

Curriculum (2018-19 Batches onwards)

Department of Civil Engineering

1. Definition of Credit:

1 Hr. Lecture (L) per week 1 credit

1 Hr. Tutorial (T) per week 1 credit

2 Hr. Practical (P) per week 1 credit

2. Credits:

A Credits of **168** for a student to be eligible to get Under Graduate degree in Engineering. A student will be eligible to get Under Graduate degree with Honors, if he/she completes an additional 20 credits. These could be acquired through MOOCs.

3. Structure of Undergraduate Engineering program:

S.No.	Category	Breakup of Credits (Total 168)
1	Humanities and Social Sciences including Management courses	06
2	Basic Science courses	26
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	20
4	Professional core courses	80
5	Professional Elective courses relevant to chosen specialization/branch	15
6	Open subjects – Electives from other technical and /or emerging subjects	06
7	Project work, seminar and internship in industry or elsewhere	15
8	Mandatory Courses	08*(Non-Credit)

4. Course code and definition:

BSC: Basic Science Courses **ESC:** Engineering Science Courses **HSMC:** Humanities and Social Sciences including Management courses **PCC:** Professional core courses **PEC:** Professional Elective courses **OEC:** Open Elective courses **LC:** Laboratory course **MC:** Mandatory courses

1. HUMANITIES & SOCIAL SCIENCES INCLUDING MANAGEMENT

Semester	Course Title	Hours/Week			Credit
		L	T	P	
2	English	2	1	0	3
7	Professional Practice, Law & Ethics	3	0	0	3
Total Learning Credits					6

2. BASIC SCIENCE COURSES

Semester	Course Title	Hours/Week			Credit
		L	T	P	
1	Mathematics –I (Calculus, Multivariable Calculus and Linear Algebra)	3	1	0	4
1	Engineering Chemistry	3	1	2	5
2	Physics (Mechanics & Mechanics of Solids)	3	1	2	5
2	Mathematics –II (Differential Equations & Numerical Methods)	3	1	0	4
3	Mathematics – III ((Transform & Discrete Mathematics)	3	1	0	4
4	Mathematics – IV (Probability Theory and Statistics)	3	1	0	4
Total Learning Credits					26

3. ENGINEERING SCIENCE COURSE

Semester	Course Title	Hours/Week			Credit
		L	T	P	
1	Basic Electrical Engineering	3	0	4	5
1	Workshop Manufacturing Practices	0	0	3	2
1	Engineering Graphics & Design	1	0	4	3
2	Programming for Problem Solving	3	0	4	5
3	Engineering Mechanics	2	1	0	3
5	CADD Lab – I (Revit Architecture and BIM)	0	0	3	2
Total Learning Credits					20

4. PROFESSIONAL CORE COURSES

Semester	Course Title	Hours/Week			Credit
		L	T	P	
3	Engineering Geology	3	0	0	3
3	Fluid Mechanics	2	1	0	3
3	Construction Materials	3	0	0	3
3	Solid Mechanics	2	1	0	3
3	Construction Materials Laboratory	0	0	3	2
3	Solid Mechanics Laboratory	0	0	3	2
4	Surveying	3	0	0	3
4	Concrete Technology	3	0	0	3
4	Hydraulic Engineering	2	1	0	3
4	Geotechnical Engineering	3	0	0	3
4	Structural Mechanics - I	2	1	0	3
4	Surveying Laboratory	0	0	3	2
4	Fluid Mechanics & Hydraulic Engineering Laboratory	0	0	3	2
4	Geotechnical Engineering Laboratory	0	0	3	2
5	Hydrology & Water Resources Engineering	3	0	0	3
5	Environmental Engineering - I	3	0	0	3
5	Transportation Engineering	3	0	0	3
5	Structural Mechanics - II	2	1	0	3
5	Remote Sensing & GIS	3	0	0	3
5	Transportation Engineering Laboratory	0	0	3	2
5	Remote Sensing & GIS Laboratory	0	0	3	2
6	Design of Steel Structures	2	1	0	3
6	Design of Concrete Structures - I	2	1	0	3
6	Environmental Engineering - II	3	0	0	3
6	Estimation, Costing & Valuation	2	1	0	3
6	STADD PRO laboratory	0	0	3	2
6	Environmental Engineering Laboratory	0	0	3	2
7	Design of Concrete Structures - II	2	1	0	3
7	CADD Lab –II Design	0	0	3	2
8	Construction Engineering & Management	3	0	0	3
Total Learning Credits					80

