Dr. Vishwanath Karad
MIT WORLD PEACE UNIVERSITY | PUNE
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

SYLLABUS

DR VISHWANATH KARAD
MIT - WORLD PEACE UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY

B.Tech Civil Engg (Smart Infrastructure and Construction Engg)

BATCH 2021 – 2024 AND ONWARDS

***Preamble**:*

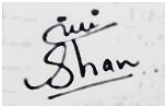
In this era of industrialisation and automation, the Civil Engineering sector has adorned a new outlook. Civil Engineer is expected to have multidisciplinary expertise to remain in space with latest technology. Along with social responsibility, civil engineer shoulders the responsibility of providing infrastructure for every sector and across all disciplines.

In the past decade, challenges in the civil engineering have seen multi-fold increase across the globe. Particularly, in developing countries it possesses a unique challenge. Such challenges can be addressed with out-of-the box design. A competent Civil Engineer, therefore, is need of the hour.

The school of civil engineering is responsible to create world class trained professionals adhering eternal human values and world peace. Over the years the school has nurtured young minds to produce bright and competent civil engineers. The school has expertise in almost the entire spectrum of civil engineering like Structural Engineering, Construction Management and Tunnel Engineering.

The structure put forth is aimed at providing the students the knowhow of the recent trends in civil engineering. In addition, the structure and syllabus is so designed, so the students meet professional and research requisitions and have good opportunities in the various fields in civil engineering. The syllabus and structure very well aligned with the requisites of the industry and the society.

As School of Civil engineering academicians, we are producing this document and enforcing it on ourselves for batch 2021-24.



Dr. Shantini Bokil
Head, School of Civil Engineering
Vice Chairman
BOS School of Civil Engineering

Dr. Prasad Khandekar
Dean Faculty of Engineering and Technology
Chairman
BOS School of Civil Engineering

Dr. Prasad Khandekar
Dean

VISION AND MISSION OF THE PROGRAMME

MIT-WPU VISION:-

- To be leading university of excellence, promoting the culture of peace through value based Universal Education System with affirm belief that Union of science and Religion/spirituality alone will bring peace to mankind
- To be a world class space of intellectual distinction in creating extensively trained professionals who will stand for eternal human values and world peace as complete global citizens.

MIT- WPU MISSION

- To create a synergy of academics with technology with research, research with industry, industry with economy and economy with social innovation, leading to world peace and positive change in the society.
- To identify, enhance, hone and nurture the strength of every student to apply scientific knowledge to touch the life of human beings.
- To foster the spirit of inquiry and imagination in students to push the envelope of human knowledge and come up with innovative and ground breaking solution for well- being of the world.
- To create value and intellectual capital for society that will act as a prime mover for development of society.
- To promote the `idea of India` by sensitizing students about the ethos of democracy, vision of leadership and culture of good governance.
- Co creation and partnership with individuals and organizations that can support students realize their supreme potential.

Vision FOET:

- To be globally recognized leader in Engineering Education having constructive impact on society.

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Mission FOET:

- To achieve academic excellence through continuously updated education (CUEd)
- To create environment of Engineering research and social innovation through trans-disciplinary centres of excellence.
- To strengthen partnerships with industry research and social organizations.
- To promote universal value based professional education.

Vision School of Civil Engineering: -

To develop globally recognised ethical, responsible civil engineering professionals contributing in nation building.

Mission School of Civil Engineering: -

- To achieve academic excellence for solving problems in civil and environmental engineering.
- To promote higher education, research, innovation and entrepreneurship amongst graduates for contributing in infrastructure development.
- To inculcate social responsibility, ethical behavior, professional industry practice through partnerships.
- To be a center of excellence collaborating across other disciplines.

Programme Educational Objectives (PEO's): -

PEO-1 Demonstrate the ability to design and develop products, systems and processes in multidisciplinary engineering environment.

PEO-2 Demonstrate abilities to offer solutions to engineering problems.

PEO-3 Continue professional development through self-learning and higher education.

PEO-4 Pursue successful careers at global level.

Programme Outcomes (PO's)

PO1:- Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

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PO2:- 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.

PO3:- 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

PO4:-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 for complex problems.

PO5:-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.

PO6:-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

PO7:-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

PO8:-Ethics Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9:-Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10:-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.

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PO11:-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.

PO12:-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

Programme Specific Outcomes (PSO's)

PSO-I To design and simulate structures, project systems and processes by applying concepts of mathematics, basic and engineering sciences.

PSO-II To formulate, model, analyse and realize civil and environmental systems across various disciplines.

