

Rayat Shikshan Sanstha's
**Karmaveer Bhaurao Patil,
College of Engineering, Satara.**

An Autonomous Institute & Affiliated to DBATU Lonere

Accredited by NAAC with "B++" Grade



Second Year to Final Year B. Tech

Civil Engineering

Structure & Curriculum

(w.e.f. A.Y. 2026-27)

As Per NEP 2020

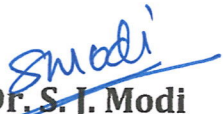
NCrF Level 6

Recommended in BOS (Civil) Meeting Dated: 16th June 2026

&

Approved in Academic Council Meeting Dated: 20th July 2026


Mr. A. A. Mahadar
BOS Chairman (Civil)


Dr. S. J. Modi
Member Secretary
Academic Council


Dr. A. C. Attar
Principal

Rayat Shikshan Sanstha's

KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING, SATARA

(An Autonomous Institute Affiliated to DBATU, Lonere)

Accredited by NAAC & NBA



DEPARTMENT OF CIVIL ENGINEERING

STRUCTURE AND CURRICULUM

For

Under Graduate Program

Bachelor of Technology
In

CIVIL ENGINEERING

(w.e.f. Academic Year 2026 - 2027)

As per NEP 2020





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Key Features of Curriculum

1. Multiple entry and exit option after every year.
2. Provision for Open Electives (OE), Vocational and Skill Enhancement Courses (VSE), Ability Enhancement Courses (AE), Indian Knowledge System (IKS), Value Education Courses (VE), Co-Curricular Courses (CC) in addition to program core courses.
3. Mandatory internship of one semester.
4. Credits for Value education courses, Ability Enhancement Courses, Co-Curricular Curricular activities.
5. Mandatory Non-Credit Courses.
6. Interdisciplinary and multidisciplinary education through single and double minors and open electives.
7. Skill based courses and multiple exit level.
8. Provision for learning in NPTEL mode through Swayam / NPTEL etc courses
9. Provision for B.Tech. Honours with Research degree through research project.
10. Opportunity for learner to choose courses of their interest in all disciplines.
11. Provision of Skill Based Courses and internship/Field project/mini projects for exit options at each level.
12. Flexibility for all types of learners i.e. Good, Normal and Exit

Good Students	Normal Students	Exit
B. Tech. Major with Multidisciplinary Minor	B. Tech. Major with Multidisciplinary Minor	Additional 08 credits in the form of skill-based courses / labs, Internship, Mini projects shall be offered in 8 weeks.
B. Tech. Honors and Multidisciplinary Minor		
B. Tech. Honors with Research and Multidisciplinary Minor		
B. Tech. with Double Minor (Multidisciplinary and Specialization Minor)		





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

Credit Distribution for each year and Exit Option

NCrF Level	Year/Sem	Exit Option	Minimum Credit Requirements	Maximum Credit Requirements	KBPCOES Civil Credits	Additional Credits for exit students	KBPCOES Civil Total Credits
4.5	I & II	U. G. Certificate	40	44	42	8	50
5	III & IV	U. G. Diploma	80	88	86	8	94
5.5	V & VI	B. Vocational /B.Sc.	120	132	130	8	138
6	VII & VIII	B. Tech. Major with Multidisciplinary Minor	160	176	172	-	172
6	VII & VIII	B.Tech. Honors and Multidisciplinary Minor	180	194	172	18	190
		B.Tech. Honors with Research and Multidisciplinary Minor	180	194	172	18	190
		B.Tech. with Double Minor (Multidisciplinary and Specialization Minor)	180	194	172	18	190





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Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Curriculum Framework

List of Abbreviations

Sr. No.	Abbreviation	Type of Course
1	BSC	Basic Science Course
2	ESC	Engineering Science Course
3	PCC	Programme Core Course
4	PEC	Programme Elective Course
5	MDM	Multidisciplinary Minor
6	OE	Open Elective
7	VSEC	Vocational and Skill Enhancement Course
8	AEC	Ability Enhancement Course
9	EEMC	Entrepreneurship/Economics/Management Course
10	IKS	Indian Knowledge System
11	VEC	Value Education Course
12	CC	Co-Curricular Courses
13	RM	Research Methodology
14	CEP/FP	Community Engineering. Project/Field Project
15	PR	Project
16	IT/OJT	Internship/On job training





