

Course Structure Evaluation Scheme



Sr. No	Particulars of Evaluation	MSE	CA		ESE		Total
			CA1	CA2	Internal	External	
01	Theory courses	20	10	10	---	60	100
02	Audit courses	---	50	50	---	---	100
03	Studio Courses (Product Design Engg)	---	30	30	40	---	100
03	Laboratory (Practical) courses	---	15	15	10	10	50
04	Seminar / Min Project/ Project Stage I	---	30		20	---	50
05	Field Training	---	---	---	50	---	50
06	Project Stage II	---	---	---	50	50	100

Semester- III

Sr. No.	Subject Code	Subject	Contact Hours			Credit
			L	T	P	
Theory						
01	BTBSC301	Mathematics – III	3	1	-	4
02	BTCVC302	Mechanics of Solids	3	1	✓	4
03	BTCVC303	Hydraulics I	2	1	✓	3
04	BTCVC304	Surveying I	2	1	✓	3
05	BTCVC305	Building Construction	2	-	✓	2
06	BTCVC306	Engineering Geology	2	-	✓	2
07	BTHM303	Soft Skills Development	2	-	-	AU
Practical / Drawing and/or Design						
08	BTCVL307	Hydraulics Laboratory I	-	-	2	1
09	BTCVL308	Surveying Laboratory I	-	-	2	1
10	BTCVL309	Building Construction - Drawings Laboratory	-	-	2	1
11	BTCVL310	Engineering Geology Lab	-	-	2	1
12	BTCVS311	Seminar on Topic of Field Visit to Foundation Work	-	-	1	AU
13	BTCVF312	Field Training / Internship/Industrial Training Evaluation (from semester II)	-	-	-	1
		Sub-Total	16	4	09	
		Total	29			23

Semester- IV

Sr. No.	Subject Code	Subject	Contact Hours			Credit
			L	T	P	
Theory						
01	BTCVC401	Hydraulics II	2	1	✓	3
02	BTCVC402	Surveying – II	2	1	✓	3
03	BTCVC403	Structural Mechanics-I	3	1	-	4

Semester- IV

Sr. No	Subject Code	Subject	Contact Hours			Credit
			L	T	P	
Theory						
01	CV 401	Hydraulics II	2	1	0	3
02	CV 402	Surveying – II	3	1	0	4
03	CV 403	Structural Mechanics-I	3	1	-	4
04	CV 404	Product Design Engineering	2	-	-	2
05	CVE1	Elective I	3	-	-	3
06	CVA 402	Basic Human Rights	2	-	-	AU
07	CVA 403	Engineering Management	1	-	-	AU
Practical / Drawing and/or Design						
08	CVL 401	Hydraulics Laboratory II	-	-	2	1
09	CVL 402	Surveying Laboratory II	-	-	4	2
10	CVL 403	Mechanics of Solids Laboratory	-	-	2	1
11	CVP 401	Mini Project	-	-	2	1
12	CVF 402	Seminar on Topic of Field Visit to works involving Superstructure Construction	-	-	1	AU
Sub-Total			16	3	11	
Total			30			21
Elective I						
	CVE1 401 CVE1 402 OS CVE1 403 OS	Numerical Methods in Engineering Planning for Sustainable Development Instrumentation & Sensor Technologies for Civil Engineering Applications	3	-	-	3

CV 401 Hydraulics II

Pre Requisites: Hydraulics - I

Course Contents

Module 1: Uniform Flow in Open Channel

Introduction, difference between pipe flow and open channel flow, types of open channels, types of flows in open channel, geometric elements, velocity distribution, measurement of velocity-(pitot tube, current meter) weir & spillway: sharp, broad & round crested weirs, calibration of weir, time of emptying tank with weir, profile of ogee spillway, flow below gates

Module 2: Steady & Uniform Flow

Chezy's & Manning's formula, Roughosity coefficient, uniform flow computations, hydraulically efficient section- considerations for rectangular, triangular, trapezoidal, circular sections
Specific energy: definition & diagram, concept of critical, sub-critical, super-critical flow, specific force, specific discharge derivation of relationships and numerical computations