PSO-III To select, design and apply appropriate contemporary classical and modern processes to realize engineering systems in multidisciplinary environment

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Programme Structure:

(a) Programme duration : Four Years

(b) System followed : Trimester

(c) Credits System:

The outcome based education, trimester based credit and grading system is introduced to ensure quality of engineering education. Trimester based credit and grading system enables a much-required shift in focus from teacher centric to learner-centric education since the workload estimated is based on the investment of time in learning and not in teaching. It also focuses on continuous evaluation which will enhance the quality of education.

(i) Per term or per year : Credits are given per trimester

(ii) Total in the programme : 168 Credits

(d) Credits for activities other than academics:

In the curriculum, some credits are given to other activities such as social internship, domestic and international study tours, and Industry internship/project.

(e) Internship:

The program has rural immersion module as a part of social internship in the first year of study. The student would also have to undergo one full trimester Internship in Industry along with their project work during the final year. These internships have credits and mandatory for all the students.

(f) Assessment Criteria:

There will be continuous as well as end trimester assessment of a student's performance and grades will be awarded by the Subject Teacher. Various assessment tools such as tests, quizzes, assignments, project, group activities, presentations, etc would be used to evaluate the performance of the students.

(g) Branches or Specialisations:

The students of B. Tech. (Civil Engineering) Program can also be specialised in:

Track I : Analysis, Design and Simulation

Track II : Construction management

Track III : Transportation engineering

Track IV : Environmental engineering

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(h) Mandatory Attendance to appear for examination:

As per the Examination Ordinance, 2020 of MIT-WPU, the student should have minimum 75% attendance in a trimester considering all concessions such as attendance concession given for sport, sick leave etc. to appear for external examination for that trimester.

(j) Medium of Instruction & Examination: *English*

As per Section 14(a), Academic Ordinance: 2018 of MIT-WPU, in all the Academic Programs, the medium of instruction and examination shall be English.

(k) Eligibility criteria for admission to the programme:

As per Para 4, Academic Ordinance: 2017 of MIT-WPU, the eligibility criteria for First Year B. Tech. admission is as below:

1. Passed HSC or its equivalent examination with Physics and Mathematics as compulsory subjects along with one of the Chemistry or Biotechnology or Biology or Technical Vocational subjects, and obtained at least 50 % marks (at least 45 % marks, in case of Backward class categories and Persons with Disability candidates belonging to Maharashtra State only) in the above subjects taken together **OR**

2. Passed Diploma in Engineering and Technology and obtained at least 50 % marks (at least 45 % marks, in case of Backward class categories and Persons with Disability candidates belonging to Maharashtra State only)

3. Obtained score in MHT-CET conducted by the Competent Authority. **OR** Obtained score in JEE (Main) conducted by the Competent Authority.

Eligibility Criteria for B.Tech. (Lateral Entry)

1. The candidate should have passed in First Class / First Class with condonation, post SSC Or post HSC diploma course in Engineering / Technology of the Maharashtra State Board of Technical Education (MSBTE) **OR**

2. Any other recognized Diploma equivalent to the Diploma awarded by the Maharashtra State Board of Technical Education (MSBTE) with English as a medium of instruction at Diploma level. **OR**

3. Any other state / Territory Diploma equivalent to MSBTE, approved by AICTE, English as a medium of instruction out of state.

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B.Tech Civil Engg (Smart Infrastructure and Construction Engg)

A. Definition of Credit:

1 Credit (Theory/Tutorial)	15 Hrs
1 Credit (Laboratory/Project or similar activity)	30 Hrs

B. Credits:

Total number of credits for four-year B.Tech. Civil Engineering Programme would be 168.

C. Structure of Credits for Undergraduate B.Tech. Civil Engineering:

S. No.	Category	Suggested Breakup of Credits (Total 168)
1	Humanities and Social Sciences and Peace Programmes including Management courses	19
2	Basic Science courses	31
3	Engineering Science courses including workshop, drawing, Basics of electrical/mechanical/computer etc.	26
4	Professional core courses	54
5	Professional Elective courses relevant to chosen specialization/branch	16
6	Open subjects–Electives from other technical and/or emerging subjects	04
7	Project work, seminar and internship in industry or elsewhere	18
	Total	**168**

D. Course Code and Definition:

Course code	*Definitions*
L	Lecture
T	Tutorial
ES	Engineering Science Courses
WPC	Humanities and Social Sciences and Peace Programs including Management courses
MEE	Mechanical Engineering Courses
ECE	Electronics and Communication
EEE	Electrical Engineering
CHE	Chemical Engineering
CET	Computer Science and Engineering
POE	Polymer Engineering
CVE	Civil Engineering

