



Dr. Vishwanath Karad  
**MIT WORLD PEACE**  
**UNIVERSITY** PUNE  
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIP

## **SYLLABUS**

**DR VISHWANATH KARAD**  
**MIT - WORLD PEACE UNIVERSITY**

**FACULTY OF ENGINEERING AND TECHNOLOGY**

**INTEGRATED B. TECH.**  
**(CIVIL ENGINEERING)**

**BATCH 2021-2027 AND ONWARDS**

.Prof. Dr..R. S. Kale  
Associate Dean



## **PROGRAMME STRUCTURE**

### **Preamble:**

Civil Engineering is the science of applying concepts for improving quality of life. It essentially deals with application of technology. Here ideas & creativity matter a lot to develop efficient engineers. At our department we take our students through both these realms. While on one hand, we ensure clarity of the basic concepts of science, on the other hand we encourage students to look at practical needs from different angles and find innovative and creative solutions.

The programme curriculum emphasizes on fundamentals of courses necessary for building foundation of the programme. The need to offer employable engineering graduates is being satisfied through professional development courses.. A long discussed issue of work place cannot be duplicated in educational institutes is also addressed through skill development courses. The proven fact “learning by doing” is being practiced and is stressed during the entire programme through projects & internships.

Proposed Peace programs are introduced during all years of program which will ensure that prospective engineers will offer unstopping performance with calm, constructive and sharp mind. One can find reflectance of requirements of statutory bodies and international trends in the programme education.

**Prof. Mrs. Kavita Bawdekar**  
Programme Head  
Civil Engineering

**Dr. Prof. Rohini Kale**  
Associate Dean  
School of Polytechnic  
& Skill Development

.Prof. Dr..R. S. Kale  
Associate Dean

## **Vision and Mission of the Programme**

### **VISION**

To recognized department as a centre of excellence impart technical knowledge along with practical approach and intellectual skills for lifelong learning in Civil engineering.

### **MISSION**

- To impart skill based education and industrial exposure to the students with contemporary practices for solving various challenges in civil engineering with professional discipline.
- To develop approach to become responsible entrepreneurs and / or to pursue further career in academics.

## **Programme Educational Objectives**

The Department of Civil Engineering has articulated the Program Education Objectives (PEOs) as follows:

- PEO 1.** Provide socially responsible, environment friendly broad-based solutions to Civil engineering related problems adapting professional ethics.
- PEO 2.** Adapt state-of-the-art Civil engineering broad-based technologies to work in multi-disciplinary work environments.
- PEO 3.** Solve broad-based problems individually and as a team member communicating effectively in the world of work.

### Programme Outcomes (POs)

Civil Engineering Graduates will be able to:

- PO1 Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 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.
- PO5 Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling 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.
- 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**

Civil Engineering Graduate will be able to:

PSO 1. Construction Planning and Designing: Perform optimal civil engineering construction, planning and designing activities of desired quality at optimal cost.

PSO 2. Construction Execution and Maintenance: Execute civil engineering construction and maintenance using relevant materials and equipment.

## **Programme Structure:**

(a) **Programme duration:** Six 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 | : 125 Credits (For First Three Years) |

(d) **Credits for activities other than academics:**

In the curriculum, some credits are given to other activities such as Industry internship/projects/MOOC

(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 two 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:** NA

(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.

(i) **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.



**(j) Eligibility criteria for admission to the programme:**

The eligibility criteria for First Year Integrated B. Tech. admission is as below:

1. 10<sup>th</sup> with 60% in SSC course of state of Maharashtra or equivalent board. Reservations as per AICTE rules published from time to time.

**Eligibility Criteria for Integrated B.Tech. (Lateral Entry)**

1. Lateral entry as per prevailing rules of DTE and Government of Maharashtra.

## Integrated B. Tech Courses in Civil Engineering

### 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 Three-year *Integrated B.Tech. Civil Engineering* Programme would be 125. (For First Three Years)

### C. Structure of Credits for three years Integrated B.Tech. Civil Engineering Programme:

S. No.	Category	Suggested Breakup of Credits(Total 125 (For First Three Years))
1	Humanities and Social Sciences and Peace Programmes including Management courses	07
2	Basic Science courses	19
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	19
4	Professional core courses	51
5	Professional Elective courses relevant to chosen specialization/branch	09
6	Open subjects – Electives from other technical and /or emerging subjects	04
7	Project work, seminar and internship in industry or elsewhere	16
	<b>Total</b>	<b>125</b>

### 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
ME	Mechanical Engineering Courses
EC	Electronics and Communication
EE	Electrical Engineering
CH	Chemical Engineering





CS	Computer Science and Engineering
PO	Polymer Engineering
CE	Civil Engineering
PE	Petroleum Engineering

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The credit based system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The University shall follow a 10-point grading system with the following letter grades as given below:

