

# **SARALA BIRLA UNIVERSITY RANCHI**



Established under the Sarala Birla University Act 2017 Govt. of Jharkhand as per Section 2(f) of UGC Act. 1956

## **CURRICULUM FOR**

**B.Tech**

**in  
Civil Engineering**

**(Based on UGC & AICTE- CBCS)**

**Effective from 2020-21**

## **DEFINITION OF CREDIT**

1 Hr. Lecture (L) per week	1 credit
1 Hr. Tutorial (T) per week	1 credit
1 Hr. Practical (P) per week	0.5 credit
2 Hours Practical (Lab)/week	1 credit
4 Hours Practical (Lab)/week	2 credits

## **COURSE CODE AND DEFINITION**

<b>Course Code</b>	<b>Definition</b>
<b>BSC</b>	Basic Science courses
<b>ESC</b>	Engineering Science courses
<b>HSMC</b>	Humanities and Social Sciences including Management courses
<b>PCC-CE</b>	Professional core courses
<b>PEC-CE</b>	Professional Elective courses
<b>OEC</b>	Open Elective Courses
<b>MC</b>	Mandatory Courses
<b>MOOC's</b>	Massive Open Online Courses
<b>CE-P1</b>	Project stage-I
<b>CE-P2</b>	Project stage-II
<b>CE-P3</b>	Project stage-III

## **Structure of Civil Engineering (B.TECH.)**

**(Break up of Credits)**

<b>S.No</b>	<b>Category</b>	<b>Credit Breakup</b>
1	Humanities and Social Sciences including Management courses	12
2	Basic Science courses	23
3	Engineering Science courses including workshop,drawing, basics of electrical/mechanical/computer etc	32
4	Professional Core courses	67
5	Professional Elective courses relevant to chosen specialization/branch	29
6	Open subjects – Electives from other technical and /or emerging subjects	9
7	Mandatory Courses[Environmental Sciences]	2
8	Project work, seminar and internship in industry or elsewhere	16
	<b>Total Credits</b>	<b>190</b>

## CREDITS DISTRIBUTION (SEMESTER-WISE AND COURSE-WISE )

Semester	HSMC	BSC	ESC	PCC	PEC	OEC	PROJECT	MC	Total Credit Semester-wise
1st	3	9.5	13	0	0	0	0	0	25.5
2nd	3	9.5	12	0	0	0	0	2	26.5
3rd	2	4	5	14	0	0	0	0	25
4th	4	0	0	15	4	0	0	0	23
5th	0	0	0	15	0	9	0	0	24
6th	0	0	2	13	9	0	2	0	26
7th	0	0	0	6	8	0	5	0	19
8th	0	0	0	4	8	0	9	0	21
<b>Total Credit Course-wise</b>	12	23	32	67	29	9	16	2	190
<b>Total Credit</b>									<b>190</b>

## BASIC SCIENCE COURSES

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	BSC-101	Chemistry	3	1	0	4	I
2	BSC-102	Chemistry Lab	0	0	3	1.5	I
3	BSC-103	Physics	3	1	0	4	II
4	BSC-104	Physics Lab	0	0	3	1.5	II
5	BSC-105	Mathematics-I	3	1	0	4	I
6	BSC-106	Mathematics-II	3	1	0	4	II
7	BSC-107	Mathematics-III	3	1	0	4	III
<b>Total Credits:</b>						<b>23</b>	

## ENGINEERING SCIENCE COURSES

Sl. No.	Course Code	Course Title	Hours Per Week			Credits	Preferred Semester
			L	T	P		
1	ESC-101	Basic Electrical & Electronics Engineering	3	1	0	4	I
2	ESC-102	Basic Electrical & Electronics Engineering Lab	0	0	2	1	I
3	ESC-103	Introduction to Unix & C Programming	3	1	0	4	I
4	ESC-104	Introduction to Unix & Programming for Problem Solving Lab	0	0	2	1	I
5	ESC-105	Engineering Graphics & Design	1	0	4	3	I
6	ESC-106	Electronic Devices	3	0	0	3	II
7	ESC-107	Electronic Devices Lab	0	0	2	1	II
8	ESC-108	Data Structures using C++	3	1	0	4	II
9	ESC-109	Data Structures using C++ Lab	0	0	2	1	II
10	ESC-110	Workshop & Manufacturing Practices	1	0	4	3	II
11	ESC-111	Engineering Mechanics	3	1	0	4	III
12	ESC-112	Programming using MATLAB	0	0	2	1	III
13	ESC-113	Python Programming	1	0	2	2	III
<b>Total Credit:</b>						<b>32</b>	

