Course Structure

for Program

B. Tech. Civil Engineering (Structural Engineering) (Integrated)

In line with National Education Policy 2020

(Effective from AY 2024-25 for Affiliated Institutes)

Dr. Babasaheb Ambedkar Technological University

Lonere 402 103, Dist- Raigad, Maharashtra, INDIA

Established vide Maharashtra Act No. XXII of 1989 and Act. No. XXIX of 2014
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Course Structure, Guidelines, Rules and Regulations

Preamble

Economic advancement of a country is closely tied to the quality of technical education it offers. Engineering education is reaching new heights and plays a significant role in the overall education system. The preparation of engineering graduates should focus on enhancing their employability and sustainability in response to evolving industry and societal needs. As technology advances and expectations change rapidly, updating the curriculum to be contemporary and relevant is imperative.

In order to align our technical education system with global standards and practices, based on performance and assessment system was implemented earlier for all Undergraduate Programs (UG). Now as per National

Education Policy-2020 framework we are incorporating pro+ject-based learning. The realm of engineering and technology, characterized by its interdisciplinary nature, demands the synthesis of knowledge from a wide array of domains including humanities, arts, and advanced technologies. However, what distinguishes technologists is their proficiency in design and their ability to adeptly apply this knowledge across diverse disciplines to achieve effective problem-solving.

In response to these needs, aspiring engineers need thorough preparation and a deep understanding of the latest technological trends and industrial requirements. This calls for studying under a modern and adaptable curriculum that mirrors the global environment. As part of this initiative, there is a push to integrate recent advancements and enrich course content with pertinent and up-to-date subjects. Consequently, a revised structure and curriculum will debut from the academic year 2023-24 for First Year Civil Engineering, with intentions to progressively implement these updates across second, third- and fourth-year engineering programs.

Project-based learning has been introduced alongside traditional classroom teaching and laboratory-based learning to enhance the overall learning experience. The objective is to encourage students to learn collaboratively in groups of 3 to 4, focusing on solving meaningful problems. These problems can be theoretical, practical, social, technical, symbolic, cultural, or scientific, arising from students' curiosity across various disciplines and professional contexts. The selected problems should be exemplary and may require an interdisciplinary approach for both analysis and resolution. This approach aims to develop students' capacity for learning through shared cognition.

- Laboratory Course:

This is focused on completing experiments and assignments related to the courses of the Semester.

- Seminar: This aspect will revolve around state-of-the-art topics selected by students and approved by the authority. Students are required to submit a certified seminar report in a standard format, evaluated by

their assigned guide and the department/institute head for satisfactory completion of the work.

- Project Work in Final Year: Project work in the seventh Semester is integral to the curriculum. It involves applying knowledge gained throughout the graduation program, ideally addressing societal needs. The project provides an opportunity for students to design and construct complete systems or subsystems, specializing in areas of their interest. Students must prepare a certified final project report in standard format, evaluated by their guide and the department/institute head for satisfactory completion of the work.
- Internship: Internships are crucial for educational and career development, offering practical experience in field of discipline. It plays a significant role as employers seek well-trained employees. The primary objective is to expose technical students to real-world industrial environments, providing insights into the social, economic, and administrative factors influencing organizational operations. Students may choose internships in industries, government agencies, NGOs, MSMEs, rural settings, innovation hubs, intellectual property rights (IPR), or entrepreneurship initiatives. They can opt to focus on innovation, leading to start-up's, or gain experience in industry/NGO/government/MSME settings to prepare for professional roles. The conduction, monitoring, assessment, and evaluation of internships follow guidelines provided by AICTE.

Definition of Credit **

1 Hour Lecture (L) per week	1 credit for 1 Hour
Tutorial (T) per week	1 credit for 1 Hour
Practical(P) per week 2 Hours Practical (Lab)/week	1 credit for 2 Hours

** The head of Tutorial and Practical (as a special case) may be merged for common credit with the permission of authority.

Rule No. 1: Eligibility for Admission

Eligibility Criteria

Students seeking admission to the first year of the Bachelor's degree course in Engineering and Technology must fulfil the eligibility criteria as laid down from time to time by the following authorities:

- **Dr. Babasaheb Ambedkar Technological University (DBATU)**
- **Government of Maharashtra**
- **All India Council for Technical Education (AICTE)**

Rule No. 2: Scheme of Assessment

Eligibility for the Degree of Bachelor of Engineering and Technology

To be eligible for the degree of Bachelor of Engineering and Technology, a candidate must:

1. **Appearing for Examinations**:
    - A candidate is required to appear for all prescribed examinations during the course of study. This includes theory exams, practical exams, term-work assessments, project evaluations, and any other form of examination as specified in the Course Contents.
2. **Passing of Examinations**:
    - A candidate must pass all the prescribed examinations. The passing criteria, including minimum marks required in theory, practical, term-work, and other components, will be as per the rules laid down by the university.