5. PROFESSIONAL ELECTIVE COURSES

Semester	Course Title	Hours/Week			Credit
		L	T	P	
6	Foundation Engineering	3	0	0	3
	Geotechnical Design				
	Offshore Engineering				
	Rock Mechanics				
	Environmental Geo-technology				
	Ground improvement techniques				
7	Pavement Design	3	0	0	3
	Public Transportation Systems				
	Traffic Engineering and Management				
	Urban Transportation Planning				
	Geometric Design of Highways				
	Highway Construction and Management				
7	Railway Engineering	3	0	0	3
	Design of hydraulic structures				
	Irrigation Engineering				
	Groundwater Engineering				
8	Surface Water Hydrology	3	0	0	3
	Ecological Engineering				
	Rural Water Supply and Onsite Sanitation Systems				
	Water and Air Quality Modeling				
	Solid and Hazardous Waste Management				
	Air and Noise Pollution and Control				
8	Environmental Impact Assessment and Life Cycle Analyses	3	0	0	3
	Wood Structures				
	Masonry Structures				
	Structural Analysis by Matrix Methods				
	Pre stressed Concrete				
	Industrial Structures				
8	Earthquake Engineering	3	0	0	3
Total Learning Credits					15

6. OPEN ELECTIVE COURSES

Semester	Course Title	Hours/Week			Credit
		L	T	P	
6	Cloud Computing	3	0	0	3
	Web Design				
	Digital Image Processing				
	Data Analysis				
	German Primer				
	Astro – Physics				
	Business Administration				
	Chemistry in Crime Investigation				
	French Primer				
	Japanese				
	Bioinformatics				
	Communication Skills				
	Finance for Non Finance Managers				
	Fuel Cell and Batteries				
	Basic of Hindi				
7	Autotronics	3	0	0	3
	Artificial Intelligence and Machine Learning				
	Nano Technology and Surface Engineering				
	Disaster Preparedness & Planning				
	Engineering Economics				
	HR Management				
	Nuclear and Particle Physics				
	Internet of Things (IOT)				
	Psychology				
	Statistical Methods with Excel				
	Key Board				
	Logistics and Supply Chain				
	Panini Grammar				
	Violin				
Vocal Music					
Total Learning Credits					6

7. PROJECT AND INTERNSHIP

Semester	Course Title	Hours/Week			Credit
		L	T	P	
7	Project work Phase –I	0	0	0	2
3-6	Survey Camp, In-plant Training & Internship**	0	0	0	3
8	Project work Phase – II	0	0	0	10
Total Learning Credits					15

**Evaluated 7 semester only.

8. MANDATORY COURSES*:

Semester	Course Title	Hours/Week			Credit
		L	T	P	
2	Environmental Sciences and Engineering	2	0	0	2*
4	Sanskrit and Indian Culture	2	0	0	2*
3to6	Soft Skill	-	-	-	4*
Total Learning Credits					8*

(* For mandatory non-credit courses, these will be graded as Pass or Fail (P/F). Thus the grades obtained will not affect the grade point average. However, they will appear on the grade sheet.)

