

Heritage Institute of Technology

(A Kalyan Bharti Trust Initiative)

**(An Autonomous Institute under
MAKAUT)**



Civil Engineering Department

B.TECH. PROGRAMME

SYLLABUS

**RELEASE DATE:
July, 2023: Ver. 1.0**

(Applicable from 2023 admitted batch)



FIRST YEAR FIRST SEMESTER

A. Theory								
Sl. No.	Course Category	Course Code	Course Title	Contacts Hours / Week				Credit Points
				L	T	P	Total	
1.	Basic Science	CHM 1001	Chemistry I	3	0	0	3	3
2.	Basic Science	MTH 1101	Mathematics I	3	1	0	4	4
3.	Engineering Science	CSE 1001	Programming for Problem Solving	4	0	0	4	4
4.	Engineering Science	ELE 1001	Basic Electrical Engineering	3	1	0	4	4
5.	Humanities & Social Sciences	HUM 1001	English for Technical Writing	2	0	0	2	2
Total Theory				15	2	0	17	17
B. Laboratory								
1.	Basic Science	CHM 1051	Chemistry I Laboratory	0	0	2	2	1
2.	Engineering Science	CSE 1051	Programming for Problem Solving Laboratory	0	0	3	3	1.5
3.	Engineering Science	ELE 1051	Basic Electrical Engineering Laboratory	0	0	2	2	1
4.	Humanities & Social Sciences	HUM 1051	English for Technical Writing Laboratory	0	0	2	2	1
Total Practical				0	0	9	9	4.5
Total of Semester				15	2	9	26	21.5

FIRST YEAR SECOND SEMESTER

A. Theory								
Sl. No.	Course Category	Course Code	Course Title	Contacts Hours / Week				Credit Points
				L	T	P	Total	
1.	Basic Science	PHY 1001	Physics I	3	0	0	3	3
2.	Basic Science	MTH 1201	Mathematics II	3	1	0	4	4
3.	Engineering Science	ECE 1001	Introduction to Electronics Devices & Circuits	3	0	0	3	3
4.	Humanities & Social Sciences	HUM 1002	Universal Human Values and Professional Ethics	2	1	0	3	3
Total Theory				11	2	0	13	13
B. Laboratory								
1.	Basic Science	PHY 1051	Physics I Laboratory	0	0	2	2	1
2.	Engineering Science	ECE 1051	Introduction to Electronics Devices & Circuits Laboratory	0	0	2	2	1
3.	Engineering Science	MEC 1051	Workshop / Manufacturing Practices	1	0	3	4	2.5
4.	Engineering Science	CIV 1051	Engineering Drawing - I	1	0	3	4	2.5
Total Practical				2	0	10	12	7
Total of Semester				13	2	10	25	20



SECOND YEAR THIRD SEMESTER

A. Theory								
Sl. No.	Course Category	Course Code	Course Title	Contacts Hours / Week			Total	Credit Points
				L	T	P		
1.	Program Core	CIV 2101	Fundamentals of Strength of Materials	3	0	0	3	3
2.	Program Core	CIV 2102	Fluid Mechanics	3	0	0	3	3
3.	Program Core	CIV 2103	Construction Materials and Technology	3	0	0	3	3
4.	Program Core	CIV 2104	Surveying	3	0	0	3	3
5.	Program Core	CIV 2105	Design Thinking	1	0	0	1	1
6.	Mandatory Course	EVS 2016	Environmental Sciences	2	0	0	2	0
Total Theory				15	0	0	15	13
B. Laboratory								
1.	Program Core	CIV 2151	Strength of Materials Lab	0	0	3	3	1.5
2.	Program Core	CIV 2152	Fluid Mechanics Lab	0	0	2	2	1
3.	Program Core	CIV 2153	Construction Materials Lab	0	0	3	3	1.5
4.	Program Core	CIV 2154	Engineering Drawing - II	0	0	3	3	1.5
5.	Program Core	CIV 2155	Idea Lab	0	0	2	2	0
Total Practical				0	0	13	13	5.5
Total of Semester				15	0	13	28	18.5