Components of Assessment

The scheme of assessment typically includes the following components:

1. **Theory Examinations**:
    - Conducted at the end of each Semester.
    - Assess the theoretical understanding of the subjects.
2. **Practical Examinations**:
    - Conducted to assess the practical skills and application of knowledge.
    - Includes laboratory work, experiments, and practical assignments.
3. **Term-Work Assessments**:
    - Continuous assessment of assignments, tutorials, and project work throughout the Semester.
    - Includes the evaluation of written assignments, presentations, and project reports.
4. **Project Work**:
    - Assessment of project-based learning and final year projects.
    - Includes continuous assessment by the faculty and final evaluation through project reports, presentations, and viva-voce.
5. **Internal Continuous Assessment**:
    - Regular assessments conducted throughout the Semester.
    - Includes quizzes, class tests, mid-term exams, and participation in class activities.

General Rules and Regulations

1. The normal duration of the course leading to B.Tech. degree will be EIGHT semesters.
2. The normal duration of the course leading to M.Tech. degree will be FOUR semesters.
3. Each academic year shall be divided into 2 semesters, each of 20 weeks duration, including evaluation and grade finalization, etc. The Academic Session in each semester shall provide for at least 90 Teaching Days, with at least 40 hours of teaching contact periods in a five to six days session per week. The

semester that is typically from Mid-July to November is called the ODD SEMESTER, and the one that is from January to Mid-May is called the EVEN SEMESTER. Academic Session may be scheduled for the Summer Session/Semester as well. For 1st year B. Tech and M. Tech the schedule will be decided as per the admission schedule declared by Government of Maharashtra.

4. The schedule of academic activities for a Semester, including the dates of registration, mid-semester examination, end-semester examination, inter-semester vacation, etc. shall be referred to as the Academic Calendar of the Semester, which shall be prepared by the Dean (Academic), and announced at least TWO weeks before the Closing Date of the previous Semester.
5. The Academic Calendar must be strictly adhered to, and all other activities including co-curricular and/or extra -curricular activities must be scheduled so as not to interfere with the Curricular Activities as stipulated in the Academic Calendar.

Registration:

1. Lower and Upper Limits for Course Credits Registered in a Semester, by a Full- Time Student of a UG/PG Program:

   A full time student of a particular UG/PG program shall register for the appropriate number of course credits in each semester/session that is within the minimum and maximum limits specific to that UG/PG program as stipulated in the specific Regulations pertaining to that UG/PG program.
2. Mandatory Pre-Registration for higher semesters: In order to facilitate proper planning of the academic activities of a semester, it is essential for the every institute to inform to Dean (Academics) and COE regarding details of total no. of electives offered (Course-wise) along with the number of students opted for the same. This information should be submitted within two weeks from the date of commencement of the semester as per academic calendar.
3. PhD students can register for any of PG/PhD courses and the corresponding rules of evaluation will apply.
4. Under Graduate students may be permitted to register for a few selected Post Graduate courses, in exceptionally rare circumstances, only if the DUGC/DPGC is convinced of the level of the academic achievement and the potential in a student.

Course Pre-Requisites:

1. In order to register for some courses, it may be required either to have exposure in, or to have completed satisfactorily, or to have prior earned credits in, some specified courses.
2. Students who do not register on the day announced for the purpose may be permitted LATE REGISTRATION up to the notified day in academic calendar on payment of late fee.

3. REGISTRATION IN ABSENTIA will be allowed only in exceptional cases with the approval of the Dean (Academic) / Principal.
4. A student will be permitted to register in the next semester only if he fulfills the following conditions:
   i) Satisfied all the Academic Requirements to continue with the program of Studies without termination
   ii) Cleared all Institute, Hostel and Library dues and fines (if any) of the previous semesters;
   iii) Paid all required advance payments of the Institute and hostel for the current semester;
   iv) Not been debarred from registering on any specific ground by the Institute.

Evaluation System:

1. Absolute grading system based on absolute marks as indicated below will be implemented from academic year 2023-24, from I year B. Tech.

Percentage of marks	Letter Grade	Grade Point
91-100	EX	10.0
86-90	AA	9.0
81-85	AB	8.5
76-80	BB	8.0
71-75	BC	7.5
66-70	CC	7.0
61-65	CD	6.5
56-60	DD	6.0
51-55	DE	5.5
40-50	EE	5.0
<40	EF	0.0

2. Class is awarded based on CGPA of all eighth semester of B.Tech Program.

CGPA for pass is minimum 5.0	
CGPA upto <5.50	Pass class
CGPA ≥ 5.50&<6.00	Second Class
CGPA ≥ 6.00&<7.5	First Class
CGPA >7.50	Distinction
[Percentage of Marks =CGPA*10.0]	

3. A total of 100 Marks for each theory course are distributed as follows:

Mid Semester Exam (MSE) Marks	20
Continuous Assessment Marks	20
End Semester Examination(ESE)Marks	60

4. A total of 100 Marks for each practical course are distributed as follows

1.	Continuous Assessment Marks	40
2.	End Semester Examination (ESE)Marks	60

- It is mandatory for every student of B. Tech to score a minimum of 40 marks out of 100, M. Tech to score a minimum of 45 marks out of 100 with a minimum of 20 marks out of 60 marks in End Semester Examination for theory course.
- This will be implemented from the first year of B. Tech starting from Academic Year 2023-24

5. Description of Grades

EX Grade: An 'EX' grade stands for outstanding achievement.