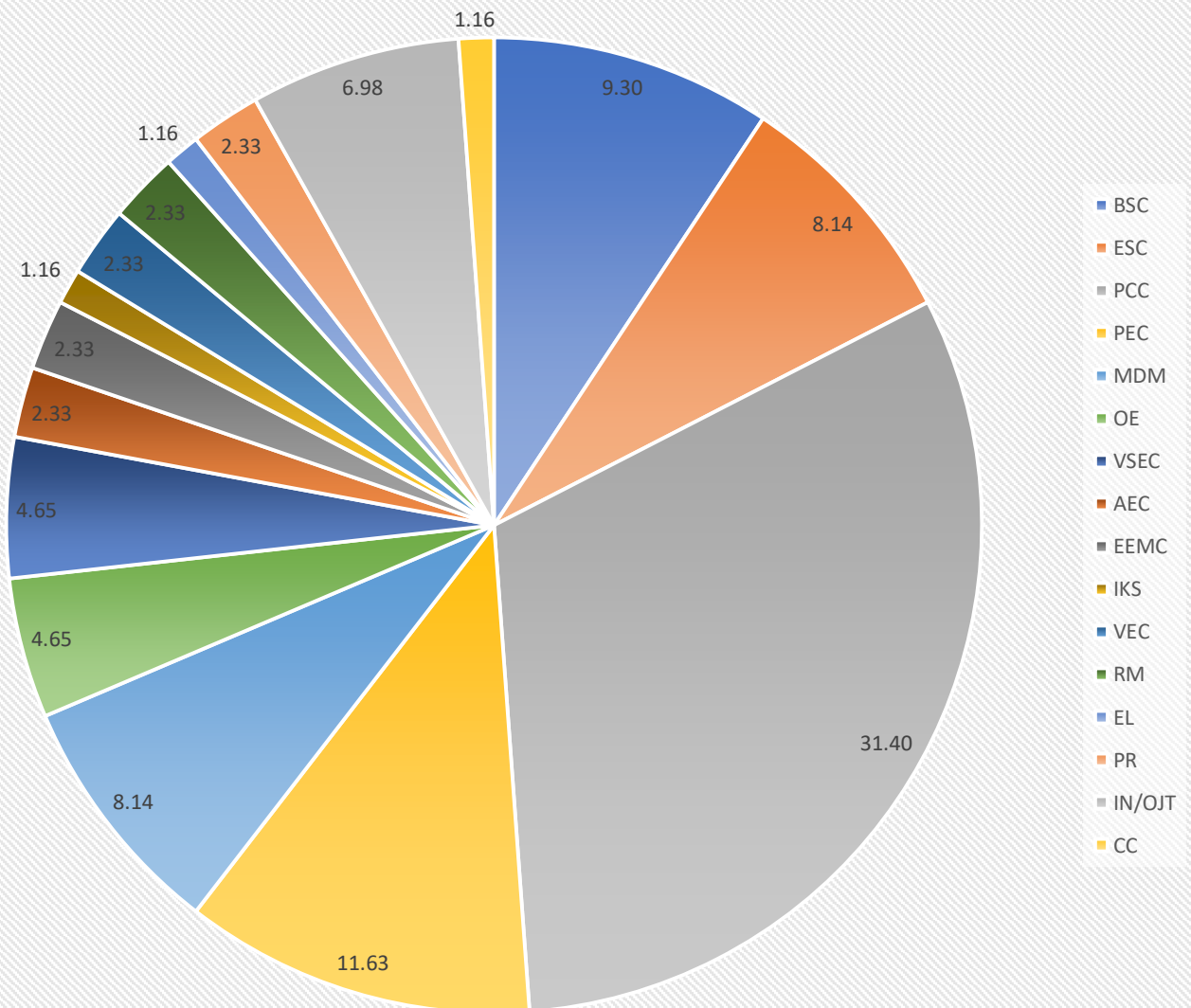
Semester-Wise Credit Distribution

Course Category	As per NEP GR	KBPCOES Credits	Course Category	As per NEP GR	KBPCOES Credits
BSC/ESC	30	30	BSC	14-18	14
			ESC	12-16	15
Program Courses	64-76	74	PCC	44-56	54
			PEC	20	20
Multi disciplinary Courses	22	22	MDM	14	14
			OE	8	8
Skill Courses	8	8	VSEC	8	8
Humanities, Social Science & Management (HSSM)	14	14	AEC	4	5
			EEMC	4	4
			IKS	2	2
			VEC	4	4
Experiential Learning Courses	22	22	RM	4	4
			EL	2	2
			PR	4	4
			IN/OJT	12	12
Liberal Learning Courses	4	2	CC	4	2
Total Credits	160-176	172	Total Credits	160-176	172





Credit Distribution Chart %





Semester-Wise Credit Distribution

Course Category		Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
BSC/ESC	Basic Science Course	7	7							14
	Engineering Science Course	8	7							15
Program Courses	Programme Core Course (PCC)		2	10	10	12	10	6	4	54
	Programme Elective Course (PEC)					4	8	6	2	20
Multi disciplinary Courses	Multidisciplinary Minor (MDM)			2	3	3	2	4		14
	Open Elective (OE) Other than a particular program			3	2	3				8
Skill Courses	Vocational and Skill Enhancement Course (VSEC)	2	2		2		2			8
Humanities Social Science and Management (HSSM)	Ability Enhancement Course (AEC -01, AEC-02)	3			2					5
	Entrepreneurship/ Economics/ Management Courses			2	2					4
	Indian Knowledge System (IKS)		2							2
	Value Education Course (VEC)			2	2					4
Experiential Learning Courses	Research Methodology							4		4
	Comm. Engg. Project (CEP)/Field Project (FP)			2						2
	Project							4		4
	Internship/ OJT								12	12
Liberal Learning Courses	Co-curricular Courses (CC)	1	1							2
Total Credits (Major)		21	21	21	23	22	22	24	18	172