<b>Marks Out of 100</b>	<b>Grade</b>	<b>Grade Point</b>
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

***Integrated B. Tech. Civil Engineering (First Year)***  
**(Batch 2021-2027)**  
**Trimester-I**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Basic Mathematics	BMS	30	20	0	2	1	50	50	50	150
2		Basics of Civil Engineering	CEM	30	0	30	2	1	50	50	50	150
3		Basic Physics	BSP	30	0	30	2	1	50	50	50	150
4		Fundamentals of Computer System	FCO	0	0	60	0	2	0	100	0	100
5		Fundamentals of Biology for engineers	BIO	30	0	0	2	0	50	0	50	100
6		PEACE I	WPC1	30	0	0	2	0	70	0	30	100
7		Yoga for Winning Personality	WP	-	-	-	-	-	-	-	-	-
		<b>Total</b>		<b>150</b>	<b>20</b>	<b>120</b>	<b>10</b>	<b>5</b>	<b>270</b>	<b>250</b>	<b>230</b>	<b>750</b>

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

**Weekly Teaching Hours: 290**

**Total Credits: First Year Integ. B. Tech Trimester I: 15**

\* CCA : Class Continuous Assessment

\*LCA : Laboratory Continuous Assessment

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Associate Dean

***Integrated B. Tech. Civil Engineering (First Year)***  
**(Batch 2021-2027)**  
**Trimester – II**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Basic Chemistry	BSC	30	0	30	2	1	50	50	50	150
2		Communication Skill	ENG	30	0	0	2	0	50	0	50	100
3		Building material and Construction (SK1)	BMC	20	0	30	1	1	00	50	50	100
4		Basics of Electronics and Electrical Engg.	FEE	30	0	30	2	1	50	100	00	150
5		Engineering Mechanics- statics	EMS	30	0	30	2	1	50	50	50	150
6		Engineering Graphics	EGG	30	0	30	2	1	50	100	0	150
7		Yoga for Winning Personality	WP	-	-	-	-	-	-	-	-	-
		<b>Total</b>		<b>170</b>	<b>0</b>	<b>180</b>	<b>11</b>	<b>5</b>	<b>250</b>	<b>350</b>	<b>200</b>	<b>800</b>

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

**Weekly Teaching Hours: 350**

**Total Credits: First Year Integ. B. Tech Trimester II: 16**

\* CCA : Class Continuous Assessment

\*LCA : Laboratory Continuous Assessment

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Associate Dean

***Integrated B. Tech. Civil Engineering (First Year)***  
**(Batch 2021-2027)**  
**Trimester – III**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Applied Science	APS	30	0	30	2	1	50	50	50	150
2		Surveying Technique(SK2)	SUY	30	0	60	2	2	50	100	50	200
3		Basics of Mechanical Engineering	FME	30	0	30	2	1	50	100	00	150
4		Engineering Mechanics – Dynamics	AME	30	0	30	2	1	50	50	50	150
5		Workshop	CEW	0	0	30	0	1	00	50	00	50
6		Yoga for Winning Personality	WP	-	-	-	-	-	-	-	-	-
		<b>Total</b>		<b>120</b>	<b>00</b>	<b>180</b>	<b>8</b>	<b>6</b>	<b>200</b>	<b>350</b>	<b>150</b>	<b>700</b>

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

**Weekly Teaching Hours: 30**

**Total Credits: First Year Integ. B. Tech Trimester III: 14**

\* CCA : Class Continuous Assessment

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***Integrated B. Tech. Civil Engineering (Second Year)***  
**(Batch 2021-2027)**  
**Trimester – IV**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Mechanics of Structure	MOS	30	0	30	2	1	50	50	50	150
2		Advance Survey technique.( SK3)	ASY	20	0	30	1	1	50	50	50	150
3		Principles of Building Planning	BDW	30	0	30	2	1	50	50	50	150
4		Introduction to Concrete Technology	CTE	30	0	30	2	1	50	50	50	150
5		Introduction to Geotechnical Engineering	GTE	30	0	30	2	1	50	50	50	150
6		Introduction to Engineering Design Laboratory	EDL	0		30		1		50	00	50
		<b>Total</b>		<b>140</b>	<b>0</b>	<b>180</b>	<b>9</b>	<b>06</b>	<b>250</b>	<b>300</b>	<b>250</b>	<b>800</b>

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

**Weekly Teaching Hours: 320**

**Total Credits: Second Year Integ. B. Tech Trimester I: 15**

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***Integrated B. Tech. Civil Engineering (Second Year)***  
**(Batch 2021-2026)**  
**Trimester – V**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Engineering Mathematics I	EMS I	30	0	0	2	0	50	00	50	100
2		Theory Of Structure I	TOS	30	0	0	2	0	50	00	50	100
3		Water Treatment system	WTS	30	0	30	2	1	50	50	50	150
4		Roads and Highway Engineering	RHE	30	0	30	2	1	50	50	50	150
5		PEACE II	WPC 2	30	0	0	2	0	70	00	30	100
6		Water Resource Engineering	WRE	30	0	0	2	0	50	00	50	100
7		<b>Total</b>		<b>180</b>	<b>0</b>	<b>60</b>	<b>12</b>	<b>2</b>	<b>320</b>	<b>100</b>	<b>280</b>	<b>700</b>