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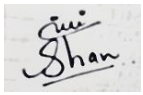
PEL	Petroleum Engineering

E. Grading Scheme:

According to Para 12.1 of Academic Ordinances 2017, University shall use trimester /semester / annual as per need of a program. The credit based system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system provides a 'cafeteria' type approach in which the students can take courses of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning. The University shall follow a 10-point grading system with the following letter grades as given below:

Marks Out of 100	Grade	Grade Point
80-100	O: Outstanding	10
70-79	A+: Excellent	9
60-69	A: Very Good	8
55-59	B+: Good	7
50-54	B: Above Average	6
45-49	C: Average	5
40-44	Pass	4
0-39	Fail	0
Ab	Absent	NA



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B. Tech. (First Year) (Batch 2021-24)

Trimester – I

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment, Marks			
				Theory	Tutorial	Lab	Th	Lab	CCA *	LCA *	End Term Test	Total
1	SCI101B	Linear Algebra and Differential Calculus	BS	30	15		3	-	100	-	50	**150**
2	SCI102B	Physics	BS	30	15	30	3	1	100	50	50	**200**
3	CVE101B	Mechanics	BS	45	-	30	3	1	100	50	50	**200**
4	MEE101B	Workshop Practices	ES	-	-	30	-	1	-	50	-	**50**
5	FET101B	Effective Communication	HSS	15	-	30	1	1	50	50	-	**100**
6	WPC101A	World Famous Philosophers, Sages/Saints and Great Kings	WP	30	-	-	2	-	70	-	30	**100**
	WPC001A	Yoga - for Winning Personality	WP	-	-	-	-	-	-	-	-	-
		Total		**150**	**30**	**120**	**12**	**4**	**420**	**200**	**180**	**800**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours:- 300

Total Credits: First Year *B. Tech* Trimester I: 16

* CCA : Class Continuous Assessment
* LCA : Laboratory Continuous Assessment

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***B. Tech.* (First Year) (Batch 2021-24)**

Trimester – II

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks **			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	SCI103B	Integral Calculus	BS	30	15	-	3	-	100	-	50	**150**
2	SCI104B	Chemistry	BS	30	-	30	2	1	50	50	50	**150**
3	MEE102B	Material Science	BS	30	-	-	2	-	50	-	50	**100**
4	MEE103B	Engineering Graphics	ES	30	-	30	2	1	50	50	50	**150**
5	CET101B	Programming and Problem Solving	ES	30	-	30	2	1	50	50	50	**150**
6		Rural Immersion	HSS	-	-	-	-	-	-	-	-	-
7	WPC001A	Yoga - for Winning Personality	WP	-	-	-	-	-	-	-	-	-
		Total		**150**	**15**	**90**	**11**	**3**	**300**	**150**	**250**	**700**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours: - 300

***** CCA : Class Continuous Assessment

Total Credits: First Year *B. Tech* Trimester II: 14

***** LCA : Laboratory Continuous Assessment

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B. Tech. (First Year) (Batch 2021-24)

Trimester – III

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	SCI105B	Biology for Engineers	BS	30	-	-	2	-	50	-	50	**100**
2	MEE104B	Design Thinking Laboratory	ES	-	-	30	-	1	-	50	-	**50**
3	ECE101B	Basics of Electrical and Electronics Engineering	ES	45	-	30	3	1	100	50	50	**200**
4	MEE105B	Basics of Mechanical Engineering	ES	30	-	30	2	1	50	50	50	**150**
5	CVE102B	Basics of Civil Engineering	ES	30	-	30	2	1	50	50	50	**150**
6	WPC302A	Study of Languages, Peace in Communications and Human Dynamics	WP	30	-	-	2	-	70	-	30	**100**
7	WPC001A	Yoga - for Winning Personality	WP	-	-	-	-	-	-	-	-	-
		Total		**165**	-	**120**	**11**	**4**	**320**	**200**	**230**	**750**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours: - 285

Total Credits: First Year B. tech. Trimester III: 15

Total First Year B. Tech Credits:16+14+15 = 45

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***** LCA : Laboratory Continuous Assessment

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B. Tech. School of Civil Engineering (Second Year) (Batch 2021-24)

Trimester – IV

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Advanced Calculus and Numerical Methods	BS	30	-	30	2	1	50	50	50	150
2		Engineering Geo-sciences	BS	30	-	30	2	1	50	50	50	150
3		Strength of Materials	PC	30	-	30	2	1	50	50	50	150
4		Fluid Mechanics	PC	30	-	30	2	1	50	50	50	150
5		Indian Constitution	HSS	15	-	-	1	-	50	-	-	50
6		Linux based Python Lab	PC	-	-	30	-	1	-	50	-	50
		Total :		**135**		**150**	**9**	**5**	**250**	**250**	**200**	**700**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours: - 285