SECOND YEAR FOURTH SEMESTER

A. Theory								
Sl. No.	Course Category	Course Code	Course Title	Contacts Hours / Week			Total	Credit Points
				L	T	P		
1.	Basic Science	MTH 2001	Mathematical Methods	3	1	0	4	4
2.	Program Core	CIV 2201	Structural Analysis – I	3	0	0	3	3
3.	Program Core	CIV 2202	Soil Mechanics	3	0	0	3	3
4.	Program Core	CIV 2203	Highway and Traffic Engineering	3	0	0	3	3
5.	Program Core	CIV 2204	Concrete Technology	3	0	0	3	3
6.	Program Core	CIV 2205	Environmental Engineering	3	0	0	3	3
Total Theory				18	1	0	19	19
B. Laboratory								
1.	Program Core	CIV 2252	Soil Mechanics Lab – I	0	0	2	2	1
2.	Program Core	CIV 2253	Highway Engineering Lab	0	0	2	2	1
3.	Program Core	CIV 2254	Concrete Technology Lab	0	0	4	4	2
4.	Program Core	CIV 2256	Surveying Lab	0	0	3	3	1.5
Total Practical				0	0	11	11	5.5
Total of Semester				18	1	11	30	24.5



THIRD YEAR FIFTH SEMESTER

A. Theory								
Sl. No.	Course Category	Course Code	Course Title	Contacts Hours /			Total	Credit Points
				L	T	P		
1.	Program Core	CIV 3101	Structural Analysis – II	3	0	0	3	3
2.	Program Core	CIV 3102	Design of RCC Structures	3	0	0	3	3
3.	Program Core	CIV 3103	Foundation Engineering	3	0	0	3	3
4.	Engineering Science	CSE 3106	Data Structure & RDBMS	4	0	0	4	4
5.	Program Elective	CIV 3131- CIV 3134	Professional Elective - I	3	0	0	3	3
6.	Open Elective	CIV 3121 & CIV 3122	Open Elective - I (Emerging field)	3	0	0	3	3
7.	Mandatory Course	ICO 3016	Indian Constitution and Civil Society	2	0	0	2	0
Total Theory				21	0	0	21	19
B. Laboratory								
1.	Program Core	CIV 3152	RCC Design and Detailing Lab	0	0	3	3	1.5
2.	Program Core	CIV 3153	Soil Mechanics Lab – II	0	0	3	3	1.5
3.	Program Core	CIV 3154	Environmental Engineering Lab	0	0	3	3	1.5
4.	Engineering Science	CSE 3156	RDBMS Lab	0	0	3	3	1.5
Total Practical				0	0	12	12	6
Total of Semester				21	0	12	33	25

THIRD YEAR SIXTH SEMESTER

A. Theory								
Sl. No.	Course Category	Course Code	Course Title	Contacts Hours / Week			Total	Credit Points
				L	T	P		
1.	Program Core	CIV 3201	Design of Steel Structures	3	0	0	3	3
2.	Program Core	CIV 3202	Project Planning and Management	2	0	0	2	2
3.	Program Core	CIV 3203	Water Resources Engineering	3	0	0	3	3
4.	Humanities & Social Sciences	HUM 3201	Economics for Engineers	3	0	0	3	3
5.	Program Elective	CIV 3231- CIV 3234	Professional Elective – II	3	0	0	3	3
6.	Open Elective	CIV 3221 & CIV 3222	Open Elective – II	3	0	0	3	3
Total Theory				17	0	0	17	17
B. Laboratory								
1.	Program Core	CIV 3251	Industrial Structure Design and Detailing Lab	0	0	2	2	1
2.	Program Core	CIV 3254	Computer-aided Structural Analysis and Design Lab	0	0	3	3	1.5
Total Practical				0	0	5	5	2.5
C. Sessional								
1.	Seminar	CIV 3293	Term Paper and Seminar	0	0	4	4	2
Total Sessional				0	0	4	4	2
Total of Semester				17	0	9	26	21.5