Module 3: Varied Flow

Gradually (G.V.F.): Definition, classification of channel Slopes, dynamic equation of G.V.F. (Assumption and derivation), classification of G.V.F. profiles-examples, direct step method of computation of G.V.F. profiles
Rapidly varied flow (R.V.F.): Definition, examples, hydraulic jump- phenomenon, relation of conjugate depths, parameters, uses, types of hydraulic jump

Module 4: Impact of Jet

Impulse momentum principle, impact of jet on Vanes-flat, curved (stationary and moving), inlet & outlet velocity triangles under various conditions, Series of flat, curved vanes mounted on wheel

Semester- V

Sr. No	Subject Code	Subject	Contact Hours			Credit
			L	T	P	
Theory						
01	BTCVC 501	Design of Steel Structures	2	2	-	4
02	BTCVC 502	Structural Mechanics-II	2	1	-	3
03	BTCVC 503	Soil Mechanics	3	1	✓	4
04	BTCVC 504	Environmental Engineering	2	-	✓	2
05	BTCVC 505	Transportation Engineering	2	-	✓	2
06	CV E2	Elective II	3	-	-	3
07	BTHM507	Essence of Indian Traditional Knowledge	1	-	-	AU
Practical / Drawing and/or Design						
08	BTCVL508	Soil Mechanics Laboratory	-	-	2	1
09	BTCVL509	Environmental Engineering Laboratory	-	-	2	1
10	BTCVL510	Transportation Engineering Laboratory	-	-	2	1
11	BTCVS511	Seminar on Topic of Field Visit to works related to Building Services	-	-	1	AU
		Sub-Total	15	4	7	
		Total	26			21
		Elective II				
	BTCVE506A	Materials, Testing & Evaluation	3	-		3
	BTCVE506B	Computer Aided Drawing				
	BTCVE506C	Development Engineering				
	BTCVE506D	Business Communication & Presentation Skills				

BTCVC 501 Design of Steel Structures

Teaching Scheme: (2 Lectures + 2 Tutorial) hours/week

Course Contents

Module 1: Introduction and Connections

(8 Lectures)

Introduction, advantages & disadvantages of steel structures, permissible stresses, factor of safety, methods of design, types of connections, various types of standard rolled sections, types of loads and load combinations

Types: Riveted, Bolted, Welded; Analysis of axially & eccentrically loaded connections (subjected to bending & torsion), Permissible Stresses, Design of connections, failure of joints

Module 2: Axially Loaded Members

(6 Lectures)

Tension members: Common sections, net effective area, load capacity, connection using weld / bolts, design of tension splice
Compression members: Common sections used, effective length and slenderness ratio, permissible stresses, load carrying capacity, connection using weld / bolt

Module 3: Beams

(6 Lectures)

Laterally supported & unsupported beams, design of simple beams, built up beams using flange plates, curtailment of flange plates, web buckling & web crippling, secondary and main beam arrangement, beam to beam connections

Module 4: Industrial Roofing

(6 Lectures)

Gantry girder: Forces acting on a gantry girder, commonly used sections, introduction to design of gantry girder as laterally unsupported beam, connection details

Roof trusses: Components of an industrial shed, types of trusses, load calculations and combinations, design of purlins, design of truss members, design of hinge & roller supports

Semester- VI

Students should register for the CVF 705 in Semester VI to undergo training during vacation after semester VI and appear at examination in Semester VII. Result shall appear in Grade-sheet of Semester VII