## HUMANITIES & SOCIAL SCIENCES INCLUDING MANAGEMENT COURSE

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	HSMC-101	English	3	0	0	3	I
2	HSMC-102	Technical Communication	2	0	0	2	II
3	HSMC-103	Technical Communication Lab	0	0	2	1	II
4	HSMC-104	French Through Communicative Approach-I	2	0	0	2	III
5	HSMC-105	French Through Communicative Approach-II	2	0	0	2	IV
6	HSMC-106	Organisational Behaviour	2	0	0	2	IV
<b>Total Credit:</b>						<b>12</b>	

## Mandatory Courses

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	MC-101	Induction Programme	0	0	0	0	I
2	MC-102	Environmental Science	2	0	0	2	IV
3	MC-103	Values & Ethics	2	0	0	0	IV
4	MC-104	PDP-I	2	0	0	0	I
5	MC-105	PDP-II	2	0	0	0	II
6	MC-106	PDP-III	2	0	0	0	III
7	MC-107	PDP-IV	2	0	0	0	IV
8	MC-108	PDP-V	2	0	0	0	V
9	MC-109	PDP-VI	2	0	0	0	VI
10	MC-110	PDP-VII	2	0	0	0	VII
11	MC-111	PDP-VIII	2	0	0	0	VIII
12	MC-112	PT & Games/NSS/NCC-I	0	0	0	0	I
13	MC-113	PT & Games/NSS/NCC-II	0	0	0	0	II
<b>Total Credit:</b>						<b>2</b>	

**Note:** PDP: Personality Development Programme  
PT: Physical Training  
NSS: National Service Scheme  
NCC: National Cadet Corps



# MASSIVE OPEN ONLINE COURSES

Branch: Civil Engineering (B.Tech)

Sl. No.	Course Code	Course Title	Hrs./ Week T: P	L:	Credits
1	MOOCs -101	Artificial Intelligence for Real-World Application	03:01:00		4
2	MOOCs -102	Applications of Deep Learning and Neural Networks	03:01:00		4
3	MOOCs -103	Usability Design of Software Applications	03:01:00		4
4	MOOCs -104	Applied Cloud Computing	03:01:00		4
5	MOOCs -105	Information Security - Practitioner's perspective	03:01:00		4
6	MOOCs -106	Innovation and Entrepreneurship	03:01:00		4
7	MOOCs -107	Practical Approach to Data Mining and Analytics	03:01:00		4
8	MOOCs -108	IoT and its Applications	03:01:00		4
9	MOOCs -109	Intelligent Game Design and its Applications	03:01:00		4
10	MOOCs -110	Industrial Mechatronic Systems	03:01:00		4
11	MOOCs -111	Solar Energy Technology and its Applications	03:01:00		4

**Note: A student will be eligible to get Under Graduate degree with Honours or additional Minor Engineering, if he/she completes an additional 20 credits. These could be acquired through MOOCs.**

**PROFESSIONAL CORE COURSES (Sem III & IV)****Branch: Civil Engineering**

Sl. No.	Course Code	Course Title	Hours			Credit	Semester
			L	T	P		
1	PCC-CE-201	Strength of Material	3	1	0	4	III
2	PCC-CE-202	Strength of Material Lab	0	0	2	1	III
3	PCC-CE-203	Surveying & Levelling	3	1	0	4	III
4	PCC-CE-204	Surveying & Levelling Lab	0	0	2	1	III
5	PCC-CE-205	Engineering Geology	3	1	0	4	III
6	PCC-CE-206	Fluid Mechanics	3	1	0	4	IV
7	PCC-CE-207	Fluid Mechanics Lab	0	0	2	1	IV
8	PCC-CE-208	Materials Testing & Evaluation	3	1	0	4	IV
9	PCC-CE-209	Materials Testing & Evaluation Lab	0	0	2	1	IV
10	PCC-CE-210	Building Construction	3	1	0	4	IV
11	PCC-CE-211	Building Construction Lab	0	0	2	1	IV
<b>Total</b>						<b>29</b>	