EE Grade: The 'EE' grade stands for minimum passing grade.

The students may appear for the remedial examination for the subjects he/she failed for the current semester of admission only and his/her performance will be awarded with EE grade only.

If any of the students remain absent for the regular examination due to genuine reason and the same will be verified and tested by the Dean (Academics) or committee constituted by the University Authority.

FF Grade: The 'FF' grade denotes very poor performance, i.e. failure in a course due to poor performance. The students who have been awarded 'FF' grade in a course in any semester must repeat the subject in next semester.

6. Evaluation of Performance

a. Semester Grade Point Average (SGPA)

The performance of a student in a semester is indicated by Semester Grade Point Average (SGPA) which is a weighted average of the grade points obtained in all the courses taken by the student in the semester and scaled to a maximum of 10. (SGPI is to be calculated up to two decimal places). A Semester Grade Point Average (SGPA) will be computed for each semester as follows:

$$SGPA = \frac{[\sum_{i=1}^{n} c_i g_i]}{[\sum_{i=1}^{n} c_i]}$$

Where

'n' is the number of subjects for the semester,

'c_i' is the number of credits allotted to a particular subject, and

'g_i' is the grade-points awarded to the student for the subject based on his performance as per the above table.

SGPA will be rounded off to the second place of decimal and recorded as such.

b. Cumulative Grade Point Average (CGPA):

An up to date assessment of the overall performance of a student from the time he entered the Institute is obtained by calculating Cumulative Grade Point Average (CGPA) of a student. The CGPA is weighted average of the grade points obtained in all the courses registered by the student since s/he entered the Institute. CGPA is also calculated at the end of every semester (upto two decimal places).Starting from the first semester at the end of each semester (S), a Cumulative Grade Point Average (CGPA) will be computed as follows:

$$CGPA = \frac{[\sum_{i=1}^{m} c_i g_i]}{[\sum_{i=1}^{m} c_i]}$$

Where,

'm' is the total number of subjects from the first semester onwards up to and including the semester S,

'ci' is the number of credits allotted to a particular subject, and

'gi' is the grade-points awarded to the student for the subject based on his/her performance as per the above table.

CGPA will be rounded off to the second place of decimal and recorded as such.

7. Attendance Requirements:

a. All students must attend every lecture, tutorial and practical classes.

b. To account for approved leave of absence (eg. representing the Institute in sports, games or athletics; placement activities; NCC/NSS activities; etc.) and/or any other such contingencies like medical emergencies, etc., the attendance requirement shall be a minimum of 75% of the classes actually conducted. If the student failed to maintain 75% attendance, he/she will be detained for appearing the successive examination. The Dean (Academics)/ Principal is permitted to give 10% concession for the genuine reasons as such the case may be. In any case the student will not be permitted for appearing the examination if the attendance is less than 65%.

c. The course instructor handling a course must finalize the attendance 3 calendar days before the last day of classes in the current semester and communicate clearly to the students by displaying prominently in the department and also in report writing to the head of the department concerned.

d. The attendance records are to be maintained by the course instructor and he shall show it to the student, if and when required.

8. Transfer of Credits:

The courses credited elsewhere, in Indian or foreign University/Institutions/ Colleges/Swayam Courses by students during their study period at DBATU may count towards the credit requirements for the award of degree. The guidelines for such transfer of credits are as follows:

a. 20 % of the total credit will be considered for respective calculations.
b. Credits transferred will be considered for overall credits requirements of the program.
c. Credits transfer can be considered only for the course at same level i.e UG, PG etc.
d. A student must provide all details (original or attested authentic copies) such as Course Contents, number of contact hours, course instructor /project guide and evaluation system for the course for which he is requesting a credits transfer. He shall also provide the approval or acceptance letter from the other side. These details will be evaluated by the concerned Board of Studies before giving approval. The Board of Studies will then decide the number of equivalent credits the student will get for such course(s) in DBATU. The complete details will then be forwarded to Dean for approval.
e. A student has to get minimum passing grades/ marks for such courses for which the credits transfers are to be made.
f. Credits transfers availed by a student shall be properly recorded on academic record(s) of the student.
g. In exceptional cases, the students may opt for higher credits than the prescribed.

Table A: Credit Structure for UG program in Engineering

Course Category	Recommended	Provided
Basic Science Course (BSC)	14 to 18	17
Engineering Science Course (ESC)	12 to 16	16
Program Core Course (PCC)	44 to 56	58
Multidisciplinary Minor (MDM)	14	14
Humanities Social Science and Management (HSSM-IKS/VEC/AEC)	14	12
Vocational and Skill Enhancement Course (VSEC)	08	08
Open Elective (OE) Other than a particular program	08	09
Program Elective Course (PEC)	20	19
Experiential Learning Courses (ELC)	22	20
Co-curricular Courses (CC)	02-04	02
TOTAL	**160 to 176**	**175**