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Sr. No.	Subject Code	Subject Title	Contact hours			
			L	T	P	Credit
01	BTCVC601	Design of Concrete Structures I	3	1	-	3
02	BTCVC602	Foundation Engineering	2	1	-	3
03	BTCVC603	Concrete Technology	2	-	✓	2
04	BTCVC604	Project Management	2	1	-	2
05	CVE3	Elective III	3	-	-	3
06	BTCVC606	Building Planning and Design	2	-	✓	2
Practical / Drawing and/or Design						
07	BTCVL607	Concrete Technology Laboratory	-	-	2	1
08	BTCVL608	Building Planning, Design and Drawing Laboratory	-	-	4	2
09	BTCVM609	Community Project (Mini Project)	-	-	2	1
10	BTCVS610	Seminar on Topic of Field Visit Road Construction	-	-	1	AU
11	BTCVF611	Industrial Training ^s	-	-	2	--
		Sub-Total	14	3	11	
		Total	28			19
Elective III						
	BTCVE605A	Waste Water Treatment				
	BTCVE605B	Operations Research				
	BTCVE605C	Geographic Data Analysis and Applications				
	BTCVE605D	Advanced Engineering Geology				
	BTCVE605E	Advanced Soil Mechanics				
	BTCVE605F	Design of Masonry and Timber Structures				

BTCVC601 Design of Concrete Structures - I

Teaching Scheme: (2 Lectures + 1 Tutorial) hours/week

Course Contents

Module 1:

(5 Lectures)

Basic Aspects of Structural Design, Introduction to Design Philosophies, Stress Strain behaviour of Materials, Permissible stresses, Comparison of Different Philosophies, Estimation of Loads

Working Stress Method

Module 2:

(5 Lectures)

Stress block parameters, Balanced, under reinforced and over reinforced section: Modes of failure, properties of singly and doubly reinforced rectangular section beams, Analysis and Design of Singly and Doubly Reinforced Beams

One Way and Two Way Slab: Behavior of slabs, types, support conditions, analysis and design with various conditions

Module 3: (4 Lectures)

Analysis and Design of Axially and Eccentrically Loaded Columns, Isolated Column Footings, Staircases, Design of dog-legged and open well stair case, effective span and load distribution

Limit State Method

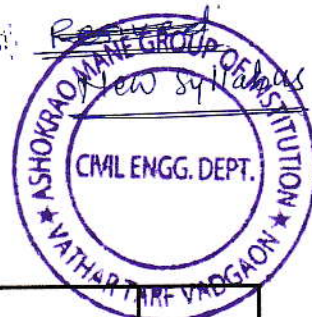
Module 4: Introduction to Limit State Approach

(5 Lectures)

Introduction to Limit State Approach, Types and Classification of Limit States, Characteristics Strength and Characteristics Load, Load Factor, Partial Safety Factors

B. Tech. Civil Engineering

Course Structure for Semester VII (Fourth Year) w.e.f. 2020-2021



Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
BTCVC701	Core	Design of Concrete Structures - II	2	1	--	20	20	60	100	3
BTCVC702	Core	Infrastructure Engineering	3	--	--	20	20	60	100	3
BTCVC703	Core	Water Resources Engineering	3	1	--	20	20	60	100	4
BTCVC704	Core	Professional Practices	2	1	--	20	20	60	100	3
BTCVE705A	Elective IV	Construction Techniques	3	--	--	20	20	60	100	3
BTCVE705B		Engineering Economics								
BTCVE705C		Finite Element Method								
BTCVE705D		Limit State Design of Steel Structures								
BTCVE705E		Plastic Analysis and Design								
BTCVE705F		Water Power Engineering								
BTCVOE706A	Open Elective V	Advanced Structural Mechanics	3	--	--	--	--	--	--	Audit (AU/ NP)
BTCVOE706B		Air Pollution Control								
BTCVOE706C		Bridge Engineering								
BTCVOE706D		Introduction to Earthquake Engineering								
BTCVOE706E		Town and Urban Planning								
BTCVOE706F		Tunneling and Underground Excavations								
BTCVL707	Laboratory	Design & Drawing of RC & Steel Structures	--	--	2	30	--	20	50	1
BTCVL708	Laboratory	Professional Practices	--	--	2	30	--	20	50	1
BTCVT709	Training	Field Training /Internship/Industrial	--	--	--	--	--	50	50	1
BTCVS710	BTS	Seminar	--	--	2	--	--	50	50	1
BTCVP711	BTP	Project Stage-I**	--	--	6	--	50	50	100	3
Total			16	3	12	160	150	490	800	23

**In case of students opting for Internship and Industry Project in the eighth semester, the Project must be industry-based.