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

General Instructions

1. Students can complete any course or program elective courses (PE1 to PE5) in "NPTEL" mode, offered through SWAYAM/NPTEL portal or equivalent platform, which provides an evaluation mechanism with permission from the Board of Study (BOS). In this case:
 - a) Students can register and complete these NPTEL courses any time after the beginning of the third semester; however, they must successfully complete and pass the course and submit the scorecard/certificate before the declaration of the result for the respective semester in which the course is being offered.
 - b) If a student registers for an NPTEL course but fails, they must register for the same course offered by the institute in the respective semester as per the curriculum. In this case, the student will have to appear for all examinations (ISE, MSE, ESE, etc.) and successfully complete the course.
2. In the eighth semester, students must complete a mandatory internship for one semester at a company or organization approved by the BOS Chairman.
3. During the eighth-semester internship, students must complete theory courses through one of the two modes:
 - a) NPTEL mode, where courses are offered through SWAYAM/NPTEL or an equivalent platform, providing an evaluation mechanism approved by the BOS Chairman. In this case:
 - i. Students can register and complete these NPTEL courses any time after the beginning of the third semester.
 - ii. The course must be completed and the scorecard/certificate submitted before the declaration of the eighth-semester result.
 - iii. If a student fails an NPTEL course, they must register for the same course offered by the institute and appear for all examinations (ISE, MSE, ESE, etc.) personally as per the schedule declared by the institute to successfully complete the course.
 - b) Self-study mode, where students study independently using the course offered by the institute.
 - Students must appear for all college assessments/examinations (ISE, MSE, ESE) personally as per the institute's schedule and successfully complete the course.
- 4) In addition to program-specific courses, students must complete vocational skill courses, internships, and field projects connected to their major degree.
- 5) Exit Options:
 - a) The exit option is available at the end of even semesters (2nd, 4th, and 6th semesters), commencing from the academic year 2024-25 for the UG Certificate.
 - b) Students opting for exit at any level (odd or even semesters) must earn an additional eight credits in skill-based vocational courses, internships, apprenticeships, or mini-projects before exiting.





- c) This makes them eligible for a UG Certificate, UG Diploma, or B.Voc./B.Sc. Engineering degree, depending on their qualification level.
- 6) Re-entry and Lateral Entry:
 - a) Students opting for exit after an even semester may re-enter within four years and resume from the next odd semester they left off.
 - b) There must be a gap of at least one year between exit and re-entry.
- 7) Students opting for exit after an odd semester (1st, 3rd, 5th, or 7th) may only re-enter the program during the next even semester.
 - There must be a gap of at least one year between exit and re-entry.
- 8) Maximum Duration for Degree Completion:
 - a) The B.Tech degree must be completed within eight years from the date of admission to the first-year undergraduate program.
 - b) The duration includes exit, withdrawal, absence, or permissible leaves but excludes rustication periods.
 - c) If exceptional cases arise, valid reasons may be presented to the Academic Council, which may approve an extension of one additional year.
- 9) Eligibility for Admission to UG Bachelor's Degree with Honors, Research, or Double Minor: Students must have a minimum CGPA of 7.5 with no backlogs at the end of the fourth semester and must have earned 84 credits.
- 10) Multiple Exit Qualification Titles & Requirements:
- 11)
 - a) Exit-1 (NCrF Level 4.5) – One-Year UG Certificate in Engineering/Technology (Requires 8 additional credits by 2-Month internship /Technical Project/Industrial Training **or** equivalent skill courses).
 - b) Exit-2 (NCrF Level 5.0) – Two-Year UG Diploma in Engineering/Technology (Requires 8 additional credits by 2-Month internship /Technical Project/Industrial Training **or** equivalent skill courses).
 - c) Exit-3 (NCrF Level 5.5) – Three-Year B.Voc/B.Sc. Engineering Degree (Requires 8 additional credits by 2-Month internship /Technical Project/Industrial Training **or** equivalent skill courses).





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

Multiple Exit Options

Option	NCrF Level	Qualification Title	Additional Credit Requirement	Bridge Courses
Exit-1	4.5	One-Year UG Certificate Course in Engineering/Technology	8	2 Months Internship / Technical Project/Industrial Training OR Online Two Skill Courses at ITI Level from NSQF/ESSC/Any Other Agency providing certification/evaluation
Exit-2	5.0	Two-Year UG Diploma in Engineering/Technology	8	2 Months Internship / Technical Project/Industrial Training OR Online Two Skill Courses at Diploma Level from NSQF/ESSC/Any Other Agency providing certification/evaluation
Exit-3	5.5	Three-Year Bachelor Degree in Vocation (B.Voc.) or B.Sc. (Engineering/Technology)	8	2 Months Internship / Technical Project/Industrial Training OR Online Two Skill Courses at Degree Level from NSQF/ESSC/Any Other Agency Providing certification/Evaluation





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Curriculum Structure
of
First Year B.Tech. in Civil Engineering
With
Multidisciplinary Minor
Effective from
Academic Year 2026-27





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

First Year B.Tech. in Civil Engineering Semester-I (w.e.f. 2026-27)

