School of Engineering

MIT-ADT UNIVERSITY
PUNE, INDIA
A Leap Towards World Class Education

Programme Curriculum

BACHELOR OF TECHNOLOGY

PATTERN 2021

Civil Engineering

Faculty of Engineering

MIT ART DESIGN & TECHNOLOGY UNIVERSITY, PUNE

MIT SCHOOL OF ENGINEERING PUNE

STRUCTURE & SYLLABUS

FOR

Bachelor of Technology Civil Engineering

UNDER FACULTY OF TECHNOLOGY

4 Year Under Graduate Course sanctioned by AC & BoS

(160 CREDITS)

Department of Civil Engineering

VISION

Strive to build industry ready engineers having proficient and leadership qualities with capacity to undertake professional and research assignments in civil engineering with an interdisciplinary approach, for Sustainable Development.

MISSION

- To foster intellectual curiosity, build community empowered lives committed to purpose service, and leadership.
- The department is committed to mobilize the resources and equip itself with men and materials of excellence, thereby ensuring that the institution becomes a pivotal center of service to industry, academia, and society with the latest technology.
- To promote and undertake research as step towards sustainable development.
- To strengthen societal association with all stakeholders for holistic development of humanity
- To mentor students for innovative thinking with relevance to entrepreneurship.

B. Tech [Civil Engineering]

Program Educational Objectives (PEOs)

1. Demonstrate technical proficiency and innovation in civil engineering by applying advanced principles and technologies to resilient infrastructure design, while engaging in ongoing professional development.
2. Uphold high ethical standards, ensuring public safety, and demonstrate effective communication, collaboration, and leadership in diverse teams.
3. Address complex civil engineering challenges with a focus on sustainability and environmental stewardship, promoting economic development and equitable solutions for all stakeholders.

Program Outcomes (POs)

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

1. Enhance employability and/or entrepreneur skills through in-house and onsite training.
2. Provide solutions/procedures to societal and rural development problems through research and innovative practices.
3. Contribute to sustainable infrastructure development by incorporating environmentally friendly practices, optimizing resource utilization, and addressing resilience and climate change considerations in civil engineering projects.

MIT ART, DESIGN AND TECHNOLOGY UNIVERSITY, PUNE

MIT SCHOOL OF ENGINEERING, PUNE

STRUCTURE AND SYLLABUS

FOR

B. Tech. Civil Engineering

[160 Credit]

UNDER FACULTY OF TECHNOLOGY

SEMESTER III

Sr. No.	Course Code	Course Title	Teaching Scheme Periods per week			Credits	Evaluation Scheme		Total Marks	Category
			L	T	P/D		CA	FE		
1	21BTCE301	Building Materials & Construction Technology	3	0	0	3	40	60	100	DCC
2	21BTCE302	Geotechnical Engineering	3	0	0	3	40	60	100	DCC
3	21BTMT303	Calculus and Numerical Techniques	3	0	0	3	40	60	100	BSC
4	21BTCE304	Surveying	3	0	0	3	40	60	100	DCC
5	21BTCE305	Mechanics of Solids	3	0	0	3	40	60	100	DCC
6	21BTCE306	Building Services	3	0	0	3	40	60	100	DCC
7	21BTCE311	Geotechnical Engineering Laboratory	0	0	2	1	40	60	100	DCC
8	21BTCE312	Surveying Laboratory	0	0	2	1	40	60	100	DCC
9	21BTCE313	Civil Engineering Material Testing Laboratory	0	0	2	1	40	60	100	DCC
10	21BTCE321	Mini Project - I	0	0	2	1	100	-	100	PRS
		Total	18	0	8	22	440	540	1000	

SEMESTER IV

Sr. No.	Course Code	Course Title	Teaching Scheme Periods per week			Credits	Evaluation Scheme		Total Marks	Category
			L	T	P/D		CA	FE		
1	21BTCE401	Building Planning and CADD	3	0	0	3	40	60	100	DCC
2	21BTCE402	Concrete Technology	3	0	0	3	40	60	100	DCC
3	21BTCE403	Advanced Surveying	3	0	0	3	40	60	100	DCC
4	21BTCE404	Theory of Structures I	3	0	0	3	40	60	100	DCC
5	21BTCE405	Foundation Engineering	3	0	0	3	40	60	100	DCC
6	21BTCE406	Fluid Mechanics I	3	0	0	3	40	60	100	DCC
7	21BTCE411	Building Planning and CADD Laboratory	0	0	2	1	40	60	100	DCC
8	21BTCE412	Concrete Technology Laboratory	0	0	2	1	40	60	100	DCC
9	21BTCE413	Advance Surveying Laboratory	0	0	2	1	40	60	100	DCC
10	21BTCE421	Mini Project - II	0	0	2	1	100	-	100	PRS
		Total	18	0	8	22	460	540	1000	

