Course Structure

for Degree Program

B. Tech. in Civil Engineering

In line with National Education Policy 2020

(Effective from AY 2023-24 for University Department only)

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
"Vidyavihar", P.O. Lonere, Dist. Raigad, Pin 402 103, Maharashtra, India
Telephone and Fax.: 02140 - 275142
www.dbatu.ac.in

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 project-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	13
Humanities Social Science and Management (HSSM-IKS/VEC/AEC)	14	12
Vocational and Skill Enhancement Course (VSEC)	08	8
Open Elective (OE) Other than a particular program	08	9
Program Elective Course (PEC)	20	19
Experiential Learning Courses (ELC)	22	20
Co-curricular Courses (CC)	02-04	2
TOTAL	**160 to 176**	**174**

Dr. Babasaheb Ambedkar Technological University, Lonere

Teaching & Evaluation Scheme for First Year B. Tech. Civil Engineering

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
Semester- I										
1	BTCVBST101	Engineering Mathematics-I	3	0	0	20	20	60	100	3
2	BTCVBST102	Engineering Physics	3	0	0	20	20	60	100	3
3	BTCVEST103	Engineering Graphics & Design	2	0	0	20	20	60	100	2
4	BTCVEST104	Basic Civil Engineering	3	0	0	20	20	60	100	3
5	BTCVHMT105	Communication Skill	2	0	0	20	20	60	100	2
6	BTCVVST106	Design Thinking	2	0	0	20	20	60	100	2
7	BTCVBSL107	Engineering Physics Lab	0	0	2	60	-	40	100	1
8	BTCVESL108	Engineering Graphics & Design Lab	0	0	2	60	-	40	100	1
9	BTCVHML109	Communication Skill Lab	0	0	2	60	-	40	100	1
10	BTCVCC110	A) NSS B) NCC C) Yoga Education D) UHV-I	0	0	2	60	-	40	100	1
		Total	**15**	**00**	**08**	**360**	**120**	**520**	**1000**	**19**
Semester- II										
1	BTCVBST201	Engineering Mathematics-II	3	0	0	20	20	60	100	3
2	BTCVBST202	Engineering Chemistry	3	0	0	20	20	60	100	3
3	BTCVEST203	Computer Programming	2	0	0	20	20	60	100	2
4	BTCVEST204	Engineering Mechanics	3	0	0	20	20	60	100	3
5	BTCVEST205	Basic Electrical & Electronics Engineering	3	0	0	20	20	60	100	3
6	BTCVIKT206	History of Indian Civil Engineering	2	0	0	20	20	60	100	2
7	BTCVBSL207	Engineering Chemistry Lab	0	0	2	60	-	40	100	1
8	BTCVESL208	Computer Programming Lab	0	0	2	60	-	40	100	1
9	BTCVESL209	Engineering Mechanics Lab	0	0	2	60	-	40	100	1
10	BTCVVSL210	Workshop Practices	0	0	4	60	-	40	100	2
11	BTCVECC211	A) Health & Wellness B) Fine Arts C) Visual Art D) Performing Arts	0	0	2	60	-	40	100	1
		Total	**16**	**00**	**12**	**420**	**120**	**560**	**1100**	**22**

Dr. Babasaheb Ambedkar Technological University, Lonere

Teaching & Evaluation Scheme for Second Year B. Tech. Civil Engineering

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester-III										
1	BTCVBST301	Civil Engineering Mathematics	3	0	0	20	20	60	100	3
2	BTCVPCT302	Mechanics of Solids	3	0	0	20	20	60	100	3
3	BTCVPCT303	OPEN ELECTIVE-1 (from bucket)	3	0	0	20	20	60	100	3
4	BTCVPCT304	Surveying	2	0	0	20	20	60	100	2
5	BTCVMDT305	MDM -1 (from bucket)	3	0	0	20	20	60	100	3
6	BTCVPCT306	Building Construction	3	0	0	20	20	60	100	3
7	BTCVPCL307	Mechanics of Solid Lab	0	0	2	50	-	50	100	1
8	BTCVPCL308	Surveying Lab	0	0	2	50	-	50	100	1
9	BTCVMDTL309	MDM-1 Lab (from bucket)	0	0	2	25	-	25	50	1
10	BTCVHMA310	Entrepreneurship Development Process	0	2	0	50	-	-	50	2
11	BTCVHMP311	Life of Bharat Ratna Dr.Babasaheb Ambedkar	1	0	0	50	-	-	50	1
12	BTCVHMA312	Indian Constitution-Value Education	2	0	0	-	-	-	AU	GR
		TOTAL	**20**	**2**	**6**	**345**	**120**	**485**	**950**	**23**
Semester-IV										
1	BTCVPCT401	Structural Mechanics-I	3	0	0	20	20	60	100	3
2	BTCVPCT402	Concrete Technology	3	0	0	20	20	60	100	3
3	BTCVPCT403	Hydraulics Engineering	3	0	0	20	20	60	100	3
4	BTCVPCT404	Building Planning & Drawing	3	0	0	20	20	60	100	3
5	BTCVHMT405	Universal Human Values	3	0	0	20	20	60	100	3
6	BTCVOET406	OPEN ELECTIVE-2 (from bucket)	3	0	0	20	20	60	100	3
7	BTCVPCL407	Concrete Technology Lab	0	0	2	50	-	50	100	1
8	BTCVPCL408	Hydraulics Lab	0	0	2	25	-	25	50	1
9	BTCVPCL409	Building Planning & Drawing Lab	0	0	2	50	-	50	100	1
10	BTCVOEL410	OPEN ELECTIVE-2 –LAB	0	0	2	25	-	25	50	1
11	BTCVHMP411	Life of Chhatrapati Shivaji Maharaj	1	0	0	50	-	-	50	1
		TOTAL	**19**	**2**	**6**	**320**	**120**	**510**	**950**	**23**