Group A

SEMESTER-I												
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit	
			L	T	P	S	ISE	MSE	ESE/POE	Total		
BSC	26BSH101	Engineering Mathematics – I	3	--	--	1	10	30	60	100	3	
BSC	26BSHA102	Engineering Chemistry	3	--	--	1	10	30	60	100	3	
ESC	26BSHA103	Engineering Mechanics	3	--	--	1	10	30	60	100	3	
ESC	26BSHA104	Basic Mechanical Engineering	2	--	--	1	10	30	60	100	2	
AEC-01	26BSHA105	Communication Skills	2	--	--	1	10	30	60	100	2	
BSC	26BSHA106	Engineering Chemistry Lab	--	--	2	--	60	--	40	100	1	
ESC	26BSHA107	Engineering Mechanics Lab	--	--	2	--	60	--	40	100	1	
ESC	26BSHA108	Python Programming Lab	--	--	4	--	60	--	40	100	2	
VSEC	26BSHA109	Workshop Practices-I	--	--	4	--	60	--	40	100	2	
AEC-01	26BSHA110	Communication Skills Lab	--	--	2	--	60	--	40	100	1	
CC	26BSHA111A	Sports &Physical Education	--	--	2	--	60	--	40	100	1	
	26BSHA111B	Music & Dance										
	26BSHA111C	Yoga Education										
Total			13	--	16	5	410	150	540	1100	21	
Total Contact Hrs=29			Total Theory=05				Total Lab=06					

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

CREDITS: 21





First Year B.Tech. in Civil Engineering Semester-I (w.e.f. 2026-27)

Group B

SEMESTER-I											
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE/POE	Total	
BSC	26BSH101	Engineering Mathematics – I	3	--	--	1	10	30	60	100	3
BSC	26BSHB102	Engineering Physics	3	--	--	1	10	30	60	100	3
ESC	26BSHB103	Engineering Graphics	3	--	--	1	10	30	60	100	3
ESC	26BSHB104	Basic Civil Engineering	2	--	--	1	10	30	60	100	2
BSC	26BSHB105	Engineering Physics Lab	--	--	2	--	60	--	40	100	1
ESC	26BSHB106	Engineering Graphics Lab	--	--	4	--	60	--	40	100	2
PCC	26BSHB107	Basics in AI-I-RA Lab	--	--	4	--	60	--	40	100	2
VSEC	26BSHB108	Design Thinking	--	--	4	--	60	--	40	100	2
IKS	26BSHB109	IKS Bucket #	2	--	0	--	60	--	40	100	2
CC	26BSHB110A	Integrated Personality Development	--	--	2	--	60	--	40	100	1
	26BSHB110B	Health and Wellness									
	26BSHB110C	Social Outreach Activities									
Total			13	00	16	04	400	120	480	1000	21
Total Contact Hrs=29			Total Theory=05				Total Lab=05				

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

CREDITS: 21





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

First Year B.Tech. in Civil Engineering Semester-II (w.e.f. 2026-27)

Group A

SEMESTER-II											
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE/POE	Total	
BSC	26BSH201	Engineering Mathematics – II	3	-	-	1	10	30	60	100	3
BSC	26BSHA202	Engineering Physics	3	-	-	1	10	30	60	100	3
ESC	26BSHA203	Engineering Graphics	3	-	-	1	10	30	60	100	3
ESC	26BSHA204	Basic Civil Engineering	2	-	-	1	10	30	60	100	2
BSC	26BSHA205	Engineering Physics Lab	-	-	2	-	60	-	40	100	1
ESC	26BSHA206	Engineering Graphics Lab	-	-	4	-	60	-	40	100	2
PCC	26BSHA207	Basics in AI-I-RA Lab	-	-	4	-	60	-	40	100	2
VSEC	26BSHA208	Design Thinking	-	-	4	-	60	-	40	100	2
IKS	26BSHA209	IKS Bucket #	2	-	0	-	60	-	40	100	2
CC	26BSHA210A	Integrated Personality Development	-	-	2	-	60	-	40	100	1
	26BSHA210B	Health and Wellness									
	26BSHA210C	Social Outreach Activities									
Total			13	-	16	4	400	120	480	1000	21
Total Contact Hrs=29			Total Theory=05				Total Lab=04				

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

CUMULATIVE CREDITS: 21 + 21 = 42





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

First Year B.Tech. in Civil Engineering Semester-II (w.e.f. 2026-27)

Group B

SEMESTER-II											
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE/ POE	Total	
BSC	26BSH201	Engineering Mathematics – II	3	--	--	1	10	30	60	100	3
BSC	26BSHB202	Engineering Chemistry	3	--	--	1	10	30	60	100	3
ESC	26BSHB203	Engineering Mechanics	3	--	--	1	10	30	60	100	3
ESC	26BSHB204	Basic Mechanical Engineering	2	--	--	1	10	30	60	100	2
AEC-01	26BSHB205	Communication Skills	2	--	--	1	10	30	60	100	2
BSC	26BSHB206	Engineering Chemistry Lab	--	--	2	--	60	--	40	100	1
ESC	26BSHB207	Engineering Mechanics Lab	--	--	2	--	60	--	40	100	1
ESC	26BSHB208	Python Programming Lab	--	--	4	--	60	--	40	100	2
VSEC	26BSHB209	Workshop Practices-I	--	--	4	--	60	--	40	100	2
AEC-01	26BSHB210	Communication Skills Lab	--	--	2	--	60	--	40	100	1
CC	26BSHB211A	Sports &Physical Education	--	--	2	--	60	--	40	100	1
	26BSHB211B	Music & Dance									
	26BSHB211C	Yoga Education									
Total			13	00	16	05	410	150	540	1100	21
Total Contact Hrs=29			Total Theory=05				Total Lab=06				