**PROFESSIONAL CORE COURSES (Sem V & VI)**

Sl. No.	Course Code	Course Title	Hours			Credit	Semester
			L	T	P		
1	PCC-CE-301	Geotechnical Engineering-I	3	1	0	4	V
2	PCC-CE-302	Geotechnical Engineering Lab-I	0	0	2	1	V
3	PCC-CE-303	Hydraulic Engineering	3	1	0	4	V
4	PCC-CE-304	Hydraulic Engineering Lab	0	0	2	1	V
5	PCC-CE-305	Transportation Engineering	3	1	0	4	V
6	PCC-CE-306	Transportation Engineering Lab	0	0	2	1	V
7	PCC-CE-307	Structural Analysis -I	3	1	0	4	VI
8	PCC-CE-308	Structural Engineering Lab	0	0	2	1	VI
9	PCC-CE-309	Design of Concrete Structures-I	3	1	0	4	VI
10	PCC-CE-310	Environmental Engineering	3	1	0	4	VI
<b>Total</b>						<b>28</b>	

**PROFESSIONAL CORE COURSES (Sem VII & VIII)**

Sl. No.	Course Code	Course Title	Hours			Credit	Semester
			L	T	P		
1	PCC-CE-401	Hydrology & Water Resources Engineering	3	1	0	4	VII
2	PCC-CE-402	Concrete Structure Lab	0	0	2	1	VII
3	PCC-CE-403	Computer Aided Civil Engg. Drawing.	0	0	2	1	VII
4	PCC-CE-404	Construction Engineering & Management	3	1	0	4	VII
<b>Total</b>						<b>10</b>	

## PROFESSIONAL ELECTIVE COURSES (Sem V & VI)

**Branch: Civil Engineering**

SL No.	Course Code	Course Title	Hrs./ Week L: T: P	Credits	Preferred Semester
1	PEC-CE-201	Disaster Preparedness & Planning Management	03:01:00	4	IV/VI
2	PEC-CE-301	Geotechnical Engineering-II	03:01:00	4	IV/VI
3	PEC-CE-302	Geotechnical Engineering Lab-II	00:00:02	1	IV/VI
4	PEC-CE-303	Engineering Economics, Estimation & Costing	03:01:00	4	IV/VI
5	PEC-CE-304	Instrumentation & Sensor Technologies for Civil	03:01:00	4	IV/VI
6	PEC-CE-305	Railway Engineering	03:01:00	4	IV/VI
7	PEC-CE-306	Open Chanel Flow	03:01:00	4	IV/VI

## PROFESSIONAL ELECTIVE COURSES (Sem VII & VIII)

**Branch: Civil Engineering**

1	PEC-CE-401	Design of Concrete Structures-II	03:01:00	4	VII/VIII
2	PEC-CE-402	Structural Analysis-II	03:01:00	4	VII/VIII
3	PEC-CE-403	Design of Hydraulic Structure	03:01:00	4	VII/VIII
4	PEC-CE-404	Traffic Engineering & Management	03:01:00	4	VII/VIII
5	PEC-CE-405	Port & Harbour Engineering	03:01:00	4	VII/VIII
6	PEC-CE-406	Prestressed Concrete	03:01:00	4	VII/VIII
7	PEC-CE-407	Bridge Engineering	03:01:00	4	VII/VIII
8	PEC-CE-408	Design of Steel Structures	03:01:00	4	VII/VIII
9	PEC-CE-409	Foundation Engineering & Geotechnical Design	03:01:00	4	VII/VIII
10	PEC-CE-410	Solid & Hazardous Waste Management	03:01:00	4	VII/VIII
11	PEC-CE-411	Earthquake Engineering	03:01:00	4	VII/VIII
12	PEC-CE-412	Structural Dynamics	03:01:00	4	VII/VIII
13	PEC-CE-413	Water & Air Quality Modelling	03:01:00	4	VII/VIII
14	PEC-CE-414	Air & Noise Pollution and Control	03:01:00	4	VII/VIII
15	PEC-CE-415	Irrigation Engineering	03:01:00	4	VII/VIII
16	PEC-CE-416	Masonry Structures	03:01:00	4	VII/VIII
15	PEC-CE-415	Irrigation Engineering	03:01:00	4	VII/VIII
16	PEC-CE-416	Masonry Structures	03:01:00	4	VII/VIII

# OPEN ELECTIVE COURSES

**Branch: Civil Engineering**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>
1	OEC-CSE-301	Machine Learning for Real-World Applications	4
2	OEC-EEE-305	Renewable Energy	4
3	OEC-EEE-306	Renewable Energy Lab	1