Civil (Integrated-Structural Engineering) Program

Program Objectives

Goal of the Civil (Integrated-Structural Engineering) Program at Dr. Babasaheb Ambedkar Technological University, Lonere (DBATU) is to provide students with preparation to become worthy of professional careers in the field and to be motivated for lifelong learning. All prescribed courses have definite objectives and outcomes. Program objectives are expected qualities of engineers as under:

a) Preparation: To prepare students to excel in various educational programmes or to succeed in industry / technical profession through further education/training;

b) Core Competence: To provide students with a solid foundation in mathematical, scientific fundamentals required to solve real life civil engineering problems;

c) Breadth: To train students with a breadth of scientific knowledge to comprehend, analyze, design & create novel products and solutions for real life problems;

d) Professionalism: To inculcate in students professional/ethical attitude, effective team work skills, multidisciplinary approach and to relate engineering issues to a broader context;

e) Learning Environment: To provide students with academic environment of excellence, leadership, ethical guidelines and life-long learning needed for a long / productive career.

Program Educational Objectives

1. Taking pride in their profession and have commitment to highest standards of ethical practices and related technical disciplines;
2. Able to design various structures and systems that is safe, economical and efficient;
3. Capable of using modern tools efficiently in all aspects of professional practices;
4. Dealing successfully with real life civil engineering problems and achieve practical solutions based on a sound science and engineering knowledge;
5. Shall be engage in continuous research, development and exchange of knowledge for professional development;
6. Be honest in their control and performing their duties and promote effective use of resources through open, honest and impartial services to the public;
7. Act in such a manner which will uphold the honour, integrity, or dignity of the engineering profession, and avoid knowingly engaging in business or professional practices of a fraudulent, dishonest or unethical nature;
8. Recognize that the lives, safety, health and welfare of the general public are dependent upon engineering, decision and practices;
9. Continue their professional development throughout their careers and provide opportunities for the professional development.

Program Outcomes

At the end of the program the student will be able to:

PO 1	Apply the knowledge of mathematics, basic sciences, and civil engineering to the solution of complex engineering problems.
PO 2	Identify, formulate, research literature, and analyze complex civil engineering problems reaching substantiated conclusions.
PO 3	Design solutions for complex engineering problems and design of civil engineering structures that meet the specified needs.
PO 4	Use civil engineering research-based knowledge related to interpretation of data and provide valid conclusions.
PO 5	Create, select, and apply modern civil engineering and IT tools to complex engineering activities with an understanding of the limitations.
PO 6	Apply reasoning acquired by the civil engineering knowledge to assess societal and safety issues.
PO 7	Understand the impact of engineering solutions on the environment, and demonstrate the knowledge for sustainable development.
PO 8	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communicate effectively on complex engineering activities with the engineering community and with society at large.
PO 11	Understand the engineering and management principles and apply these to the multidisciplinary environments.
PO 12	Recognize the need for life-long learning in the broadest context of technological change.

Program-Specific Outcomes (PSOs)

PSO 1	Make the students employable in engineering industries.
PSO 2	Motivate the students for higher studies and research.
PSO 3	Motivate the students for various competitive examinations.

Dr. Babasaheb Ambedkar Technological University, Lonere

Teaching & Evaluation Scheme for First Year of

B. Tech. Civil Engineering (Structural Engineering) (Integrated)

GROUP A

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester- I										
1	24AF1000BS101	Engineering Mathematics – I	3	0	0	20	20	60	100	3
2	24AF1CHEBS102	Engineering Chemistry	3	0	0	20	20	60	100	3
3	24AF1CHEBS103L	Engineering Chemistry Lab	0	0	2	60	--	40	100	1
4	24AF1EMES104	Engineering Mechanics	3	0	0	20	20	60	100	3
5	24AF1EMES105L	Engineering Mechanics Lab	0	0	2	60	--	40	100	1
6	24AF1000ES106	Programming for Problem Solving	2	0	0	20	20	60	100	2
7	24AF1000ES107L	Programming for Problem Solving Lab	0	0	2	60	--	40	100	1
8	24AF1000VS108L	Workshop Practices	0	0	4	60	--	40	100	2
9	24AF1000VS109	Communication Skills	2	0	0	20	20	60	100	2
10	24AF1000VS110L	Communication Skills Lab	0	0	2	60	--	40	100	1
11	24AF1000CC111A	Yoga Education	1	0	2	60	--	40	100	2
	24AF1000CC111B	NSS-I								
	24AF1000CC111C	NCC								
Total			**14**	**0**	**14**	**460**	**100**	**540**	**1100**	**21**