INDUCTION PROGRAM

Induction program (mandatory)	3 weeks duration
Induction program for students to be offered right at the start of the first year.	Physical activity Creative Arts• Universal Human Values• Literary• Proficiency Modules• Lectures by Eminent People• Visits to local Areas• Familiarization to Dept./Branch• & Innovations

Semester-wise structure of curriculum

[L= Lecture, T = Tutorials, P = Practical & C = Credits]

Semester I (First year]

Sl.No	Category	Code	Course Title	Hours/Week			Credit
				L	T	P	
1	BSC	CBSMAC8T10	Mathematics - I(Calculus, Multivariable Calculus and Linear Algebra)	3	1	0	4
2	BSC	CBSCH18T20	Engineering Chemistry	3	0	0	3
3	ESC	CESEE18T30	Basic Electrical Engineering	3	0	0	3
4	ESC	CESME18P50	Engineering Graphics & Design	2	0	2	3
5	BSC	CBSCH18P60	Chemistry Lab	0	0	3	2
6	ESC	CESEE18P70	Basic Electrical Engineering Lab	0	0	3	2
Total Credits							17

Semester II (First year]

Sl.No	Category	Code	Course Title	Hours/Week			Credit Points
				L	T	P	
1	HSMC	CHSEN18T10	English	2	1	0	3
2	BSC	CBSMAE8T20	Mathematics - II (Differential Equations & Numerical Methods)	3	1	0	4
3	BSC	CBSPH28T30	Applied Physics For Engineers	3	0	0	3
4	ESC	CESCS18T40	Programming For Problem Solving	2	1	0	3
5	MC*	CMCCH28T50	Environmental Sciences and Engineering*	2	0	0	2*
6	BSC	CBSPH28P60	Applied Engineering Physics Lab	0	0	3	2
7	ESC	CESCS18P60	Programming For Problem Solving Lab	0	0	4	2
8	ESC	CESME18P70	Workshop/Manufacturing Practices	0	0	3	2
Total Credits							19+2*

Semester III (Second year)

Sl.No	Category	Code	Course Title	Hours/Week			Credit
				L	T	P	
1	BSC	BCEF183T10	Mathematics-III (Transform & Discrete Mathematics)	3	1	0	4
2	ESC	BCEF183T20	Engineering Mechanics	2	1	0	3
3	PCC	BCEF183T30	Engineering Geology	3	0	0	3
4	PCC	BCEF183T40	Fluid Mechanics	2	1	0	3
5	PCC	BCEF183T50	Construction Materials	3	0	0	3
6	PCC	BCEF183T60	Solid Mechanics	2	1	0	3
7	PCC	BCEF183P70	Construction Materials Laboratory	0	0	3	2
8	PCC	BCEF183P80	Solid Mechanics Laboratory	0	0	3	2
9	MC*	BETF183MC3	Soft Skill-I	0	0	0	1*
Total Credits							23+1*

Semester IV (Second year)

Sl.No	Category	Code	Course Title	Hours/Week			Credit
				L	T	P	
1	BSC	CBSMAD8T10	Mathematics-IV (Probability Theory and Statistics)	3	1	0	4
2	PCC	BCEF184T20	Hydraulic Engineering	2	1	0	3
3	PCC	BCEF184T30	Structural Mechanics - I	2	1	0	3
4	PCC	BCEF184T40	Geotechnical Engineering	2	1	0	3
5	PCC	BCEF184T50	Surveying	3	0	0	3
6	PCC	BCEF184T60	Concrete Technology	3	0	0	3
7	PCC	BCEF184P70	Surveying Laboratory	0	0	3	2
8	PCC	BCEF184P80	Geotechnical Engineering Laboratory	0	0	3	2
9	PCC	BCEF184P90	Fluid Mechanics & Hydraulic Engineering Laboratory	0	0	3	2
10	MC*	BETF18MC02	Sanskrit and Indian Culture	2	0	0	2*
11	MC*	BETF18MC04	Soft Skill-II	0	0	0	1*
Total Credits							25+3*

Semester V (Third year]

