

**BACHELOR OF TECHNOLOGY DEGREE PROGRAM IN CIVIL
ENGINEERING
B.TECH (CIVIL ENGINEERING)
2018 – 2022**

1.1 PROGRAM CURRICULUM

Mandatory Courses and Credits

The B.Tech (Civil Engineering) Program Structure (2018-2022) consists of 59 Courses totaling 180 credits.

B.Tech (Civil Engineering) 2018-2022: Mandatory Courses and Credits			
S. NO	TYPE OF COURSES	NO. OF COURSES	CREDITS
1	Humanities, Social Sciences and Management Sciences (HS)	4	11
2	Basic Sciences (BS)	9	29
3	Engineering Sciences (ES)	7	21
4	Core (Professional) Course (CC)	26	76
5	Discipline(Professional) Elective (DE)	4	12
6	Open Elective (OE)	2	6
7	Professional Practice (PP)	2	20
8	Personal and Professional Skills (PPS)	4	4
9	University Learning Courses (ULC)	1	1
TOTAL		59	180
<p>The mandatory minimum credits required for the award of the B.Tech (Civil Engineering) Degree is 180 Credits.</p>			

B.Tech. (Civil Engineering) Program Year Wise Structure

First Year			Second Year			Third Year			Fourth Year	
Sem. 1	Sem. 2	Summer Term	Sem.3	Sem. 4	Summer Term/PP -I-1	Sem. 5	Sem. 6	Summer Term	Sem. 7	Sem. 8
BS-3 ES-4 HS-1 PPS-1	BS-4 ES-3 HS-1 PPS-1		BS-1 CC-6 PPS-1 ULC--1	BS-1 CC-7 PPS-1		CC-6 HS-1 DE-1	CC-5 HS-1 DE-1		CC-2 DE-1 OE-1	DE-1 OE-1 PP-II-1

Mandatory Minimum Credits required for the award of the B.Tech (Civil Engineering) Degree: 180

Nomenclature:

- BS - Basic Sciences
- ES - Engineering Sciences
- HS – Humanities, Social Sciences and Management Sciences
- CC - Core Course
- DE - Discipline/Professional Electives
- OE - Open Electives
- PP-I/PP-II - Professional Practice
- PPS-Personal and Professional Skills
- ULC - University Learning Course

In the entire Program, the practical and skill based Course component contribute to an extent of approximately 30% out of the total credits of 180 for B.Tech (Civil Engineering) Program of four years duration.

1.2 PROGRAM STRUCTURE

I Sem- PHYSICS CYCLE (Aug-Dec)*						
S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	MAT 101	Engineering Mathematics – I	3	1	0	4
2	PHY 101	Engineering Physics	4	0	0	4
3	EEE 101	Elements of Electrical Engineering	3	0	0	3
4	CIV 101	Elements of Civil Engineering	3	0	0	3
5	MEC 152	Engineering Graphics	2	0	4	4
6	ENG 103	Technical written communication	2	1	0	3
7	PHY 151	Engineering Physics Lab	0	0	2	1
8	MEC 151	Workshop Practice	0	0	2	1
9	PPS 105	Building Self Confidence	0	0	2	1
		TOTAL	17	2	10	24

I Sem - CHEMISTRY CYCLE (Aug-Dec)#						
S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	MAT 101	Engineering Mathematics – I	3	1	0	4
2	CHE 101	Engineering Chemistry	4	0	0	4
3	ECE 101	Elements of Electronics Engineering	3	0	0	3
4	MEC 101	Elements of Mechanical Engineering	3	0	0	3
5	CIV 102	Environmental Science and Disaster Management	3	0	0	3
6	ENG 104	Technical spoken communication	1	0	2	2
7	CSE 151	Computer Programming	2	0	4	4
8	CHE 151	Engineering Chemistry Lab	0	0	2	1
9	PPS 105	Building Self Confidence	0	0	2	1
		TOTAL	19	1	10	25

II Sem- CHEMISTRY CYCLE (Jan-May) *						
S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	MAT 102	Engineering Mathematics – II	3	1	0	4
2	CHE 101	Engineering Chemistry	4	0	0	4
3	ECE 101	Elements of Electronics Engineering	3	0	0	3
4	MEC 101	Elements of Mechanical Engineering	3	0	0	3
5	CIV 102	Environmental Science and Disaster Management	3	0	0	3
6	ENG 104	Technical spoken communication	1	0	2	2
7	CSE 151	Computer Programming	2	0	4	4
8	CHE 151	Engineering Chemistry Lab	0	0	2	1
9	PPS 106	Effective Communication	0	0	2	1
		TOTAL	19	1	10	25