Dr. Babasaheb Ambedkar Technological University, Lonere

Teaching & Evaluation Scheme for First Year of

B. Tech. Civil Engineering (Structural Engineering) (Integrated)

GROUP A

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester- II										
1	24AF1000BS201	Engineering Mathematics – II	3	0	0	20	20	60	100	3
2	24AF2PHYBS202	Engineering Physics	3	0	0	20	20	60	100	3
3	24AF2PHYBS203L	Engineering Physics Lab	0	0	2	60	--	40	100	1
4	24AF2EGRES204	Engineering Graphics	2	0	0	20	20	60	100	2
5	24AF2EGRES205L	Engineering Graphics Lab	0	0	2	60	--	40	100	1
6	24AF1000ES206	Basic Electrical and Electronics Engineering	3	0	0	20	20	60	100	3
7	24AF1000ES207L	Basic Electrical and Electronics Engineering Lab	0	0	2	60	--	40	100	1
8	24AF2CMEES208	Basic Civil and Mechanical Engineering	3	0	0	20	20	60	100	3
9	24AF1EEEES209	Energy and Environmental Engineering	2	0	0	50	--	--	50	AU
10	24AF1000IK210	IKS Bucket #	2	0	0	60	--	40	100	2
11	24AF1000VS211	Design Thinking	2	0	0	60	--	40	100	2
12	24AF1000CC212A	Integrated Personality Development	1	0	2	60	--	40	100	2
	24AF1000CC212B	NSS-II								
	24AF1000CC212C	Health and Wellness								
Total			**21**	**0**	**8**	**510**	**100**	**540**	**1150**	**23**

 # Refer to the University website for the subjects under IKS bucket

Note: Students can complete online courses of 40% of total credits through online platform NPTEL / SWAYAM/ Sector Skill council of India and other online platforms identified by the University time to time. At least 80% contents of the NPTEL / SWAYAM/ Sector Skill council of India course should match with syllabus contents of the subject prescribed by the university.

Dr. Babasaheb Ambedkar Technological University, Lonere

Teaching & Evaluation Scheme for First Year of

B. Tech. Civil Engineering (Structural Engineering) (Integrated)

GROUP B

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester- I										
1		Engineering Mathematics – I	3	0	0	20	20	60	100	3
2		Engineering Physics	3	0	0	20	20	60	100	3
3		Engineering Physics Lab	0	0	2	60	--	40	100	1
4		Engineering Graphics	2	0	0	20	20	60	100	2
5		Engineering Graphics Lab	0	0	2	60	--	40	100	1
6		Basic Electrical and Electronics Engineering	3	0	0	20	20	60	100	3
7		Basic Electrical and Electronics Engineering Lab	0	0	2	60	--	40	100	1
8		Basic Civil and Mechanical Engineering	3	0	0	20	20	60	100	3
9		Energy and Environmental Engineering	2	0	0	50	--	--	50	AU
10		IKS Bucket #	2	0	0	60	--	40	100	2
11		Design Thinking	2	0	0	60	--	40	100	2
12		Integrated Personality Development NSS-II Health and Wellness	1	0	2	60	--	40	100	2
Total			**21**	**0**	**8**	**510**	**100**	**540**	**1150**	**23**
Semester- II										
1		Engineering Mathematics – II	3	0	0	20	20	60	100	3
2		Engineering Chemistry	3	0	0	20	20	60	100	3
3		Engineering Chemistry Lab	0	0	2	60	--	40	100	1
4		Engineering Mechanics	3	0	0	20	20	60	100	3
5		Engineering Mechanics Lab	0	0	2	60	--	40	100	1
6		Programming for Problem Solving	2	0	0	20	20	60	100	2
7		Programming for Problem Solving Lab	0	0	2	60	--	40	100	1
8		Workshop Practices	0	0	4	60	--	40	100	2
9		Communication Skills	2	0	0	20	20	60	100	2
10		Communication Skills Lab	0	0	2	60	--	40	100	1
12		Yoga Education NSS-I NCC	1	0	2	60	--	40	100	2
Total			**14**	**0**	**14**	**460**	**100**	**540**	**1100**	**21**

 # Refer to the University website for the subjects under IKS bucket.

Note: Students can complete online courses of 40% of total credits through online platform NPTEL / SWAYAM/ Sector Skill council of India and other online platforms identified by the University time to time. At least 80% contents of the NPTEL / SWAYAM/ Sector Skill council of India course should match with syllabus contents of the subject prescribed by the university.

Dr. Babasaheb Ambedkar Technological University, Lonere

Teaching & Evaluation Scheme for Second Year of
B. Tech. Civil Engineering (Structural Engineering) (Integrated)

