-appropriate length of welded rails and advantages of welded rails. Creep: Its definition, causes, effects and prevention. Wear of rails, its causes and effects. (ii) SLEEPERS: Function of sleepers. Different types of sleepers: wooden, steel, cast iron (pot type) concrete and prestressed concrete, their sizes, shapes, characteristics and spacing. (iii) BALLAST: Function, materials used for making ballast stone, brick, slag and cinder, their characteristics. (iv) Fixtures and Fastenings.</u> <u>(a) Connections of rail to rail-Fishplate and fish bolts.</u> <u>Connection of Rail to sleepers: Sketches of connection between flat footed rails with various types sleepers with details of fixtures and fasteners used.</u>	8 Hours



Unit-3:	Geometries for Broad Gauge: Typical Cross-sections of single and double broad gauge railway tracks in cutting and embankment, Permanent and temporary land width, Gradients ruling, maximum, minimum for drainage. Gradients in station yards, Curves; Limiting radius of a curve for broad gauge, Transition length to be provided for railway curves as per railway code, Super-elevation-its necessity and limiting value, Definition of equilibrium cant and cant deficiency, widening of gauge on curves. Points and Crossings: Necessity and details of arrangement; sketch of a turnout definition of stock rail, tongue rail, check rail, lead rail, wing rail, point rail, splice rail, stretcher bar, throw of switch, heel of switch, nose of crossing, angle of crossing, overall length of turnout, facing and trailing points, diamond crossing, cross over, triangle.	8 Hours
Unit-4:	<u>Track Laying: Preparation of sub grade, Collection of materials setting up of material depot and carrying out initial operations such as adzing of sleepers, bending of rails and assembling of crossings. Definitions of boxe and rail head. Transportation by material trellices, rail carriers and material trains. Method of track laying (parallel, telescopic and American methods). Organization of layout at rail head. Ballasting of the track.</u>	8 Hours
Unit-5:	Hill Roads: (i) Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cut and partly in fill. (ii) Landslides: Causes, preventions and control measures. Road Drainage: (i) Necessity of road drainage work, cross drainage works. (ii) Surface and subsurface drains and storm water drains. Location, spacing and typical details of side drains, side ditches for surface drainage. Intercepting drains, pipe drains in hill roads, details of drains in cutting embankment, typical cross-sections.	8 Hours
Text Books:	1. Gupta B.L., <i>Road, Railway, Bridges, Tunnels & Harbour Dock Engineering</i> , Standard Publishers Distributors, Delhi.	
Reference Books:	1. Khana S.K. & Justo, <i>Highway Engineering</i>, Nem Chand & Bros., Roorkee. 2. Ahuja S.C., <i>Highway Engineering</i>, Charotar Publishing House (P) Ltd., Anand. 3. Ahuja & Birdi, <i>Road, Railway, Bridges & tunnels Engineering</i>, Standard Books House, Delhi. 3. Gupta D.V., <i>Transportation Engineering</i> Asian Publishers Muzaffarnagar. *Latest editions of all the suggested books are recommended.	

Course Code: DCE658	Diploma in Civil Engineering - Semester-V	L-0 T-0 P-4 C-2
Course Outcomes:	Civil Engineering Drawing – I	
	On completion of this course the students will be:	
CO1.	Remembering the fundamentals of civil engineering drawing.	
CO2.	Understanding the foundations, various floors, doors & windows	
CO3.	Analyzing the civil engineering drawing with auto CAD/D for field work	
CO4.	Applying the various detailed drawing terms to draw civil engineering map.	
CO5.	Evaluating the planning and detained drawing work for the completion of project on ground	