FOURTH YEAR SEVENTH SEMESTER

A. Theory								
Sl. No.	Course Category	Course Code	Course Title	Contacts Hours / Week			Total	Credit Points
				L	T	P		
1.	Humanities & Social Sciences	HUM 4101	Principles of Management	3	0	0	3	3
2.	Program Elective	CIV 4131 – CIV 4134	Professional Elective - III	3	0	0	3	3
3.	Program Elective	CIV 4141 – CIV 4144	Professional Elective - IV	3	0	0	3	3
4.	Program Elective	CIV 4151 - CIV 4154	Professional Elective – V	3	0	0	3	3
5.	Open Elective	CIV 4121 & CIV 4122	Open Elective – III	3	0	0	3	3
6.	Open Elective	BTC 4126 BTC 4127 BTC 4128	Open Elective - IV	3	0	0	3	3
Total Theory				18	0	0	18	18
B. Sessional								
1.	Industrial Training	CIV 4191	Industrial Training / Internship	-	-	-	-	2
2.	Project	CIV 4195	Project – I	0	0	8	8	4
Total Sessional				0	0	8	8	6
Total of Semester				18	0	8	26	24

FOURTH YEAR EIGHTH SEMESTER

B. Sessional								
1.	Project	CIV 4295	Project – II	0	0	14	14	7
2.	Grand Viva Voce	CIV 4297	Comprehensive Viva-voce	-	-	-	-	1
Total Sessional				0	0	14	14	8
Total of Semester				0	0	14	14	8



PROFESSIONAL ELECTIVE COURSES FOR CIVIL ENGINEERING

Professional Elective - I	CIV 3131	Air and Noise Pollution
	CIV 3132	Structural Dynamics and Earthquake Engineering
	CIV 3133	Rock Mechanics
	CIV 3134	Offshore Structures
Professional Elective - II	CIV 3231	Prestressed Concrete Structures
	CIV 3232	Solid and Hazardous Waste Management
	CIV 3233	Advanced Foundation Engineering
	CIV 3234	Ground Improvement Techniques
Professional Elective - III	CIV 4131	Irrigation Engineering
	CIV 4132	Design of Tall Structures
	CIV 4133	Advanced Highway and Traffic Engineering
	CIV 4134	Environmental Impact Assessment
Professional Elective - IV	CIV 4141	Airport, Railway and Harbor Engineering
	CIV 4142	Advanced Structural Analysis
	CIV 4143	Bridge Engineering
	CIV 4144	Soil Dynamics and Machine Foundations
Professional Elective - V	CIV 4151	Hydraulic Structures
	CIV 4152	Pavement Design
	CIV 4153	Finite Element Analysis
	CIV 4154	Advanced Concrete Technology

OPEN ELECTIVE COURSES OFFERED BY CIVIL ENGINEERING DEPARTMENT

Open Elective - I (Emerging Field)	CIV 3121	Repair & Rehabilitation of Structures
	CIV 3122	Sustainable Construction Methods
Open Elective - II	CIV 3221	Project Planning and Management
	CIV 3222	Principles of Sustainable Engineering
Open Elective - III	CIV 4121	An Introduction to Concrete Technology
	CIV 4122	Construction Materials
Open Elective - IV	BTC 4126	Biology for Engineers
	BTC 4127	Biosensor
	BTC 4128	Bioenergy and other Non-conventional Energy

NOTE:-

Open Elective –I (Emerging Field) - to be offered exclusively for the students of Civil Engineering

Open Elective-II, III and IV – to be offered for the students of other Departments.

Open Electives for Civil Engineering Students of 5th, 6th and 7th semester to be decided later.



Credit Summary for B. Tech.in Civil Engineering Programme with effect from July, 2023

Sl. No.	Course Type	Credit	AICTE suggested
1.	Humanities and Social Sciences including Management Courses	12	15
2.	Basic Science courses	20	25
3.	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	25	24
4.	Professional core courses /Program core courses	63	48
5.	Professional Elective courses relevant to chosen specialization/branch	15	18
6.	Open subjects – Electives from other technical and /or emerging subjects	12	18
7.	Project work, grand viva, seminar and internship in industry or elsewhere	16	15
8.	Mandatory Courses [Induction Program, Indian Constitution, Essence of Indian Traditional Knowledge, Organizational Behavior]	0	0
	Total	163	163