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester-III										
1	25AF1000BS301	Civil Engineering Mathematics	3	0	0	20	20	60	100	3
2	25AF 1906PC302	Mechanics of Solids	2	1	0	20	20	60	100	3
3	25AF1906PC303	Surveying	2	1	0	20	20	60	100	3
4	25AF1906PC304	Building Construction	3	0	0	20	20	60	100	3
5	25AF1ARPOEM05	OPEN ELECTIVE-I	2	0	0	20	20	60	100	2
6	Refer Bucket	Multi-Disciplinary Minor-I	3	0	0	20	20	60	100	3
7	25AF1COIVE307	Constitution of India	2	0	0	-	-	-	AU	GR
8	25AF1000VE308B	Life of Bharat Ratna Dr. Babasaheb Ambedkar	1	0	0	50	-	-	50	1
9	25AF1906PCL309	Mechanics of Solid Lab	0	0	2	25	-	25	50	1
10	25AF1000AE310	Modern Indian Language	2	0	0	50	-	50	100	2
11	25AF1906PCL311	Surveying Lab	0	0	2	25	-	25	50	1
		TOTAL	**20**	**2**	**4**	**240**	**140**	**470**	**850**	**22**
Semester-IV										
1	25AF1906PC401	Structural Mechanics-I	2	1	0	20	20	60	100	3
2	25AF1906PC402	Concrete Technology	3	0	0	20	20	60	100	3
3	25AF1906PC403	Hydraulics Engineering	2	1	0	20	20	60	100	3
4	25AF1906PC404	Building Planning & Drawing	3	0	0	20	20	60	100	3
5	25AF1ARPOE405	OPEN ELECTIVE-II	3	0	0	20	20	60	100	3
6	Refer Bucket	Multi-Disciplinary Minor-II	2	0	0	20	20	60	100	2
7	25AF1UHVVE407	Universal Human Values-II	3	0	0	20	20	60	100	3
8	25AF1000VE408A	Life of Chhatrapati Shivaji Maharaj	1	0	0	50	0	0	50	1
9	25AF1906HM409	Entrepreneurship Development Process	1	0	0	25	-	25	50	1
10	25AF1906PCL410	Hydraulics Lab	0	0	2	25	-	25	50	1
11	25AF1906PCL411	Building Planning & Drawing Lab	0	0	2	25	-	25	50	1
12	25AF1906PCL412	Concrete Technology Lab	0	0	2	25	-	25	50	1
		TOTAL	**20**	**2**	**6**	**290**	**140**	**520**	**950**	**25**

Course Type	Course Code	Course Name
Open Elective-I	25AF1ARPOEM05I	Design of Masonry Structures
	25AF1ARPOEM05J	Energy Efficient Buildings
	25AF1ARPOEM05N	Construction Techniques
Open Elective-II	25AF1ARPOEM05G	Advanced Surveying
	25AF1ARPOEM05Q	Modern Surveying

Course Type	Course Code	Course Name
Multi-Disciplinary Minor-I	Refer Bucket	Refer Bucket
Multi-Disciplinary Minor-II	Refer Bucket	Refer Bucket
Modern Indian Language	25AF1000AE310A	Marathi
	25AF1000AE310B	Hindi
	25AF1000AE310C	Sanskrit

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Teaching & Evaluation Scheme for Third Year of
B. Tech. Civil Engineering (Structural Engineering) (Integrated)

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	ISE	MSE	ESE	Total	
Semester-V										
1	26AF1906PC501	Structural Mechanics-II	3	0	0	20	20	60	100	3
2	26AF1906PC502	Design of Steel Structures	3	0	0	20	20	60	100	3
3	26AF1906PC503	Open Channel Flow & Hydraulic Machines	3	0	0	20	20	60	100	3
4	26AF1906PC504	Geotechnical Engineering	3	0	0	20	20	60	100	3
5	26AF1ARPOE505	OPEN ELECTIVE-III	3	0	0	20	20	60	100	3
6	Refer Bucket	Multi-Disciplinary Minor-III	3	0	0	20	20	60	100	3
7	26AF1906PCL507	Design of Steel Structures Lab	0	0	2	50	-	50	100	1
8	26AF1906PCL508	OCF & HM Lab	0	0	2	25	-	25	50	1
9	26AF1906PCL509	Geotechnical Engineering Lab	0	0	2	50	-	50	100	1
10	26AF1906HM510	Soft Skills Development	0	2	0	-	-	-	AU	GR
11	26AF1906VS511	Construction Equipment and Site Safety Management	0	2	0	50	-	50	100	2
		TOTAL	**18**	**4**	**6**	**295**	**120**	**535**	**950**	**23**
Semester-VI										
1	26AF1906PC601	Design of Concrete Structures	3	0	0	20	20	60	100	3
2	26AF1906PE602	Program Elective-I	3	0	0	20	20	60	100	3
3	26AF1906PE603	Program Elective -II	3	0	0	20	20	60	100	3
4	26AF1906PE604	Program Elective-III	3	0	0	20	20	60	100	3
5	26AF1906PC605	Foundation Engineering	3	0	0	20	20	60	100	3
6	Refer Bucket	Multi-Disciplinary Minor-IV	3	0	0	20	20	60	100	3
7	26AF1906PCL607	Design of Concrete Structures Lab	0	0	2	50	-	50	100	1
8	26AF1906PEL608	Program Elective-II- Lab	0	0	2	25	-	25	50	1
9	26AF1906PEL609	Program Elective-III- Lab	0	0	2	25	-	25	50	1
10	26AF1906EL610	Seminar	0	2	2	25	-	25	50	1
11	26AF1906VS611	Academic Research Writing	1	0	0	50	-	-	50	1
		TOTAL	**19**	**2**	**8**	**295**	**120**	**485**	**900**	**23**

Course Type	Course Code	Course Name
Program Elective-I	26AF1906PE602A	Hydraulics Structures
	26AF1906PE602B	Dams and Reservoirs
Program Elective-II	26AF1906PE603A	Water Quality Engineering
	26AF1906PE603B	Environment Health and Safety
Program Elective-III	26AF1906PE604A	Highway & Railway Engineering
	26AF1906PE604B	Intelligent Transportation Systems
	26AF1906PE604C	Urban Transportation Planning