Sl.No	Category	Code	Course Title	Hours/Week			Credit
				L	T	P	
1	PCC	BCEF185T10	Hydrology & Water Resources Engineering	3	0	0	3
2	PCC	BCEF185T20	Environmental Engineering I	3	0	0	3
3	PCC	BCEF185T30	Transportation Engineering	3	0	0	3
4	PCC	BCEF185T40	Structural Mechanics - II	2	1	0	3
5	PCC	BCEF185T50	Remote Sensing& GIS	3	0	0	3
6	PCC	BCEF185P60	Transportation Engineering Laboratory	0	0	3	2
7	PCC	BCEF185P70	Remote Sensing& GIS Laboratory	0	0	3	2
8	ESC	BCEF185P80	CADD Lab – I (Revit Architecture and BIM)	0	0	3	2
9	MC*	BETF18MC05	Soft Skill-III	0	0	0	1*
Total Credits							21+1*

Semester VI (Third year]

Sl.No	Category	Code	Course Title	Hours/Week			Credit
				L	T	P	
1	PCC	BCEF186T10	Design of Steel Structures	2	1	0	3
2	PCC	BCEF186T20	Design of Concrete Structures -I	2	1	0	3
3	PCC	BCEF186T30	Environmental Engineering II	3	0	0	3
4	PCC	BCEF186T40	Estimation, Costing & Valuation	2	1	0	3
5	PEC	BCEF186EA0-EF0	Elective-I	3	0	0	3
7	OEC	BCEF186OEA-OEO	Open Elective-I	3	0	0	3
7	PCC	BCEF186P70	STADD PRO lab	0	0	3	2
8	PCC	BCEF186P80	Environmental Engineering Laboratory	0	0	3	2
9	MC*	BETF18MC06	Soft Skill-IV	0	0	0	1*
Total Credits							22+1*

Semester VII (Final year)

Sl. No	Category	Code	Course Title	Hours/Week			Credit
				L	T	P	
1	HSCM	BCEF187T10	Professional Practice, Law & Ethics	3	0	0	3
2	PCC	BCEF187T20	Design of Concrete Structures -II	2	1	0	3
3	PEC	BCEF187EG0-EM0	Elective-II	3	0	0	3
4	PEC	BCEF187EN0-EQ0	Elective-III	3	0	0	3
5	OEC	BCEF187OEP-OE4	Open Elective – II	3	0	0	3
6	PCC	BCEF187P60	CADD Lab –II Design	0	0	3	2
7	PROJ	BCEF187Z70	Project work Phase–I	0	0	4	2
8	PROJ	BCEF187P80	Extensive Survey, In-plant Training & Internship**	0	0	0	3
Total Credits							22

Semester VIII (Final year]

Sl.No	Category	Code	Course Title	Hours/Week			Credit
				L	T	P	
1	PCC	BCEF188T10	Construction Engineering & Management	3	0	0	3
2	PEC	BCEF188ER0-EW0	Elective-IV	3	0	0	3
3	PEC	BCEF188EX0-EC1	Elective-V	3	0	0	3
4	PROJ	BCEF188Z40	Project work Phase-II	0	0	12	10
Total Credits							19