Total Credits: Second Year *B. Tech.* Trimester IV: 14

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B. Tech. School of Civil Engineering (Second Year) (Batch 2021-24)

Trimester – V

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Building Design and Computer Aided Drawing	ES	15	-	30	1	1	50	50	-	100
2		Analysis of Structures	PC	30	-	0	2	-	50	-	50	100
3		Geomatic Engineering and Geoinformatics	PC	30	-	30	2	1	50	50	50	150
4		Soil Mechanics	ES	30	-	30	2	1	50	50	50	150
5		Open Channel Hydraulics/ Smart Materials in Construction engineering	PC	30	-	30	2	1	50	50	50	150
6		Philosophy of Science and Religion/Spirituality	WP	30	-	0	2	-	70	-	30	100
7		National Study Tour	_	-	-	-	-	-	-	-	-	-
		Total		**165**	**-**	**120**	**11**	**4**	**320**	**200**	**230**	**750**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours: - 285

***** CCA : Class Continuous Assessment

Total Credits: Second Year B. Tech. Trimester V: 15

***** LCA : Laboratory Continuous Assessment

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B. Tech. School of Civil Engineering. (Second Year) (Batch 2021-24)

Trimester – VI

Trimester teaching hours: - 330 ****Assessment Marks are valid only if Attendance criteria are met**

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Probability and Statistics	BS	45	-	-	3	-	100	-	50	150
2		Water and Waste Water Engineering	PC	30	-	30	2	1	50	50	50	150
3		Fundamentals of Infrastructure	PC	30	-	30	2	1	50	50	50	150
4		Theory of Structures	PC	30	-	30	2	1	50	50	50	150
5		Basic IoT Laboratory	PC	-	-	60	-	2	-	100	-	100
6		Seminar	PR	-	-	30	-	1	-	50	-	50
7		Environmental Science	BS	15	-	-	1	-	50	-	-	50
8		Employment Skills Development – I	AC	-	-	-	-	-	-	-	-	-
		Total :		**150**	**-**	**180**	**10**	**6**	**300**	**300**	**200**	**800**

Second Year B. Tech. Trimester VI: 16

Total Second Year B. Tech Credits: 14+15+16 = 45

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B. Tech. School of Civil Engineering (Third Year) (Batch 2021-24)

Trimester – VII

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Project Management and Management Information System	PC	30	-	30	2	1	50	50	50	150
2		Foundation Engineering	PC	30	-	-	2	-	50	-	50	100
3		Traffic Engineering and Road Safety Audit	PC	30	-	30	2	1	50	50	50	150
4		Artificial Intelligence and Machine Learning	PC	30	-	30	2	1	50	50	50	150
5		Open Elective – I	OE	30	-	-	2	-	50	-	50	100
6		Indian Tradition, Culture and Heritage	WP	30	-	-	2	-	70	-	30	100
7		Employment Skills Development – II	AC	-	-	-	-	-	-	-	-	-
		Total :		**180**	**-**	**90**	**12**	**3**	**320**	**150**	**280**	**750**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours - 270

Total Credits: Third Year B. Tech. Trimester VII: 15

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B. Tech. School of Civil Engineering (Third Year) (Batch 2021-24)

Trimester – VIII

****Assessment Marks are valid only if Attendance criteria are met**

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Design of RCC Structures	PC	30	-	30	2	1	50	50	50	150
2		Data Science for Engineers	PC	30	-	30	2	1	50	50	50	150
3		Intelligent irrigation Technologies	PC	30	-	-	2	0	50	-	50	100
4		Professional Elective – I	PE	30	-	30	2	1	50	50	50	150
5		Finance and Costing	HSS	30	-	-	2	-	50	-	50	100
6		Humanities - Ethical, Moral and Social Sciences	WP	30	-	-	2	-	70	-	30	100
		Total :		**180**	**-**	**90**	**12**	**3**	**320**	**150**	**280**	**750**

Trimester teaching hours: - 270

Total Credits: Third Year B. Tech. Trimester VIII: 15

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B. Tech. School of Civil Engineering (Third Year) (Batch 2021-24)
Trimester – IX