Course Type	Course Code	Course Name
Open elective-III	26AF1ARPOEM05H	Geomatics Engineering
	26AF1ARPOEM05I	Ground Improvement Techniques
	26AF1ARPOEM05J	Sustainable Construction Methods
Multi-Disciplinary Minor-III	Refer Bucket	Refer Bucket
Multi-Disciplinary Minor-IV	Refer Bucket	Refer Bucket

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Teaching & Evaluation Scheme for Fourth Year of B. Tech. Civil Engineering (Structural Engineering) (Integrated)

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester- VII										
1	27AF1906PC701	Design of Reinforced & Prestressed Concrete Structures	3	0	0	20	20	60	100	3
2	27AF1906PC702	Infrastructure Engineering	3	0	0	20	20	60	100	3
3	27AF1906PE703	Program Elective -IV	3	0	0	20	20	60	100	3
4	27AF1906PC704	Irrigation Engineering	3	0	0	20	20	60	100	3
5	27AF1906PC705	Design of Reinforced & Prestressed Concrete Structures Lab	0	0	2	50	-	50	100	1
6	Refer Bucket	Multi-Disciplinary Minor-V	3	0	0	20	20	60	100	3
7	27AF1906PEL707	Program Elective -IV -Lab	0	0	2	25	-	25	50	1
8	27AF1906EL708	Minor Project#	0	0	4	25	-	25	50	2
		TOTAL	**15**	**0**	**8**	**200**	**100**	**400**	**700**	**19**
Semester- VIII										
1	27AF1906PC801	Theory of Elasticity & Plasticity	3	0	0	20	20	60	100	3
2	27AF1906PC802	Earthquake Engineering	3	0	0	20	20	60	100	3
3	27AF1906PE803	Program Elective -V	3	0	0	20	20	60	100	3
4	27AF1906PE804	Program Elective-VI	3	0	0	20	20	60	100	3
5	27AF1906PEL805	Program Elective-V-Lab	0	0	2	50	-	50	100	1
6	27AF1906PEL806	Program Elective-VI Lab	0	0	2	25	-	25	50	1
7	27AF1906EL807	Major Project	0	0	8	50	-	50	100	4
8	27AF1906EL808	Internship	0	0	4	25	-	25	50	2
		TOTAL	**12**	**0**	**16**	**230**	**80**	**390**	**700**	**20**

Preferably Community Engagement Project

Course Type	Course Code	Course Name		Course Type	Course Code	Course Name
Program Elective-IV	27AF1906PE703A	Pollution Control & Treatment		Multi-Disciplinary Minor-V	Refer Bucket	Refer Bucket
	27AF1906PE703B	Industrial Waste water Management				
Program Elective-V	27AF1906PE803A	Professional Practices		Program Elective-VI	27AF1906PE804A	Design of Bridges
	27AF1906PE803B	Construction Cost Analysis			27AF1906PE804B	Retrofitting of Structures
	27AF1906PE803C	Estimation and Costing			27AF1906PE804C	Structural Health Monitoring

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Teaching & Evaluation Scheme for Fifth Year of
B. Tech. Civil Engineering (Structural Engineering) (Integrated)

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester- IX										
1	28AF1906PC901	Structural Dynamics	3	0	0	20	20	60	100	3
2	28AF1906PC902	Theory of Plates & Shells	3	0	0	20	20	60	100	3
3	28AF1906PE903	Program Elective-VII	3	0	0	20	20	60	100	3
4	28AF1906PE904	Program Elective- VIII	3	0	0	20	20	60	100	3
5	28AF1906EL905	Civil Engineering Software	0	0	4	50	-	50	100	2
6	28AF1906PC906	Research Methodology	0	2	0	25	-	25	50	2
7	28AF1906EL907	Dissertation Stage- I	0	0	4	50	-	50	100	2
		TOTAL	**12**	**2**	**8**	**205**	**80**	**365**	**650**	**18**
Semester- X										
1	28AF1906EL1001	Dissertation Stage- II	0	0	40	200	-	100	300	20
		TOTAL	**0**	**0**	**40**	**200**	**-**	**100**	**300**	**20**

Course Type	Course Code	Course Name		Course Type	Course Code	Course Name
Program Elective-VII	27AF1906PE903A	Design of Cold Formed Steel Structures				
	27AF1906PE903B	Solution Procedures in Civil Engineering				
	27AF1906PE903C	Design of Tall Structures				
Program Elective-VIII	27AF1906PE904A	Advanced Prestressed Concrete				
	27AF1906PE904B	Disaster Resistant Structures				
	27AF1906PE904C	Structural Fire Engineering				

Type of course:

Basic Science: **BS**	Engineering Science: **ES**
Program Elective: **PE**	Program Core: **PC**
Modern Indian Language: **MIL**	Indian Knowledge System: **IK**
Value Education Course: **VEC**	Ability Enhancement Course: **AE**
Vocational and Skill Enhancement: **VS**	Audit Course: **AU**
Open Elective: **OE** (Other than particular program)	Co-curricular & Extracurricular Activities: **CC**
Humanities, Management, language and Commerce: **HM**	Multidisciplinary Courses: **MD**

ELECTIVE / OPEN ELECTIVE/ MULTIDISCIPLINARY MINOR COURSES

Below listed courses will be offered as per student's requirement and availability of subject expert with the approval of the head of the department.