Sr.No.	Multidisciplinary Minor Courses	Open Elective (OE)
A	Engineering Geology	Building Materials
B	Geomatics	Advanced Surveying
C	MOOC-/SWAYAM/ NPTEL	Advanced Geographical Information Systems
		Applications of Drone Technology

Dr. Babasaheb Ambedkar Technological University, Lonere

Teaching & Evaluation Scheme for Third Year B. Tech. Civil Engineering

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester-V										
1	BTCVPCT501	Structural Mechanics-II	3	0	0	20	20	60	100	3
2	BTCVPCT502	Design of Steel Structures	3	0	0	20	20	60	100	3
3	BTCVPCL503	Open Channel Flow & Hydraulics Machines	3	0	0	20	20	60	100	3
4	BTCVPCT504	Geotechnical Engineering	3	0	0	20	20	60	100	3
5	BTCVOET505	Operation Research	3	0	0	20	20	60	100	3
6	BTCVMDL506	MDM-2 (from bucket)	3	0	0	20	20	60	100	3
7	BTCVPCL507	Design of Steel Structures Lab	0	0	2	50	-	50	100	1
8	BTCVPCL508	OCF & HM Lab	0	0	2	25	-	25	50	1
9	BTCVPCL509	Geotechnical Engineering Lab	0	0	2	50	-	50	100	1
10	BTCVHMA510	Soft Skills Development	0	2	0	-	-	-	AU	GR
11	BTCVVST511	Construction Equipment and Site Safety Management	0	2	0	25	-	25	50	2
		TOTAL	**18**	**4**	**6**	**270**	**120**	**510**	**900**	**23**
Semester-VI										
1	BTCVPCT601	Design of Concrete Structures	3	0	0	20	20	60	100	3
2	BTCVPET602	Elective-I	3	0	0	20	20	60	100	3
3	BTCVPET603	Elective-II	3	0	0	20	20	60	100	3
4	BTCVPET604	Elective-III	3	0	0	20	20	60	100	3
5	BTCVPCT605	Foundation Engineering	3	0	0	20	20	60	100	3
6	BTCVMDT606	MDM -3 (from bucket)	2	0	0	20	20	60	100	2
7	BTCVPCL607	Concrete Structures Lab	0	0	2	50	-	50	100	1
8	BTCVPEL608	Elective-II- Lab	0	0	2	25	-	25	50	1
9	BTCVPEL609	Elective-III- Lab	0	0	2	25	-	25	50	1
10	BTCVELP610	Seminar	0	2	0	25	-	25	50	2
11	BTCVVSP611	Academic Research Writing	0	2	0	50	-	-	50	2
		TOTAL	**17**	**4**	**6**	**295**	**120**	**485**	**900**	**24**

Sr.No.	Multidisciplinary Minor Courses	Open Elective (OE)	Elective
A	Engineering Economics and Project Management	Operation Research	Hydraulics Structures
B	Geomatics	Design of Masonry Structures	Water Quality Engineering
C	MOOC-/SWAYAM/ NPTEL (as per availability of course)		Highway & Railway Engineering