SEMESTER V

Sr. No.	Course Code	Course Title	Teaching Scheme Periods per week			Credits	Evaluation Scheme		Total Marks	Category
			L	T	P/D		CA	FE		
1	21BTCE501	Theory of Structures II	3	0	0	3	40	60	100	DCC
2	21BTCE502	Fluid Mechanics II	3	0	0	3	40	60	100	DCC
3	21BTCE503	Transportation Engineering I	3	0	0	3	40	60	100	DCC
4	21BTCE504	Environmental Engineering I	3	0	0	3	40	60	100	DCC
5	21BTCE505	Construction & Project Management	3	0	0	3	40	60	100	DEC
6	21BTCE___	Elective I	3	0	0	3	40	60	100	DEC
7	21BTCE511	Fluid Mechanics II Laboratory	0	0	2	1	40	60	100	DCC
8	21BTCE512	Transportation Engineering I Laboratory	0	0	2	1	40	60	100	DCC
9	21BTCE513	Environmental Engineering I Laboratory	0	0	2	1	40	60	100	DCC
10	21BTCE521	Mini Project - III	0	0	2	1	100	-	100	PRS
		Total	18	0	8	22	460	540	1000	

SEMESTER VI

Sr. No.	Course Code	Course Title	Teaching Scheme Periods per week			Credits	Evaluation Scheme		Total Marks	Category
			L	T	P/D		CA	FE		
1	21BTCE601	Hydrology & Water Resource Engineering	3	0	0	3	40	60	100	DCC
2	21BTCE602	Transportation Engineering II	3	0	0	3	40	60	100	HSM
3	21BTCE603	Design of Steel Structure	3	0	0	3	40	60	100	DCC
4	21BTCE604	Environmental Engineering II	3	0	0	3	40	60	100	HSM
5	21BTCE___	Elective II	3	0	0	3	40	60	100	DEC
6	21BTCE___	Elective III	3	0	0	3	40	60	100	DEC
7	21BTCE611	Transportation Engineering II Laboratory	0	0	2	1	40	60	100	DCC
8	21BTCE612	Steel Structural Design Practices	0	0	2	1	40	60	100	DCC
9	21BTCE613	Environmental Engineering II Laboratory	0	0	2	1	40	60	100	DCC
10	21BTCE621	Mini Project - IV	0	0	2	1	100	-	100	PRS
		Total	18	0	8	22	460	540	1000	

SEMESTER VII

Sr. No.	Course Code	Course Title	Teaching Scheme Periods per week			Credits	Evaluation Scheme		Total Marks	Category
			L	T	P/D		CA	FE		
1	21BTCE701	Dams & Hydraulics Structures	3	0	0	3	40	60	100	DCC
2	21BTCE702	Quantity Surveying & Estimation	3	0	0	3	40	60	100	DCC
3	21BTCE703	Design of Reinforced Concrete Structures	3	0	0	3	40	60	100	DEC
4	21BTCE___	Elective IV	3	0	0	3	40	60	100	DEC
5	21BTCE___	Elective V [Open Elective]	3	0	0	3	40	60	100	DOE
6	21BTCE711	Dams & Hydraulics Structures Practices	0	0	2	1	40	60	100	DCC
7	21BTCE712	Quantity Surveying and Estimation Laboratory	0	0	2	1	40	60	100	DCC
8	21BTCE713	Reinforced Concrete Structures Practices	0	0	2	1	40	60	100	DCC
9	21BTCE721	Project Phase I	0	0	4	2	100	-	100	PRS
		Total	15	0	10	20	420	480	900	

SEMESTER VIII

Sr. No.	Course Code	Course Title	Teaching Scheme Periods per week			Credits	Evaluation Scheme		Total Marks	Category
			L	T	P/D		CA	FE		
1	21BTCE821	Project Phase II	0	0	16	8	100	200	300	PRS
		Total	0	0	16	8	100	200	300	

LIST OF ELECTIVES

Course Code	Elective Number	Course Title
21BTCE531	Elective I	Air Pollution and Control
21BTCE532		Geomatics Railways, Airport, Docs and Harbour Engineering
21BTCE533		Safety in Construction Practices
21BTCE534		Engineering Geology
21BTCE631	Elective II	Earthquake Engineering
21BTCE632		Opearational Research in Civil Engineering
21BTCE633		Intelligent Transport Systems
21BTCE634		Special Concrete
21BTCE635	Elective III	Transportation Planning and Management
21BTCE636		Solid and Hazardous Waste Management
21BTCE637		Town Planning
21BTCE638		Ground Improvement Techniques
21BTCE731	Elective IV	Total Quality Management
21BTCE732		Design of Prestressed Concrete Structures
21BTCE733		Railways, Airport, Docks and Harbour Engineering
21BTCE734		Industrial Waste Management
21BTCE735	Elective V [Open Elective]	Green Building Technology
21BTCE736		Disaster Management
21BTCE737		Environmental Impact Assessment
21BTCE738		Remote Sensing & Geographical Information System