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

CUMULATIVE CREDITS: 21 + 21 = 42





Department of Civil Engineering

Course F. Y	Course Code: 26BSHB104/26BSHA204	Semester: I /II Course Name: Basic Civil Engineering	L	T	P	Credits
			2		-	2

Course Objectives: The course aims to:

1	Understand the fundamental principles of building planning, interpret building bye-laws and regulations and apply municipal building regulations in the planning.
2	Identify various Civil Engineering materials and choose suitable material among various options.
3	Identify various Civil Engineering building components and select appropriate structural system among various options.
4	Apply basic surveying principles for linear, angular, and area measurements using conventional surveying instruments.
5	Perform leveling operations, contour interpretation, and understand modern surveying techniques such as Total Station and Remote Sensing.
6	Acquire fundamental knowledge of Transportation, Environmental, and Irrigation Engineering systems and their societal importance.

Course Outcomes: At the end of the course student will be able to

CO1	Describe the role of Civil Engineering, building planning principles, and building bye-laws in infrastructure development.
CO2	Explain the properties, applications, and selection criteria of common building materials and structural systems.
CO3	Identify and explain the basic components of a structure, including substructure and superstructure and their functions.
CO4	Explain surveying techniques for measurement of distances, bearings, areas, & elevation and describe the applications of Electronic Distance Measurement (EDM)
CO5	Explain the fundamentals of transportation systems and the role of highways, railways, airports, harbors, and waterways in economic development.
CO6	Explain the basic concepts of Environmental, and Irrigation Engineering and their relevance to sustainable development.





Department of Civil Engineering

Unit No.	Description	Hrs.
1	Introduction to Civil Engineering Introduction of branches of civil engineering, Principles of planning, Introduction to Bye-Laws regarding building line, height of building, open space requirements, F.S.I., setbacks, ventilation, sanitation as per Municipal Corporation area requirement.	5
2	Building Materials Uses and properties of Concrete, Ingredients and grades of concrete, Plain and reinforced cement concrete and Special concrete types like RMC, FRC, Bricks, AAC Blocks, Hollow Clay Blocks, Steel, Timber, Engineered Wood Products, Smart Roofing materials etc. , Glass types and uses,	4
3	Components of structure Sub-structure: Types of soil and rocks as foundation strata, concept of bearing capacity, types of foundations i.e. shallow and deep and their suitability. Shallow foundation such as wall foundation, isolated foundation, deep foundation such as pile foundation. Superstructure: Elements of super-structures and their functions	4
4	Surveying & Levelling Surveying: Principles of surveying, Classification of surveys, Chain Survey, Compass Survey, Chain and compass Survey, Theodolite Survey, Total Station Survey. Elements of Angular measurement: Meridian, bearing and its types, system of bearing, prismatic and surveyor's compass. Leveling: Dumpy level and Auto Level, Total station, Methods of reduction of levels, Contours, characteristics of contours, use of contour maps, Introduction and use of EDM's, Introduction to Remote sensing	6
5	Introduction to Transportation Engineering Highway Engineering: Classification of Roads, Typical cross section of Road, Types of Bridges, Tunnels, Railway Engineering: Components of railway track (Broad Gauge). advancement in railway engineering, Airports Engineering: Airport infrastructure and functional areas, ICAO, FAA, DGCA and AAI standards, Air traffic controls. Waterways: Importance of water transport, Docks and Harbour,	4
6	Introduction to Environmental Engineering: Components of water supply scheme (flow diagram), water and waste water Treatment, Air Pollution its sources and control measures Introduction to Irrigation Engineering: Necessity of Irrigation, Methods of Irrigation, Types of Dams (Earthen and Gravity Dam), Smart Dam Monitoring	3





Text Books:

1. Anurag Kandya, —Elements of Civil Engineering||, Charotar Publishing, Anand
2. Sushil Kumar, —Building Construction||, Standard Publishers Distributors
3. Kanetkar T. P. and Kulkarni S. V., —Surveying and Levelling, Vols. I, II and III, Vidyarthi Gruh Prakashan, Pune
4. G. K. Hiraskar, —Basic Civil Engineering||, Dhanpat Rai Publications

Reference Books:

1. S. C. Rangwala, Building Construction, Charotar Publishing House.
2. P. C. Varghese, Building Materials, PHI Learning.
3. S. K. Khanna, C. E. G. Justo and A. Veeraragavan, Highway Engineering, Nem Chand & Bros.
4. Peavy, Rowe and Tchobanoglous, Environmental Engineering, McGraw Hill.