Dr. Babasaheb Ambedkar Technological University, Lonere

Teaching & Evaluation Scheme for Fourth Year B. Tech. Civil Engineering

Sr. No.	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Semester- VII										
1	BTCVPCT701	RC & PSC Structures	3	0	0	20	20	60	100	3
2	BTCVPCT702	Infrastructure Engineering	3	0	0	20	20	60	100	3
3	BTCVPET703	Elective-IV	3	0	0	20	20	60	100	3
4	BTCVPET704	Elective-V	3	0	0	20	20	60	100	3
5	BTCVPCT705	Water Resource Engineering	3	0	0	20	20	60	100	3
6	BTCVMDT706	MDM -4 (from bucket)	2	0	0	20	20	60	100	2
7	BTCVPCT707	RC & PSC Structures Lab	0	0	2	50	-	50	100	1
8	BTCVPEL708	Elective-IV -LAB	0	0	2	25	-	25	50	1
9	BTCVPEL709	Elective-V-LAB	0	0	2	25	-	25	50	1
10	BTCVELP710	Research Methodology	0	2	0	25	-	25	50	2
11	BTCVELP711	Minor Project	0	2	0	25	-	25	50	2
		TOTAL	**17**	**4**	**6**	**270**	**120**	**510**	**900**	**24**

Preferably Community Engagement Project

Semester- VIII										
1	BTCVMDT801	MDM -5 (from bucket)	2	0	0	20	20	60	100	2
2	BTCVELP802	Civil Engineering Software	0	0	4	-	-	50	100	2
3	BTCVELP803	Internship	0	0	20	100	-	100	200	10
4	BTCVELP804	Major Project	0	0	4	50	-	50	100	2
		TOTAL	**02**	**00**	**28**	**170**	**20**	**260**	**500**	**16**

Sr.No.	Multidisciplinary Minor Courses	Elective
A	Town and Urban Planning	Pollution Control & Treatment
B	Advanced Environmental Engineering	Professional Practices
C	MOOC-/SWAYAM/ NPTEL(as per availability of course	Highway & Railway Engineering
D		Plastic Analysis of Structures

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**

LIST OF 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.

MULTIDISCIPLINARY MINOR COURSES (B.Tech Civil Program)

Sr.No.	Course Offered	Teaching Scheme (Hrs)				Credits
		L	T	P	TOTAL	
1	Introduction to Engineering Geology	03	00	02	04	04
2	Geomatics	03	00	00	03	03
3	Engineering Economics and Project Management	02	00	00	02	03
4	Town and Urban Planning	02	00	00	02	02
5	Advanced Environmental Engineering	02	00	00	02	02
6	MOOC/SWAYAM/NPTEL	02	00	00	02	02

MULTIDISCIPLINARY MINOR COURSES (Other than B.Tech Civil Program)

Semester	Category	Subject Code	Subject Name	Total Credit
SEM-III	Foundation Courses	BTCVMDT305	Introduction to Engineering Geology	3
SEM-IV	Applied Engineering Courses	BTCVMDL406	Geomatics	3
SEM-V	Applied Engineering Courses	BTCVMDL506	Engineering Economics and Project Management	3
SEM-VI	Electives/Specialization Courses	BTCVMDT606	Town and Urban Planning	2
SEM-VII	Electives/Specialization Courses	BTCVMDT706	Advanced Environmental Engineering	2
SEM-VIII	Online Course	BTCVMDT801	MOOC/SWAYAM/NPTEL	2
TOTAL CREDITS REQUIRED TO COMPLETE A MINOR DEGREE IN CIVIL ENGINEERING				**15**

OPEN ELECTIVE OTHER THAN PARTICULAR PROGRAM

Sr.No.	Course Offered	Teaching Scheme (Hrs)				Credits
		L	T	P	TOTAL	
1	Building Materials	02	00	00	02	02
2	Advanced Surveying	03	00	02	04	04
3	Advanced Geographical Information Systems	03	00	00	03	03
4	Operation Research	03	00	00	03	03
5	Design of Masonry Structures	03	00	00	03	03
6	Industrial Waste Treatment	03	00	00	03	03
7	Air Pollution	03	00	00	03	03
8	Applications of Drone Technology	03	00	00	03	03
9	Bridge and Tunnel Engineering	03	00	00	03	03
10	Road Safety Audit	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	Literature Review	03	01	00	04	04
4	Publication	03	01	00	04	04
5	Data Analysis	03	01	00	04	04

PROGRAM ELECTIVE COURSE	
A	Professional Practice
B	Water Quality Engineering
C	Geomatics
D	Town and Urban Planning
E	Material, Testing and Evaluation
F	Pollution Control & Treatment
G	Highway & Railway Engineering
H	Structural Audit
I	Intelligent Transportation Systems
J	Plastic Analysis of Structures
K	Infrastructure Engineering
L	Environmental Impact Assessment

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