OPEN ELECTIVE OTHER THAN PARTICULAR PROGRAM

Sr.No.	Course Offered	Teaching Scheme (Hrs)				Credits
		L	T	P	TOTAL	
1	Construction Techniques	02	00	00	02	02
2	Design of Masonry Structures	02	00	00	02	02
3	Energy Efficient Buildings	02	00	00	02	02
4	Advanced Surveying	03	00	00	03	03
5	Modern Surveying	03	00	00	03	03
6	Application of remote sensing & GIS	03	00	00	03	03
7	Geomatics Engineering	03	00	00	03	03
8	Ground Improvement Techniques	03	00	00	03	03
9	Sustainable Construction Methods	03	00	00	03	03

HONORS- CIVIL ENGINEERING

Sr.No.	Course Offered	Teaching Scheme (Hrs)				Credits
		L	T	P	TOTAL	
1	Finite Element Method	03	00	00	03	03
2	Limit State Design of Steel Structures	03	00	00	03	03
3	Elements of Remote Sensing	03	00	00	03	03
4	Building Planning and Design	03	00	00	03	03
5	Advanced Structural Design	03	00	00	03	03
6	Theory of Plates and Shells	03	00	00	03	03

RESEARCH - CIVIL ENGINEERING

Sr.No.	Course Offered	Teaching Scheme (Hrs)				Credits
		L	T	P	TOTAL	
1	Problem Identification and Definition	03	01	00	04	04
2	Experimental Work/Analytical Tools and Prototype Development	03	01	00	04	04
3	Research Project Phase-I	00	00	12	12	06
4	Research Project Phase-II	03	01	12	12	06

PROGRAM ELECTIVE COURSE

Sr.No.	Course Offered	Teaching Scheme (Hrs)				Credits
		L	T	P	TOTAL	
1	Hydraulics Structures	03	00	00	03	03
2	Irrigation Engineering	03	00	00	03	03
3	Water Quality Engineering	03	00	00	03	03
4	Environment Health and Safety	03	00	00	03	03
5	Highway & Railway Engineering	03	00	00	03	03
6	Intelligent Transportation Systems	03	00	00	03	03
7	Urban Transportation Planning	03	00	00	03	03
8	Pollution Control & Treatment	03	00	00	03	03
9	Industrial Waste water Management	03	00	00	03	03
10	Professional Practices	03	00	00	03	03
11	Construction Cost Analysis	03	00	00	03	03
12	Estimation and Costing	03	00	00	03	03
13	Design of Bridges	03	00	00	03	03
14	Retrofitting of Structures	03	00	00	03	03
15	Structural Health Monitoring	03	00	00	03	03
16	Pollution Control & Treatment	03	00	00	03	03
17	Waste Water Engineering	03	00	00	03	03
18	Industrial Waste water Management	03	00	00	03	03
19	Advanced Prestressed Concrete	03	00	00	03	03
20	Disaster Resistant Structures	03	00	00	03	03
21	Structural Fire Engineering	03	00	00	03	03

Note: The elective courses listed in the Course Contents structure are indicative. Students shall ensure availability of Course Contents prior to registration.

MULTIDISCIPLINARY MINOR BUCKET
for AFFILIATED INSTITUTES
MINOR DEGREE IN CIVIL STRUCTURAL ENINGEERING
(for other than B.Tech. in Civil Structural Engineering program students)

Semester	Subject Code	Subject Name	Total Credit
SEM-III	25AF1906MD306A	Building Construction	3
SEM-III	25AF1906MD306	Introduction to Engineering Geology	3
SEM-IV	25AF1906MD406	Concrete Technology	3
SEM-V	25AF1906MD506	Geomatics Engineering	3
SEM-VI	25AF1906MD606	Project Management	3
SEM-VII	25AF1906MD706	Construction Equipment and Site Safety Management	2
MINIMUM CREDITS REQUIRED TO COMPLETE A MINOR DEGREE IN CIVIL ENGINEERING			**14**

MINOR DEGREE IN PLANNING ENINGEERING
(only for B.Tech. in Civil Structural Engineering students)

Semester	Subject Code	Subject Name	Total Credit
SEM-III	25AFMDPLAN306A	Site Planning	3
SEM-III	25AF1906MD306	Introduction to Engineering Geology	3
SEM-IV	25AFMDPLAN406A	Fundamentals of Urban Design	2
SEM-IV	25AFMDPLAN406B	Town and Urban Planning	2
SEM-V	25AFMDPLAN506A	Real Estate Development and Management	3
SEM-V	25AFMDPLAN506B	Planning Legislation	3
SEM-VI	25AFMDPLAN606A	Disaster Mitigation and Management	3
SEM- VI	25AFMDPLAN606B	Project Management	3
SEM-VII	25AFMDPLAN706A	Sustainable Building Planning	3
SEM-VII	25AFMDPLAN706B	Appropriate Building Technologies	3
MINIMUM CREDITS REQUIRED TO COMPLETE A MINOR DEGREE IN PLANNING ENGINEERING			**14**