

# Bachelor of Technology in Civil Engineering

Department of Civil Engineering

## The overall Credit Structure

Course Category	Credits
<b>Institute Core Courses</b>	
Basic Sciences (BS)	22
Engineering Arts and Science (EAS)	18
Humanities and Social Sciences (HuSS)	15
<b>Programme-linked Courses</b>	10
<b>Departmental Courses</b>	
Departmental Core	66
Departmental Electives	14
<b>Open Category Courses</b>	10
<b>Total Graded Credit requirement</b>	<b>155</b>
<b>Non Graded Units</b>	<b>15</b>

### Institute Core: Basic Sciences

Course Code	Course Name	Credits
CML100	General Chemistry	3 0 0 3
CMP100	Chemistry Laboratory	0 0 4 2
MTL100	Calculus	3 1 0 4
MTL101	Linear Algebra and Differential Equations	3 1 0 4
PYL100	Electromagnetic Waves and Quantum Mechanics	3 0 0 3
PYP100	Physics Laboratory	0 0 4 2
SBL100	Introductory Biology for Engineers	3 0 2 4
<b>Total Credits</b>		<b>22</b>

### Institute Core: Engineering Arts and Sciences

Course Code	Course Name	Credits
APL100	Engineering Mechanics	3 1 0 4
COL100	Introduction to Computer Science	3 0 2 4
CVL100	Environmental Science	2 0 0 2
ELL100	Introduction to Electrical Engineering	3 0 2 4
MCP100	Engineering Visualization	0 0 4 2
MCP101	Product Realization through Manufacturing	0 0 4 2
<b>Total Credits</b>		<b>18</b>

### Programme-Linked Basic / Engineering Arts / Sciences Core

Course Code	Course Name	Credits
APL 107	Mechanics of Fluids	3 1 2 5
APL 108	Mechanics of Solids	3 1 2 5
<b>Total Credits</b>		<b>10</b>

### Humanities and Social Sciences

Course Category	Credits
Courses from Humanities, Social Sciences and Management offered under this category	15

### Departmental Core

Course Code	Course Name	Credits
CVL111	Elements of Surveying	3 0 2 4
CVL121	Engineering Geology	3 0 0 3
CVP121	Engineering Geology Lab	0 0 2 1
CVL141	Civil Engineering Materials	3 0 0 3
CVL212	Environmental Engineering	3 0 2 4
CVL222	Soil Mechanics	3 0 0 3
CVP222	Soil Mechanics Lab	0 0 2 1
CVL242	Structural Analysis-I	3 0 0 3
CVP242	Structural Analysis Lab	0 0 2 1
CVL243	RC Design	3 0 0 3
CVP243	Structures & Material (Concrete) Lab	0 0 3 1.5
CVL244	Construction Practices	2 0 0 2
CVL245	Construction Management	2 0 0 2
CVL261	Introduction to Transportation Engineering	3 0 0 3
CVP261	Transportation Engineering Lab	0 0 2 1
CVL281	Hydraulics	3 1 0 4
CVP281	Hydraulics Lab	0 0 2 1
CVL282	Engineering Hydrology	3 0 2 4
CVL321	Geotechnical Engineering	3 1 0 4
CVP321	Geotechnical Engineering Lab	0 0 2 1
CVL341	Structural Analysis-II	3 0 0 3
CVL342	Steel Design	3 0 0 3
CVP342	Structures & Material (Steel) Lab	0 0 2 1
CVL381	Design of Hydraulic Structures	3 0 2 4
CVD411	B.Tech. Project Part-I	0 0 8 4
CVP441	Structural Design & Detailing	0 0 3 1.5
<b>Total Credits</b>		<b>66</b>

## Departmental Electives

Course Code	Course Name	Credits
CVL284	Fundamentals of Geographic Information Systems	2 0 2 3
CVL311	Industrial Waste Management	3 0 0 3
CVL312	Environmental Assessment Methodologies	3 0 0 3
CVL313	Air and Noise Pollution	3 0 0 3
CVL344	Construction Project Management	3 0 0 3
CVL361	Introduction to Railway Engineering	3 0 0 3
CVL382	Groundwater	2 0 0 2
CVL383	Water Resources Systems	2 0 0 2
CVL384	Urban Hydrology	2 0 0 2
CVL385	Frequency Analysis in Hydrology	2 0 0 2
CVL386	Fundamentals of Remote Sensing	2 0 2 3
CVD412	B.Tech. Project Part-II	0 0 12 6
CVL421	Ground Engineering	3 0 0 3
CVL422	Rock Engineering	3 0 0 3
CVL423	Soil Dynamics	3 0 0 3
CVL424	Environmental Geotechniques & Geosyntheses	3 0 0 3
CVL431	Design of Foundations & Retaining Structures	3 0 0 3
CVL432	Stability of Slopes	2 0 0 2
CVL433	FEM in Geotechnical Engineering	3 0 0 3
CVP434	Geotechnical Design Studio	0 0 4 2
CVL435	Underground Structures	2 0 0 2
CVL441	Structural Design	3 0 0 3
CVL442	Structural Analysis-III	3 0 0 3
CVL443	Prestressed Concrete & Industrial Structures	3 0 0 3
CVL461	Logistics and Freight Transport	3 0 0 3
CVL462	Introduction to Intelligent Transportation Systems	3 0 0 3
CVL481	Water Resources Management	3 0 0 3
CVL482	Water Power Engineering	2 0 2 3
CVL483	Groundwater & Surface-water Pollution	2 0 0 2
CVL484	Computational Aspects in Water Resources	1 0 4 3
CVL485	River Mechanics	2 0 2 3
CVL486	Geo-informatics	2 0 2 3
CVL721	Solid Waste Engineering	3 0 0 3
CVL724	Environmental systems analysis	3 0 0 3
CVL727	Environmental risk assessment	3 0 0 3
CVL728	Environmental Quality Modeling	3 0 0 3
CVL740	Pavement Materials and Design of Pavements	3 0 2 4
CVL741	Urban and Regional Transportation Planning	3 0 2 4
CVL742	Traffic Engineering	3 0 2 4
CVL743	Airport Planning and Design	3 0 0 3
CVL744	Transportation Infrastructure Design	2 0 2 3
CVL746	Public Transportation Systems	3 0 0 3
CVL763	Analytical and Numerical Methods for Structural Engineering	3 0 0 3
CVL765	Concrete Mechanics	3 0 0 3
CVL766	Design of Bridge Structures	3 0 0 3
CVL768	Design of Masonry Structures	3 0 0 3
CVL769	Design of Tall Buildings	3 0 0 3
CVL770	Prestressed and Composite Structures	3 0 0 3
CVL771	Advanced Concrete Technology	3 0 0 3
CVL820	Environmental impact assessment	3 0 0 3
CVL822	Emerging Technologies for Environmental Management	3 0 0 3
CVL823	Thermal Techniques for Waste Management	3 0 0 3
CVL824	Life Cycle Analysis and Design for Environment	3 0 0 3
CVL837	Mechanics of Sediment Transport	2 0 2 3
CVL841	Advanced Transportation Modelling	2 0 2 3
CVL842	Geometric Design of Roads	2 0 2 3
CVL847	Transportation Economics	3 0 0 3
CVL857	Structural Safety and Reliability	3 0 0 3
CVL858	Theory of Plates and Shells	3 0 0 3
CVL859	Theory of Structural Stability	3 0 0 3
CVL862	Design of Offshore Structures	3 0 0 3
CVL866	Wind Resistant Design of Structures	3 0 0 3