II Sem -PHYSICS CYCLE (Jan-May) #						
S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	MAT 102	Engineering Mathematics – II	3	1	0	4
2	PHY 101	Engineering Physics	4	0	0	4
3	EEE 101	Elements of Electrical Engineering	3	0	0	3
4	CIV 101	Elements of Civil Engineering	3	0	0	3
5	MEC 152	Engineering Graphics	2	0	4	4
6	ENG 103	Technical Written Communication	2	1	0	3
7	PHY 151	Engineering Physics Lab	0	0	2	1
8	MEC 151	Workshop Practice	0	0	2	1
9	PPS 106	Effective Communication	0	0	2	1
		TOTAL	17	2	10	24

Note: At the end of the 1st year (Common to all B.Tech Program) the total credits offered is 49.

* The 1st year B.Tech Program structure is executed in two cycles. The students undergoing the “Physics” cycle shall take the Courses as indicated.

The students undergoing “Chemistry” cycle shall take the Courses as indicated.

III SEMESTER						
S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	MAT 103	Engineering Mathematics – III	3	1	0	4
2	CIV 201	Strength of Materials	3	1	0	4
3	CIV 202	Surveying	3	1	0	4
4	CIV 203	Engineering Geology	4	0	0	4
5	CIV 204	Concrete Technology and Construction Materials	4	0	0	4
6	CIV 251	Strength of Materials lab	0	0	2	1
7	CIV 252	Surveying Practice	0	0	2	1
8	PPS 107	Design Thinking and Team Building	0	0	2	1
TOTAL			17	3	6	23

** The students have to register for extensive survey project one month before the end of third semester & undergo the “Survey Camp” for about 2 weeks during the Winter Break (December/ January) and the credits earned will be accounted for in the fourth semester.

S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	MAT 105	Numerical Methods	3	1	0	4
2	CIV 205	Structural Analysis-I	3	1	0	4
3	CIV 206	Transportation Engineering	3	1	0	4
4	CIV 207	Hydraulic Structures and Irrigation Engineering	4	0	0	4
5	CIV 208	Fluid Mechanics	3	1	0	4
6	CIV 253	Engineering Geology Lab	0	0	2	1
7	CIV 254	Fluid Mechanics Lab	0	0	2	1
8	PPS 108	Being Corporate Ready	0	0	2	1
9	CIV 255	Extensive Survey Project**				3
TOTAL			16	4	6	26

*** Note: Students will undergo Professional Practice – I during the summer break between the fourth and fifth semesters and the credits earned will be accounted for in the fifth semester.

V SEMESTER						
S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	CIV 209	Structural Analysis-II	3	1	0	4
2	CIV 210	Soil Mechanics	3	1	0	4
3	CIV 211	Design of RC Elements	3	1	0	4
4	CIV 3XX	Discipline Elective-I	3	0	0	3
5	MGT 112 / MGT 113	Engineering Economics / Digital Entrepreneurship	3	0	0	3
6	CIV 212	Environmental Engineering	4	0	0	4
7	CIV 262	Concrete and Highway Materials Testing Lab	0	0	2	1
8	CIV 258	Computer Aided Building Drawing	0	0	2	1
9	ULC 101	University Learning Course*	0	0	0	1
10	PIP 101	Professional Practice –I***				5
TOTAL			19	3	4	29/30

* Student has to register for University Learning Course in any one semester 5/6 to earn the mandatory credits

VI SEMESTER						
S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	CIV 213	Design of Structural Steel Elements	3	1	0	4
2	CIV 261	Computer Aided Structural Analysis Lab	0	0	2	1
3	MGT 113 / MGT 112	Digital Entrepreneurship / Engineering Economics	3	0	0	3
4	CIV 3XX	Discipline Elective – II	3	0	0	3
5	CIV 214	Foundation Engineering	3	1	0	4
6	CIV 259	Environmental Engineering Lab	0	0	2	1
7	CIV 260	Soil Mechanics Lab	0	0	2	1
8	ULC 101	University Learning Course*				1
TOTAL			12	2	6	17/18

VII SEMESTER						
S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	CIV 215	Estimating, Costing and Valuation	3	1	0	4
2	CIV 216	Hydrology and Water Resources Engineering	3	1	0	4
3	CIV 3XX	Discipline elective – III	3	0	0	3
4	CIV 4XX	Open Elective – I	3	0	0	3
TOTAL			12	2	0	14