CO-PO Matrix

Course Outcome	Programme Outcome (PO)/ Programme Specific Outcome (PSO)												
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PSO 1	PSO 2
CO1	3	2	-	-	-	2	-	-	-	-	1	-	-
CO2	3	2	-	-	-	-	-	-	-	-	1	-	-
CO3	3	2	-	-	-	-	-	-	-	-	1	-	-
CO4	3	3	1	2	2	-	-	-	-	-	1	-	-
CO5	3	3	1	2	2	-	-	-	-	-	1	-	-
CO6	2	2	-	-	-	3	-	-	-	-	2	-	-





Department of Civil Engineering

Course:	Course Code:	Semester: I & II	L	T	P	Credits
F. Y.	26BSHA103/26BSHB203	Course Name: Engineering Mechanics	3	-	-	3

Course Objectives:

1	To know and apply fundamental Laws of Engineering Mechanics
2	To know and apply Conditions of static equilibrium to analyze given force system
3	To compute Centre of gravity and Moment of Inertia of plane surfaces
4	To Apply the conditions of static equilibrium to determine support reactions in beams subjected to various loading conditions. And analyze simple trusses using the Method of Joints and Method of Sections.
5	To compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion.
6	To interpret relation between force and motion characteristics

Course Outcomes: At the end of the course student will be able to

CO1	Apply fundamental principles of engineering mechanics to analyze force systems, determine resultants, and solve problems involving moments and couples.
CO2	Analyze static equilibrium conditions of coplanar force systems and solve engineering problems involving friction, including block and ladder friction.
CO3	Apply the principles of work, power, energy, momentum, impulse, and impact to analyze the motion and collision of bodies.
CO4	Determine support reactions in beams and analyze simple trusses using the method of joints and the method of sections.
CO5	Calculate centroids, centers of gravity, and moments of inertia of simple and composite plane figures for engineering applications.
CO6	Apply the principles of kinematics and kinetics to solve problems involving linear motion, projectile motion, circular motion, relative velocity, and dynamic analysis of particles and rigid bodies.

Prerequisites: Physics & Mathematics

Unit No.	Description	Hrs.
1	Introduction and Fundamental principles Introduction: Introduction to Mechanics, Rigid Body, Force and Force Systems, Free Body Diagram, Moment, Couple. Fundamental principles: Varignon's theorem. Principle of Transmissibility, Analytical and graphical methods of Resolution and composition of forces, Resultant of Co-planer Concurrent Force System, Co-planer Non-Concurrent Force System,	7
2	Static Equilibrium: Introduction & Conditions of Equilibrium, Equilibrium of coplanar concurrent forces, non-concurrent forces, and parallel forces. Lami's theorem and its applications. Friction: Basic Definition, Types, Coulomb's laws, Application of Friction (Block Friction & Ladder Friction)	7





Department of Civil Engineering

3	Work, Power, Energy Work done by a force, potential energy, kinetic energy of linear motion and rotation, Work Energy principle, Conservation of energy, Conservation of Momentum. Collision of elastic bodies, Impact, Impulse momentum principle.	6
4	Beams and Trusses Types of beams, types of supports and loads, beam reactions for simply supported beams Simple trusses: Types of trusses, analysis of plane trusses by method of joints and method of sections.	6
5	Centroid, Center of Gravity and Moment of Inertia: Introduction, Centroid, Center of Gravity of composite figures. Methods for Finding Moment of Inertia of plane areas, Moment of Inertia of Composite figures	6
6	Kinematics & Kinetics Kinematics of linear motion: types of motion, laws of motion, kinematics of particles, Problems on rectilinear motion, constant and variable acceleration, motion under gravity, Projectile Motion, Circular motion, concept of relative velocity. Kinetics of particle: D'Alembert's principle: applications in linear motion, kinetics of rigid bodies, applications in translation.	7

Reference Books:

1. S. Timoshenko, D. H. Young, "Engineering Mechanics", McGraw Hill, 1995. & Tayal A. K., "Engineering Mechanics", Umesh Publications, 2010.
2. Beer, Johnston, "Vector Mechanics for Engineers", Vol. 1: Statics and Vol. 2: Dynamics, McGraw Hill Company Publication, 7th edition, 1995.
3. Irving H. Shames, "Engineering Mechanics - Statics and Dynamics", Pearson Educations, Fourth edition, 2003.
4. McLean, Nelson, "Engineering Mechanics", Schaum's outline series, McGraw Hill Book Company, N.Delhi, Publication.
5. Singer F. L., "Engineering Mechanics - Statics & Dynamics", Harper and Row Pub. York.
6. Khurmi R. S., "Engineering Mechanics", S. Chand Publications, N.Delhi
7. Bhavikatti S. S., Rajashekarappa K. G., "Engineering Mechanics", New Age International Publications, 2nd Edition.