# PROJECT

**Branch: Civil Engineering**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Hrs. /Week L: T: P</b>	<b>Credits</b>	<b>Preferred Semester</b>
<b>1</b>	CE-P1	Project Stage-I (Mini Project/ Industrial Training)	00:00:04	2	VI
<b>2</b>	CE-P2	Project Stage-II(Minor Project Work) <b>(to be continued in next semester)</b>	00:00:10	5	VII
<b>3</b>	CE-P3	Project Stage-III(Major Project Work & Dissertation)	00:00:18	9	VIII
<b>Total Credit</b>				<b>16</b>	

# COURSE STRUCTURE

SEMESTER I (1st YEAR)

Branch: Civil Engineering (B.Tech)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Basic Science Course	BSC-101	Chemistry	3	1	0	4	30	70	100
2	Basic Science Course	BSC-105	Mathematics – I	3	1	0	4	30	70	100
3	Engineering Science Course	ESC-101	Basic Electrical & Electronics Engineering	3	1	0	4	30	70	100
4	Engineering Science Course	ESC-103	Introduction to Unix & C Programming	3	1	0	4	30	70	100
5	Humanities and Social Sciences including Management Course	HSMC-101	English	3	0	0	3	30	70	100
<b>Total(A)</b>							<b>19</b>	<b>150</b>	<b>350</b>	<b>500</b>
<b>Practical/Drawing/Design</b>										
1	Engineering Science Course	ESC-105	Engineering Graphics & Design	1	0	4	3	30	20	50
2	Basic Science Course	BSC-102	Chemistry Lab	0	0	3	1.5	30	20	50
3	Engineering Science Course	ESC-102	Basic Electrical & Electronics Engineering Lab	0	0	2	1	30	20	50
4	Engineering Science Course	ESC-104	Introduction to Unix & C Programming Lab	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>6.5</b>	<b>120</b>	<b>80</b>	<b>200</b>
<b>Mandatory Courses/MOOC'S</b>										
1	Mandatory Course	MC-101	Induction Program	0	0	0	0	0	0	0
2	Mandatory Course	MC-112	PT & Games/NSS/NCC-I	2	0	0	0	0	0	0
3	Mandatory Course	MC-104	PDP-I	2	0	0	0	0	0	0
<b>Total(C)</b>							<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total (A+B+C)</b>							<b>25.5</b>	<b>270</b>	<b>430</b>	<b>700</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										

# COURSE STRUCTURE

**SEMESTER II (1st YEAR)**

**Branch: Civil Engineering (B.Tech)**

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Basic Science Course	BSC-106	Mathematics –II	3	1	0	4	30	70	100
2	Humanities and Social Sciences including Management Course	HSMC-102	Technical Communication	2	0	0	2	30	70	100
3	Engineering Science Course	ESC-106	Electronic Devices	3	0	0	3	30	70	100
4	Basic Science Course	BSC-103	Physics	3	1	0	4	30	70	100
5	Engineering Science Course	ESC-108	Data Structures	3	1	0	4	30	70	100
<b>Total(A)</b>							<b>17</b>	<b>150</b>	<b>350</b>	<b>500</b>
<b>Practical/Drawing/Design</b>										
1	Engineering Science Course	ESC-110	Workshop & Manufacturing Practices	1	0	4	3	30	20	50
2	Engineering Science Course	ESC-107	Electronic Devices Lab	0	0	2	1	30	20	50
3	Basic Science Course	BSC-104	Physics Lab	0	0	3	1.5	30	20	50
4	Humanities and Social Sciences including Management Course	HSMC-103	Technical Communication Lab	0	0	2	1	30	20	50
5	Engineering Science Course	ESC-109	Data Structures Lab	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>7.5</b>	<b>150</b>	<b>100</b>	<b>250</b>
<b>Mandatory Courses/MOOC'S</b>										
1	Mandatory Courses	MC-102	Environmental Science	2	0	0	2	30	70	100
2	Mandatory Courses	MC-113	PT& Games/NSS/NCC-I	2	0	0	0	0	0	0
3	Mandatory Courses	MC-105	PDP-II	2	0	0	0	0	0	0
<b>Total(C)</b>							<b>2</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>Grand Total (A+B+C)</b>							<b>26.5</b>	<b>330</b>	<b>520</b>	<b>850</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										