VIII SEMESTER						
S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	CIV 3XX	Discipline Elective – IV	3	0	0	3
2	CIV 4XX	Open Elective – II	3	0	0	3
3	PIP 102	Professional Practice - II				15
TOTAL			6	0	0	21

TABLE – 3.2.1**DISCIPLINE ELECTIVES**

S. No	COURSE CODE	COURSE NAME	L	T	P	CREDITS
1	CIV 301	Pavement Design	3	0	0	3
2	CIV 302	Ground Improvement Techniques	3	0	0	3
3	CIV 303	Environmental Pollution and Control	3	0	0	3
4	CIV 304	Bridge Design	3	0	0	3
5	CIV 305	Geographical Information System	3	0	0	3
6	CIV 306	Principles of Construction Management	3	0	0	3
7	CIV 307	Elements of Pre-stressed Concrete Structures	3	0	0	3
8	CIV 308	Ground Water Hydrology	3	0	0	3
9	CIV 309	Environmental Impact Assessment	3	0	0	3
10	CIV 310	Elements of Earthquake Engineering	3	0	0	3
11	CIV 311	Environmental Geotechnics and Solid Waste Management	3	0	0	3
12	CIV 312	Urban Transport Planning and Traffic Engineering	3	0	0	3
13	CIV 313	Advanced Surveying	3	0	0	3

TABLE – 3.2.2**OPEN ELECTIVES OFFERED BY DEPARTMENT OF CIVIL ENGINEERING**

S. No	COURSE CODE	COURSE NAME	L	T	P	CREDITS
1	CIV 401	Geographical Information Systems	3	0	0	3
2	CIV 402	Environmental Impact Assessment	3	0	0	3
3	CIV 403	Sustainable Materials and Green Buildings	3	0	0	3
4	CIV 404	Construction Project Management	3	0	0	3

OPEN ELECTIVES OFFERED BY DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

1	CSE 401	Image Processing	3	0	0	3
2	CSE 402	Data Structures Using C	3	0	0	3
3	CSE 403	Software Testing and Quality Assurance	3	0	0	3
4	CSE 404	Social Network Analytics	3	0	0	3
5	CSE 405	Digital and Mobile Forensics	3	0	0	3
6	CSE 406	Database Management Systems	3	0	0	3
7	CSE 407	Multimedia and Animation	3	0	3	3

OPEN ELECTIVES OFFERED BY DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

1	EEE 401	Artificial Neural Networks	3	0	0	3
2	EEE 405	Energy Audit	3	0	0	3
3	EEE 406	Research Methodology	3	0	0	3
4	EEE 407	Smart grid technology	3	0	0	3
5	EEE 408	Professional ethics in engineering	3	0	0	3

OPEN ELECTIVES OFFERED BY DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

1	ECE 401	Artificial Neural Networks	3	0	0	3
2	ECE 402	Biomedical Instrumentation	3	0	0	3
3	ECE 407	Internet of Things	3	0	0	3
4	ECE 408	Industrial automation and control	3	0	0	3

OPEN ELECTIVES OFFERED BY DEPARTMENT OF MECHANICAL ENGINEERING

1	MEC 401	Automotive Vehicles	3	0	0	3
2	MEC 402	Nanotechnology	3	0	0	3
3	MEC 405	Engineering Optimisation	3	0	0	3
4	MEC 406	Operations Research for Engineers	3	0	0	3
5	MEC 407	Operations Management	3	0	0	3
6	MEC 408	Work Study	3	0	0	3
7	MEC 409	Project Management	3	0	0	3
8	MEC 410	Organizational Behaviour	3	0	0	3
9	MEC 411	Renewable Energy Systems	3	0	0	3

OPEN ELECTIVES OFFERED BY DEPARTMENT OF PETROLEUM ENGINEERING

1	PET 402	Computational Methods in Chemical Engineering	3	0	0	3
2	PET 403	Computational Fluid Dynamics	3	0	0	3
3	PET 405	Petroleum Corrosion Technology	3	0	0	3
4	PET 406	Polymer Technology	3	0	0	3
5	PET 407	Total Quality Management	3	0	0	3
6	PET 408	Oil and Gas Marketing and Resource Management	3	0	0	3

OPEN ELECTIVES OFFERED BY DEPARTMENT OF BASIC SCIENCES AND HUMANITIES

1	PSY 401	Social Psychology	3	0	0	3
2	ENG 401	Literature Appreciation	3	0	0	3
3	CHE 401	Composite Materials	3	0	0	3
4	CHE 402	Catalysis Technology	3	0	0	3