Semester	Course-1	Course-2	Course-3	Course-4	Course-5	Course-6	Course-7	Course-8	Course-9	L	T	P	Credits	Non-Graded	Units	Contact Hours	
I	ELL100 Introduction to Electrical Engineering	MCP100 Introduction to Engineering Visualization	PYL100 Electromagnetic Waves and Quantum Mechanics	MTL100 Calculus	PYP100 Physics Laboratory	MCP101 Product Realization through Manufacturing	NIN100 Introduction to Engineering (Non-graded)	NEN100 Professional Ethics and Social Responsibility-1 (Non-graded)	NLN100 Language and Writing Skills-1 (Non-Graded)								
	3 0 2 4 APL100	0.5 0 3 2 COL100	3 0 0 3 CML100	3 1 0 4 MTL101	0 0 4 2 CMP100	0 0 4 2	0 0 2 1	0 0 1 0.5	0 0 2 1	9.5	1	13	17.0	2.5		28.5	
II	Engineering Mechanics	Introduction to Computer Science	Introduction to Chemistry	Linear Algebra and Differential Equations	Chemistry Laboratory			Professional Ethics and Social Responsibility-2 (Non-graded)	NLN100 Language and Writing Skills-2 (Non-Graded)								
	3 1 0 4	3 0 2 4	3 0 0 3	3 1 0 4	0 0 4 2			0 0 1 0.5	0 0 2 1	12	2	6	17.0	1.5		23.0	
Note: Courses 1-6 above are attended in the given order by half of all first year students. The other half of First year students attend the Courses 1-6 of II semester first.																	
III	CVL111	CVL121	CVL141	APL107	APL108	HUL2XX	CVN121										
	Elements of Surveying	Engineering Geology	Civil Engineering Materials	Mechanics of Fluids	Mechanics of Solids		Introduction to Civil Engineering (Non-graded)										
IV	3 0 2 4 CVP222 + CVP243	3 0 0 3 CVL242 + CVP242	3 0 0 3 CVL261 + CVP261	3 1 2 5 CVL281 + CVP281	3 1 2 5 CVL100	3 1 0 4 HUL2XX	0 0 2 1			18	3	6	24.0	1		29.0	
	Soil Mechanics + Lab	Structural Analysis I + Lab	Intro. to Transportation Engg + Lab	Hydraulics + Lab	Environmental Science												
V	3 0 2 4 CVP243 + CVP243	3 0 2 4 CVL245	3 0 2 4 CVL282	3 1 2 5 CVL321 + CVP321	2 0 0 2 CVL341	3 1 0 4				17	2	8	23.0	0		27.0	
	RC Design + Lab	Construction Management	Engineering Hydrology	Geotechnical Engineering + Lab	Structural Analysis II	SBL100 Introductory Biology for Engineers											
VI	3 0 3 4.5 CVL212	2 0 0 2 CVL244	3 0 2 4 CVL342 + CVP342	3 1 2 5 CVL381	3 0 0 3 OC 1	3 0 2 4 HUL2XX				17	1	9	22.5	0		27.0	
	Environmental Engineering	Construction Practices	Steel Design + Lab	Design of Hydraulic Structures													
VII	3 0 2 4 DE 1	2 0 0 2 DE 2	3 0 2 4 DE 3 / OC 2	3 0 2 4	3 0 0 3 CVP441	3 1 0 4 HUL3XX				17	1	6	21.0	0		24.0	
					Structural Design and Detailing		CVD411 B.Tech. Project										
VIII	2 0 2 3 DE 4	3 0 0 3 DE 5	3 0 0 3 OC 2 / DE 3	OC 3	0 0 3 1.5	3 0 0 3	0 0 8 4			11	0	13	17.5	0		24.0	
	2 0 2 3	3 0 0 3	3 0 0 3	3 1 0 4						11	1	2	13.0	0		14.0	
<b>TOTAL=155.0</b>																	