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

**Weekly Teaching Hours: 240**

**Total Credits: Second Year Integ. B. Tech Trimester V: 14**

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\*LCA : Laboratory Continuous Assessment

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***Integrated B. Tech. Civil Engineering (Second Year)***  
**(Batch 2021-2027)**  
**Trimester – VI**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Theory of Structure II	TOS	30	0	0	2	0	50	0	50	100
2		Hydraulics	HYD	30	0	30	2	1	50	50	50	150
3		Railway Engineering	RWE	30	0	0	2	0	50	00	50	100
4		Estimating & Costing	EST	30	0	60	2	2	50	100	50	200
5		Elective I	ELE	30	0	30	2	1	50	50	50	150
6		Material Science	MSC	30	0	0	2	0	50	00	50	100
		<b>Total</b>		<b>180</b>	<b>0</b>	<b>120</b>	<b>12</b>	<b>4</b>	<b>300</b>	<b>200</b>	<b>300</b>	<b>800</b>

Type: (Refer Para 11 of Academic Ord. 2017)

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

**Weekly Teaching Hours: 30**

**Total Credits: Second Year Integ. B. Tech Trimester VI: 16**

\* CCA : Class Continuous Assessment

\*LCA : Laboratory Continuous Assessment

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***Integrated B. Tech. Civil Engineering (Third Year)***  
**(Batch 2021-2027)**  
**Trimester – VII**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Internship	INT	0	0	180	0	6	00	300	00	300
2		MOOC course(online)	MCS	0	0	0	2	0	0	0	00	100
		<b>Total</b>		<b>0</b>	<b>0</b>	<b>180</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>300</b>	<b>00</b>	<b>400</b>

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

**Weekly Teaching Hours: 180**

**Total Credits: ThirdYear Integ. B. TechTrimester VII:8**

\* CCA : Class Continuous Assessment

\*LCA : Laboratory Continuous Assessment

^Internship daily hours

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***Integrated B. Tech. Civil Engineering (Third Year)***  
**(Batch 2021-2027)**  
**Trimester – VIII**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Internship	INT	0	0	180	0	6	00	300	00	300
2		Capstone Project I	CPP	0	0	60	0	2	00	100	00	100
3		Seminar	SEM	0	0	30	0	1	00	00	50	50
4		Open elective	OPE	30	0	0	2	0	00	50	50	100
		<b>Total</b>		<b>30</b>	<b>0</b>	<b>270</b>	<b>2</b>	<b>9</b>		<b>450</b>	<b>100</b>	<b>550</b>

Type: (Refer Para 11 of Academic Ord. 2017)

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

**Weekly Teaching Hours: 300**

**Total Credits: Third Year Integ. B. Tech Trimester VIII: 11**

\* CCA : Class Continuous Assessment

\*LCA : Laboratory Continuous Assessment

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***Integrated B. Tech. Civil Engineering (Third Year)***  
**(Batch 2021-2027)**  
**Trimester – IX**

Sr. No.	Course Code	Name of Course	Type	Total Hrs			Credits		Assessment, Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Design and Drafting of RCC Structures & steel structures	DDR	30	0	30	2	1	50	50	50	150
2		Contracts & Account	CAA	20	0	30	1	1	50	00	50	100
3		Engineering mathematics II	EMS	30	0	0	2	0	50	00	50	100
4		Capstone Project II	CPP	0	0	60	0	2	50	00	50	100
5		Entrepreneurship Development	EDP	0	0	30	0	1	00	50	00	50
6		Elective III	ELE II	30	0	30	2	1	50	50	50	150
7		Elective II	ELE II	30	0	30	2	1	50	50	50	150
		<b>Total</b>		<b>140</b>	<b>0</b>	<b>210</b>	<b>9</b>	<b>7</b>	<b>300</b>	<b>200</b>	<b>300</b>	<b>800</b>

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

**Weekly Teaching Hours: 350**

**Total Credits: Third Year Integ. B. Tech Trimester IX: 16**

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**Elective Courses:**

	< Environment Engg.>		< Construction Technology >		< Name of Specialisation >		<Name of Specialisation>	
	Code	Title	Code	Title	Code	Title	Code	Title
<i>Elect I</i>		Solid Waste Management		Rural Development Planning				
<i>Elect II</i>		Waste water system		Advanced Construction Technology				
<i>Elect III</i>		Industrial Waste Management		Construction Management				

*Name of Specialisation : Any specialisation track / course/ module available in the programm*

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