# COURSE STRUCTURE

**SEMESTER III (SECOND YEAR)**

**Branch: Civil Engineering**

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Basic Science Course	BSC-107	Mathematics-III	3	1	0	4	30	70	100
2	Engineering Science Course	ESC-111	Engineering Mechanics	3	1	0	4	30	70	100
3	Professional Core Course	PCC-CE-201	Strength of Material	3	1	0	4	30	70	100
4	Professional Core Course	PCC-CE-203	Surveying & Levelling	3	1	0	4	30	70	100
5	Professional Core Course	PCC-CE-205	Engineering Geology	3	1	0	4	30	70	100
6	Humanities and Social Sciences including Management Course	HSMC-104	French Through Communicative Approach-I	2	0	0	2	30	70	100
<b>Total(A)</b>							<b>22</b>	<b>180</b>	<b>420</b>	<b>600</b>
<b>Practical/Drawing/Design</b>										
1	Professional Core Course	PCC-CE-202	Strength of Material Lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-CE-204	Surveying & Levelling Lab	0	0	2	1	30	20	50
3	Engineering Science Course	ESC-112	Programming using MATLAB	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>3</b>	<b>90</b>	<b>60</b>	<b>150</b>
<b>Mandatory Courses/MOOC'S</b>										
1	Mandatory Course	MC-103	Values & Ethics	2	0	0	0	0	0	0
2	Mandatory Course	MC-106	PDP-III	2	0	0	0	0	0	0
<b>Total(C)</b>							<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total (A+B+C)</b>							<b>25</b>	<b>270</b>	<b>480</b>	<b>750</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										



# COURSE STRUCTURE

**SEMESTER IV (SECOND YEAR]**

**Branch: Civil Engineering**

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Professional Elective Course	PEC-CE-201	Disaster Preparedness & Planning Management	3	1	0	4	30	70	100
2	Professional Core Course	PCC-CE-206	Fluid Mechanics	3	1	0	4	30	70	100
3	Professional Core Course	PCC-CE-208	Materials Testing & Evaluation	3	1	0	4	30	70	100
4	Professional Core Course	PCC-CE-210	Building Construction	3	1	0	4	30	70	100
5	Humanities and Social Sciences including Management Course	HSMC-106	Organisational Behavior	2	0	0	2	30	70	100
6	Humanities and Social Sciences including Management Course	HSMC-105	French Through Communicative Approach-II	2	0	0	2	30	70	100
<b>Total(A)</b>							<b>20</b>	<b>180</b>	<b>420</b>	<b>600</b>
1	Professional Core Course	PCC-CE-207	Fluid Mechanics Lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-CE-209	Materials Testing & Evaluation Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-CE-211	Building Construction Lab	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>3</b>	<b>90</b>	<b>60</b>	<b>150</b>
<b>Mandatory Courses/MOOC'S</b>										
1	Mandatory Course	MC-107	PDP-IV	2	0	0	0	0	0	0
<b>Total(C)</b>							<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total (A+B+C)</b>							<b>23</b>	<b>270</b>	<b>480</b>	<b>750</b>

**L-Lecture, T-Tutorial, P-Practical**

**IA- Internal Assessment, ESE-End Semester Examination**

# COURSE STRUCTURE

SEMESTER V (THIRD YEAR)

Branch: Civil Engineering

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Professional Core Courses	PCC-CE-301	Geotechnical Engineering-I	3	1	0	4	30	70	100
2	Professional Core Courses	PCC-CE-303	Hydraulic Engineering	3	1	0	4	30	70	100
3	Professional Core Courses	PCC-CE-305	Transportation Engineering	3	1	0	4	30	70	100
4	Open Elective Course	OEC-CSE-301	Machine Learning for Real-World Applications	3	1	0	4	30	70	100
5	Open Elective Course	OEC-EEE-305	Renewable Energy	3	1	0	4	30	70	100
<b>Total(A)</b>							<b>20</b>	<b>150</b>	<b>350</b>	<b>500</b>
<b>Practical/Drawing/Design</b>										
1	Professional Core Course	PCC-CE-302	Geotechnical Engineering Lab-I	0	0	2	1	30	20	50
2	Professional Core Course	PCC-CE-304	Hydraulic Engineering Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-CE-306	Transportation Engineering Lab	0	0	2	1	30	20	50
4	Open Elective Course	OEC-EEE-306	Renewable Energy Lab	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>4</b>	<b>120</b>	<b>80</b>	<b>200</b>
<b>Mandatory Courses/MOOC'S</b>										
1	Mandatory Course	MC-108	PDP-V	2	0	0	0	0	0	0
<b>Total(C)</b>							<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total (A+B+C)</b>							<b>24</b>	<b>270</b>	<b>430</b>	<b>700</b>