CO-PO Matrix

Course Outcome	Programme Outcome (PO)/ Programme Specific Outcome (PSO)												
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2
C01	3	2									1		
C02	3	3		1							1		
C03	3	2		1							1		
C04	3	3	2	1							1		
C05	3	2		1							1		
C06	3	3	1	1							1		





Department of Civil Engineering

Course:	Course Code:	Semester: I & II	L	T	P	Credits
F. Y.	26BSHA107/26BSHB207	Course Name: Engineering Mechanics Lab	-	-	2	1

Course Outcomes: At the end of the course student will be able to

C01	Apply the principles of coplanar force systems to verify the polygon law of forces and analyze equilibrium conditions in engineering systems.
C02	Determine forces, support reactions, and mechanical advantage in simple engineering mechanisms such as jib cranes, bell crank levers, and beams.
C03	Evaluate the centroid and moment of inertia of regular and irregular bodies for engineering applications.
C04	Analyze frictional behavior on inclined planes and determine the coefficient of friction for different surfaces.
C05	Verify the law of machines and evaluate the performance characteristics of lifting machines such as screw jacks, worm and worm wheel, and gear crabs.
C06	Utilize spreadsheet tools for solving and analyzing engineering mechanics problems related to moments, beam reactions, kinematics, and other engineering applications.

At least 10 experiments should be performed from the following list:

Experiment No.	Description	Hrs.
1	Polygon law of co-planar forces	2
2	Study of Forces in Simple Jib Crane	2
3	Bell crank lever	2
4	Support reaction for beam	2
5	Problems on beam reaction by graphics statics method	2
6	Centroid of irregular shaped bodies.	2
7	Moment of Inertia of fly wheel	2
8	Inclined plane (to determine coefficient of friction).	2
9	Verification of law of Machine using Screw jack	2
10	Verification of law of Machine using Worm and Worm Wheel	2
11	Verification of law of Machine using Single and Double Gear Crab	2
12	Application of Spreadsheet Program for concepts like law of moments, beam reactions, problems in kinematics, etc.	2
13	Any Innovative Experiment on Virtual Lab	2

CO-PO Matrix

Course Outcome	Programme Outcome (PO)/ Programme Specific Outcome (PSO)												
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2
C01	3	3	1	2				1	1				
C02	3	3	1	2				1	1				
C03	3	2		3				1	1				
C04	3	2	2	3				1	1				
C05	2	3		2	3			1	1				
C06	2	2		2	2			1	1				





UG Certificate Level

**Exit Course after Semester -II of Engineering
(UG Certificate Course in Engineering /Technology)**

Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE	Total	
Exit		Assistant Surveyor (NSQF Level 4.5)					120	00	80	200	8
	OR										
		CAD Technician - Civil (NSQF Level 4.5)					120	00	80	200	8
Total Contact Hr.											08

EXIT 1:

1. Assistant Surveyor (NSQF Level 4.5)

- Offered by: Directorate General of Training (DGT) / Skill India Portal
 - Sector: Construction
 - Duration: Approx. 240 hours (can be spread over 1.5–2 months)
 - Mode: Online/Blended via e-Skill India or Bharat Skills
 - Skills Covered:
 - Basics of land surveying
 - Use of total station, theodolite, levelling instruments
 - Understanding maps and drawings
 - Site layout and setting out of structures
 - Field data collection and plotting
 - Certifying Body: NCVET / DGT
 - NSQF Level: 4
- Website:** <https://www.skillindiadigital.gov.in/>

2. CAD Technician – Civil (NSQF Level 4.5)

- Offered by: NASSCOM/ESSCI certified training partners or e-Skill India
- Sector: Construction / Design
- Duration: 240–300 hours (2 months approx.)
- Mode: Online via eSkill India, or NASSCOM portal
- Skills Covered:
 - Basics of AutoCAD
 - Drafting civil engineering drawings (2D and intro to 3D)
 - Creating site layouts, plans, elevations
 - Reading construction drawings
 - Layering, dimensioning, and scaling in CAD
- Certifying Body: NSDC/NASSCOM or relevant SSC
- NSQF Level: 4

Website: (<https://www.cadd.co.in/courses/civil-cadd.php>)





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Curriculum Structure
of
Second Year B.Tech. in Civil Engineering
With
Multidisciplinary Minor
Effective from
Academic Year 2027-28





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

Second Year B. Tech. in Civil Engineering Semester-III (w.e.f. 2027-28)

SEMESTER-III											
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE/POE	Total	
PCC	26102PCC301	Strength of Materials	3	--	--	1	10	30	60	100	3
PCC	26102PCC302	Water Supply Engineering	2	--	--	1	10	30	60	100	2
PCC	26102PCC303	Surveying	3	--	--	1	10	30	60	100	3
MDM	26102MDM304	Multidisciplinary Minor -I	2	--	--	1	10	30	60	100	2
OE	26102OE305	Open Elective-I	3	--	--	1	10	30	60	100	3
EEMC	26102EEMC306	Entrepreneurship & Startup Ecosystem	2	--	--	1	50	--	--	50	2
PCC	26102PCC307L	Strength of Materials Lab	--	--	2	--	60	--	40	100	1
PCC	26102PCC308L	Surveying Lab	--	--	2	--	60	--	40	100	1
VEC	26102VEC309L	Introduction to Building Information Modelling	--	--	4	--	50	--	--	50	2
CEP/ FP	26102FP3010L	Field Project	--	--	4	--	60	--	40	100	2
Total			15	00	12	06	330	150	420	900	21

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

CUMULATIVE CREDITS: 42 + 21 = 63





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

List of MDM-I Courses

Department	Course Code	Course Title	Sem
Mechanical			III
Computer Science			III
Artificial Intelligence & Data Science			III
Electronics & Telecommunication			III
Civil Engineering	26102MDM304	Building Construction	III