PROFESSIONAL ELECTIVE COURSES

SL.N o	Category	Code	Course Title	Hours/Week			Credi t
				L	T	P	
PEC - I Geotechnical Engineering							
1	PEC	BCEF186EA0	Foundation Engineering	3	0	0	3
2		BCEF186EB0	Geotechnical Design	3	0	0	3
3		BCEF186EC0	Offshore Engineering	3	0	0	3
4		BCEF186ED0	Rock Mechanics	3	0	0	3
5		BCEF186EE0	Environmental Geo-technology	3	0	0	3
6		BCEF186EF0	Ground improvement techniques	3	0	0	3
PEC - II Transportation Engineering							
7	PEC	BCEF187EG0	Railway Engineering	3	0	0	3
8		BCEF187EH0	Pavement Design	3	0	0	3
9		BCEF187EI0	Public Transportation Systems	3	0	0	3
10		BCEF187EJ0	Traffic Engineering and Management	3	0	0	3
11		BCEF187EK0	Urban Transportation Planning	3	0	0	3
12		BCEF187EK0	Geometric Design of Highways	3	0	0	3
13		BCEF187EM0	Highway Construction and Management	3	0	0	3
PEC - III Hydraulics, Hydrology & Water Resources Engineering							
14	PEC	BCEF187EN0	Irrigation Engineering	3	0	0	3
15		BCEF187EO0	Design of Hydraulic Structures	3	0	0	3
16		BCEF187EP0	Groundwater Engineering	3	0	0	3
17		BCEF187EQ0	Surface Water Hydrology	3	0	0	3
PEC – IV Environmental Engineering							
18	PEC	BCEF188ER0	Ecological Engineering	3	0	0	3
19		BCEF188ES0	Rural Water Supply and Onsite Sanitation Systems	3	0	0	3
20		BCEF188ET0	Water and Air Quality Modeling	3	0	0	3
21		BCEF188EU0	Solid and Hazardous Waste Management	3	0	0	3
22		BCEF188EV0	Air and Noise Pollution and Control	3	0	0	3
23		BCEF188EW0	Environmental Impact Assessment and Life Cycle Analyses	3	0	0	3
PEC – V Structural Engineering							
24	PEC	BCEF188EX0	Wood Structures	3	0	0	3
25		BCEF188EY0	Masonry Structures	3	0	0	3
26		BCEF188EZ0	Structural Analysis by Matrix Methods	3	0	0	3
27		BCEF188EA1	Pre stressed Concrete	3	0	0	3
28		BCEF188EB1	Industrial Structures	3	0	0	3
29		BCEF188EC1	Earthquake Engineering	3	0	0	3

OPEN ELECTIVE COURSES

Sl.No	Category	Code	Course Title	Hours/Week			Credit
				L	T	P	
1	OEC-I	BCEF186OEA	Cloud Computing	3	0	0	3
2		BCEF186OEB	Web Design	3	0	0	3
3		BCEF 186OEC	Digital Image Processing	3	0	0	3
4		BCEF186OED	Data Analysis	3	0	0	3
5		BCEF186OEE	German Primer	3	0	0	3
6		BCEF186OEF	Astro – Physics	3	0	0	3
7		BCEF186OEG	Business Administration	3	0	0	3
8		BCEF186OEH	Chemistry in Crime Investigation	3	0	0	3
9		BCEF186OEI	French Primer	3	0	0	3
10		BCEF186OEJ	Japanese	3	0	0	3
11		BCEF186OEK	Bioinformatics	3	0	0	3
12		BCEF186OEL	Communication Skills	3	0	0	3
13		BCEF186OEM	Finance for Non Finance Managers	3	0	0	3
14		BCEF186OEN	Fuel Cell and Batteries	3	0	0	3
15		BCEF186OEO	Basic of Hindi	3	0	0	3
16	OEC - II	BCEF187OEP	Autotronics	3	0	0	3
17		BCEF187OEQ	Artificial Intelligence and Machine Learning	3	0	0	3
18		BCEF187OER	Nana Technology and Surface Engineering	3	0	0	3
19		BCEF187OES	Disaster Preparedness & Planning	3	0	0	3
20		BCEF187OET	Engineering Economics	3	0	0	3
21		BCEF187OEU	HR Management	3	0	0	3
22		BCEF187OEV	Nuclear and Particle Physics	3	0	0	3
23		BCEF187OEW	Internet of Things (IOT)	3	0	0	3
24		BCEF187OEX	Psychology	3	0	0	3
25		BCEF187OEY	Statistical Methods with Excel	3	0	0	3
26		BCEF187OEZ	Key Board	3	0	0	3
27		BCEF187OE1	Logistics and Supply Chain	3	0	0	3
28		BCEF187OE2	Panini Grammar	3	0	0	3
29		BCEF187OE3	Violin	3	0	0	3
30		BCEF187OE4	Vocal Music	3	0	0	3