****Assessment Marks are valid only if Attendance criteria are met**

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Design of Steel Infrastructures	PC	30	-	30	2	1	50	50	50	150
2		Concrete technology and automation	PC	30	-	30	2	1	50	50	50	150
3		Professional Elective – II	PE	30	-	30	2	1	50	50	50	150
4		Open Elective – II	OE	30	-	-	2	-	50	-	50	100
5		Mini Project / Interdisciplinary Project	PR	-	-	30	-	1	-	50	-	50
6		Scientific Studies of Mind, Matter, Spirit and Consciousness	WP	30	-	-	2	-	70	-	30	100
		Total		**150**	**-**	**120**	**10**	**4**	**270**	**200**	**230**	**700**

Trimester teaching hours: - 270

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***** LCA : Laboratory Continuous Assessment

Total Credits: Third Year B. Tech. Trimester IX: 14

Total Third Year B. Tech Credits: 15+15+14 = 44

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FACULTY OF ENGINEERING AND TECHNOLOGY

B. Tech. School of Civil Engineering (Final Year) (Batch 2021-24)
Trimester – X

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Quantity Survey and Estimation	PC	30	-	30	2	1	50	50	50	150
2		Hydraulic Structures and Hydro informatics	PC	30	-	30	2	1	50	50	50	150
3		Innovation and Entrepreneurship	HSS	30	-	0	2	0	50	-	50	100
4		PE – III	PE	30	-	30	2	1	50	50	50	150
5		PE – IV	PE	30	-	30	2	1	50	50	50	150
		Total :		**150**	**-**	**120**	**10**	**4**	**250**	**200**	**250**	**700**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours: - 270

Total Credits: Final Year B. Tech. Trimester X: 14

* CCA : Class Continuous Assessment

* LCA : Laboratory Continuous Assessment

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B. Tech. School of Civil Engineering (Final Year) (Batch 2021-24)
Trimester – XI

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		**Internship** or **Capstone Project** *(Anyone)*	PR	-	-	240	-	8	-	400	-	400
2		OPE - 1/MOOC	OP	30	-	-	2	-	100	-	-	100
		Total :	**-**	**30**	**-**	**240**	**2**	**8**	**100**	**400**	**-**	**500**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours: - 270

Total Credits: Final Year *B. Tech.* Trimester XI: 10

* CCA : Class Continuous Assessment

* LCA : Laboratory Continuous Assessment

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MIT WORLD PEACE UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY

B. Tech. School of Civil Engineering (Final Year) (Batch 2021-24)

Trimester – XII

Sr. No.	Course Code	Name of Course	Type	Total Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		**Capstone Project** or Internship *(Anyone)*	PR	-	-	240	-	8	200	200	-	400
2		OPE - II/MOOC	OP	30	-	-	2	-	50	-	50	100
		Total :		**30**	**-**	**240**	**2**	**8**	**250**	**200**	**50**	**500**

****Assessment Marks are valid only if Attendance criteria are met**

Trimester teaching hours: - 270

***** CCA : Class Continuous Assessment

Total Credits: Final Year B. Tech. Trimester XII: 10

***** LCA : Laboratory Continuous Assessment

Total Final Year B. Tech Credits: 14+10+10 = 34

Total B. Tech Credits: 45+45+44+34 = 168

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List of Elective Courses:

Type of Elective	Elective Abbreviation	Course Code	Name of Course
Professional Elective	PE - I		Analysis and Design of Transportation Infrastructure
			Advanced Construction Methods and Automation
	PE - II		Design of Prestressed Conc. Structures
			Infrastructure Environmental impact assessment
			Sustainable Materials and Transportation Engineering
			Construction safety Engineering
	PE - III		Green Buildings and Infrastructure Contracts
			Smart City planning and Development
			Planning and Design of Non-Motorized Transport
			Airport and Railway Engineering
	PE - IV		Structural Health Monitoring
			Infrastructure Development and Construction Technology
			Traffic flow models and Simulation
			International Contracting
Professional Elective in Online Mode	OPE - I		TQM and MIS
			Valuation
			Sub-Sea Engineering
			Docks and Harbors
	OPE - II		Ferrocement Design and Construction
			Geosynthetic and Ground Engineering
			Green and Clean Energy
			Hydropower Engineering

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Open Elective	OE - I	To be taken from other schools of FoET than the student's own school.
	OE - II	To be taken from other schools than the student's own school.

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School of Civil Engineering

List of Open Electives offered: BTech Structure (2021-24)

Open Elective-I	Open Elective-II
Air Pollution	Sustainable Engineering Practices and Smart Campus
Human Resource Development and Research Methodology (HRD and RM)	Safety Engineering

Prepared By,

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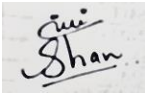

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