AutoCAD 2D Total Duration : 28 Hours	
Session	Topics
Session 1	Introduction to Engineering Drawings
	<i>Views (Orthographic, Isometric & Perspective)</i>
	Introduction to AutoCAD
	<i>History, Exploring GUI</i>
	<i>Workspaces</i>
	<i>Co-ordinate systems</i>
	File Management
	<i>New, Open, Open, Save, Save as, Close, Exit</i>
	Drawing settings
	<i>Units, Limits</i>
	Drafting settings
Session 2	<i>Ortho, Polar, Grid, Snap, Polar Tracking, Object snap, DynamicInputs, Quick Properties, Selection Cycling</i>
	Drawing Tools
Session 3	<i>Line, Circle, Arc, Ellipse, Donut,</i>
	<i>Polygon, Rectangle, Point, Multiline, Spline, Xline, Ray, Wipeout, Revision cloud</i>
Session 4	Modify Tools
	<i>Erase, Oops, Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet, Divide, Measure, Point Style, offset</i>
Session 5	Display Control
	<i>Zoom, Pan, Redraw, Regen, Clean Screen, Steering wheels</i>
	Object Properties

	Color, Line type, Lt scale, Line weight, Match Properties, Transparency, List
Session 6	Layer Management
	Layer Properties Manager
	Layers and Layer Properties
	New Property Filter
	Clipboard Copy, Copybase, Copylink, Pasteclip, Pastespecial, Pasteblock, Paste original Mlstyle, Mledit, Pedit, Splinedit, Edit Array, Grip Editing
Session 7	Annotation Tools
	Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Jogged radius, Ordinate dimensions, CentreMark, Centerline
	Dimension Style, Dimension Edit
Session 8	Annotation Tools
	Leader, Qleader, Mleader, Mleader style, Add leader, AlignLeaderlines, Collect Leader
Session 9	Annotation Tools
	Text, Style, Mtext, Scale text, Spell, Table, Table style, Tabledit
	Hatching Objects Hatch, Gradient, Hatchedit
Session 10	Object Selection Methods
	Select, Qselect, Filter
	Block, Wblock, Insert Attribute (Attdef, Attedit, Eattedit, Attdisp, Attdia, Atttext, Eatttext)
Session 11	Parametric Modeling
	Geometric Constraint, Dimensional Constraint, Design Centre, ToolPalette
Session 12	Isometric View Drawings
Session 13	Hyperlink, Data Link, Group
	Etransmit, Publish, Publish to Web
	Introduction to plotting, Layout, Viewports, Mview, Page setup, Plot Styles, Plot
	External references - Xref, Xbind

LIST OF EXPERIMENTS:		
1	Foundations.	1 Plate
2	Doors & windows.	1 Plate
3	Roofs: Wooden roof truss details, Section of RCC & RB flat roofs.	1 Plate
4	Floors. (a) Concrete floor finish over ground floor. (b) Terrazzo floor finish over ground floor. (c) Terrazzo tile floor finish over ground.	1 Plate
5	Stair case (a) Details of dog legged stairs. (b) Plans of remaining type of stairs.	1 Plate
6	Detailed plan and cross section of a domestic septic and soak pit for 10 users as per IS:2470. Part I.	1 Plate
7	Detailed plan and cross section of bathroom, kitchen and W.C. connections.	1 Plate
10	Two Room building working drawing with AutoCAD.	1 Plate
Text Books:	1. Singh Gurcharan, <i>Civil Engineering Drawing</i> , Standard Publishers Distributors, Delhi.	
Reference Books:	1. V.B. Sikka, <i>Civil Engineering Drawing</i> , S.K. Kataria & Sons. 2. Safi K.D., <i>Civil Engineering Drawing - I</i> , Asian Publishers Muzaffarnagar. *Latest editions of all the suggested books are recommended.	

Evaluation of Practical Examination:

Internal Evaluation (50 marks):

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 4-point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation Scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (35 MARKS)				ON THE DAY OF EXAM (15 MARKS)	
EXPERIMENT (5 MARKS)	FILE WORK (10 MARKS)	ATTENDANCE (10 MARKS)	VIVA (10 MARKS)	EXPERIMENT (5 MARKS)	VIVA (10 MARKS)

External Evaluation (50marks):

The external evaluation would also be done by the external Examiner based on the experiment conducted during the examination:

EXPERIMENT (20 MARKS)	FILE WORK (10 MARKS)	VIVA (20 MARKS)	TOTAL EXTERNAL (50 MARKS)
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