L-Lecture, T-Tutorial, P-Practical

IA- Internal Assessment, ESE-End Semester Examination

# COURSE STRUCTURE

**SEMESTER VI (THIRD YEAR]**

**Branch: Civil Engineering**

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Professional Core Course	PCC-CE-307	Structural Analysis -I	3	1	0	4	30	70	100
2	Professional Core Course	PCC-CE-309	Design of Concrete Structures-I	3	1	0	4	30	70	100
3	Professional Core Course	PCC-CE-310	Environmental Engineering	3	1	0	4	30	70	100
4	Professional Elective Course	PEC-CE-302	Geotechnical Engineering-II	3	1	0	4	30	70	100
5	Professional Elective Course	PEC-CE-304	Engineering Economics, Estimation & Costing	3	1	0	4	30	70	100
<b>Total(A)</b>							<b>20</b>	<b>150</b>	<b>350</b>	<b>500</b>
<b>Practical/Drawing/Design</b>										
1	Professional Core courses	PCC-CE-308	Structural Engineering Lab	0	0	2	1	30	20	50
2	Professional Elective Course	PEC-CE-303	Geotechnical Engineering Lab -II	0	0	2	1	30	20	50
3	Engineering Science Course	ESC-113	Python Programming	1	0	2	2	30	20	50
4	Project Work	CE-P1	Project Stage-I (Mini Project/ Industrial Training)	0	0	4	2	75	25	100
<b>Total(B)</b>							<b>6</b>	<b>165</b>	<b>85</b>	<b>250</b>
<b>Mandatory Courses</b>										
1	Mandatory Course	MC-109	PDP-VI	2	0	0	0	0	0	0
<b>Total(C)</b>							<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total (A+B+C)</b>							<b>26</b>	<b>315</b>	<b>435</b>	<b>750</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										

# COURSE STRUCTURE

SEMESTER VII (FOURTH YEAR]

Branch: Civil Engineering

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
1	Professional Core Course	PCC-CE-401	Hydrology & Water Resources Engineering	3	1	0	4	30	70	100
2	Professional Elective Course	PEC-CE-401	Design of Concrete Structures-II	3	1	0	4	30	70	100
3	Professional Elective Course	PEC-CE-402	Structural Analysis -II	3	1	0	4	30	70	100
<b>Total(A)</b>							<b>12</b>	<b>90</b>	<b>210</b>	<b>300</b>
1	Professional Core Course	PCC-CE-402	Concrete Structure Lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-CE-403	Computer Aided Civil Engineering Drawing	0	0	2	1	30	20	50
3	Project Work	CE-P2	Project Stage-II(Minor Project Work)	0	0	10	5	75	25	100
<b>Total(B)</b>							<b>7</b>	<b>135</b>	<b>65</b>	<b>200</b>
<b>Mandatory Courses</b>										
1	Mandatory Course	MC-110	PDP-VII	2	0	0	0	0	0	0
<b>Total(C)</b>							<b>7</b>	<b>135</b>	<b>65</b>	<b>200</b>
<b>Grand Total (A+B+C)</b>							<b>19</b>	<b>225</b>	<b>275</b>	<b>500</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										

# COURSE STRUCTURE

SEMESTER VIII (FOURTH YEAR)

Branch: Civil Engineering

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Professional Core Course	PCC-CE-404	Construction Engineering & Management	3	1	0	4	30	70	100
2	Professional Elective Course	PEC-CE-403	Design of Hydraulic Structure	3	1	0	4	30	70	100
3	Professional Elective Course	PEC-CE-404	Traffic Engineering & Management	3	1	0	4	30	70	100
<b>Total(A)</b>							<b>12</b>	<b>90</b>	<b>210</b>	<b>300</b>
<b>Practical/Drawing/Design</b>										
1	Project Work	CE-P3	Project Stage-III(Major Project Work & Dissertation)	0	0	18	9	75	25	100
<b>Total(B)</b>							<b>9</b>	<b>75</b>	<b>25</b>	<b>100</b>
<b>Mandatory Courses/MOOC'S</b>										
1	Mandatory Course	MC-111	PDP-VIII	2	0	0	0	0	0	0
<b>Total(C)</b>							<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total (A+B+C)</b>							<b>21</b>	<b>165</b>	<b>235</b>	<b>400</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										