List of Open Elective-I Courses

Department	Course Code	Open Elective-I Sem-III
Civil	26102OE305A	Basic Human Rights and Constitution of India
	26102OE305B	Disaster Management
	26102OE305C	Industrial Health and Safety
	26102OE305D	Stress Management
Mechanical		
Computer Science		
Artificial Intelligence & Data Science		
Electronics & Telecommunication		





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

Second Year B. Tech. in Civil Engineering Semester-IV (w.e.f. 2027-28)

SEMESTER-IV											
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE/POE	Total	
PCC	26102PCC401	Hydraulics	2	--	--	1	10	30	60	100	2
PCC	26102PCC402	Structural Mechanics	3	--	--	1	10	30	60	100	3
PCC	26102PCC403	Building Planning & Drawing	3	--	--	1	10	30	60	100	3
MDM	26102MDM404	Multidisciplinary Minor -II	3	--	--	1	10	30	60	100	3
OE	26102OE405	Open Elective-II	2	--	--	1	10	30	60	100	2
AEC	26102AEC406	Quantitative Aptitude & Logical Reasoning	2	--	--	1	50	--	--	50	2
EEMC	26102EEMC407	Engineering Management	2	--	--	1	50	--	--	50	2
PCC	26102PCC408L	Hydraulics Lab	--	--	2	--	60	--	40	100	1
PCC	26102PCC409L	Building Planning & Drawing Lab	--	--	2	--	60	--	40	100	1
VSEC	26102VSEC411L	Civil Engineering Software (REVIT)	--	--	4	--	60	--	40	100	2
VEC	26102VEC410L	Universal Human Values	--	--	4	--	50	--	--	50	2
Total			17	00	12	07	380	150	420	950	23

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

CUMULATIVE CREDITS: 63 + 23 = 86





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

List of MDM-II Courses

Department	Course Code	Course Title	Sem
Mechanical			IV
Computer Science			IV
Artificial Intelligence & Data Science			IV
Electronics & Telecommunication			IV
Civil Engineering	26102MDM404	Environmental Engineering	IV

List of Open Elective-II Courses

Department	Course Code	Open Elective-II Sem-IV
Civil	26102OE405A	Energy and Environment
	26102OE405B	Planning for Sustainable Development
	26102OE405C	Green Technology
	26102OE405D	Advanced Surveying
Mechanical		
Computer Science		
Artificial Intelligence & Data Science		
Electronics & Telecommunication		





UG Diploma Level
Exit Course after SEM -IV of Engineering
(UG Diploma in Engineering /Technology)

Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE	Total	
Exit		Construction Site Supervisor (NSQF Level 5)					120	00	80	200	8
		OR									
		BIM Modeller – Civil (NSQF Level 5)					120	00	80	200	8
Total Contact Hr.											08

EXIT 2:

1. **Construction Site Supervisor (NSQF Level 5):**
 - a. Offered by: Construction Skill Development Council of India (CSDCI)
 - b. Mode: Online/Blended (Training Partners via NSDC or CSDCI)
 - c. Duration: 300–400 hours (approx. 2 months full-time)
 - d. Skills Covered:
 1. Supervising civil construction works
 2. Reading and interpreting structural drawings
 3. Managing materials, manpower, and equipment
 4. Site safety and quality control procedures
 5. Communication and documentation at site
 - e. Certification: Assessment-based certification by CSDCI/NSDC
 - f. NSQF Level: 5
 - g. Website: [https](https://www.csdcindia.org) or <https://www.csdcindia.org>
2. **BIM Modeller – Civil (NSQF Level 5)**
 - a. Offered by: NASSCOM Future Skills / NSDC / Autodesk-certified partners
 - b. Mode: Online (Self-paced or instructor-led)
 - c. Duration: ~200–250 hours (can be completed in 2 months)
 - d. Skills Covered:
 1. Fundamentals of Building Information Modelling (BIM)
 2. Revit for architectural and structural modelling
 3. Clash detection and coordination
 4. Project visualization and simulation
 5. Data management in BIM
 - e. Certification: Skill India + Autodesk + NSDC recognized certification
 - f. NSQF Level: 5
 - g. Website: <https://futureskillsprime.in> <https://www.eskillindia.org>





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Curriculum Structure
of
Third Year B.Tech. in Civil Engineering
With
Multidisciplinary Minor
Effective from
Academic Year 2028-29





Third Year B. Tech. in Civil Engineering Semester-V (w.e.f. 2028-29)

SEMESTER-V											
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE/POE	Total	
PCC	26102PCC501	Design of Steel Structures	3	--	--	1	10	30	60	100	3
PCC	26102PCC502	Geotechnical Engineering	3	--	--	1	10	30	60	100	3
PCC	26102PCC503	Theory of Structure	3	--	--	1	10	30	60	100	3
PEC	26102PEC504	Program Elective Course – I	3	--	--	1	10	30	60	100	3
MDM	26102MDM505	Multidisciplinary Minor –III	3	--	--	1	10	30	60	100	3
OE	26102OE506	Open Elective-III	3	--	--	1	10	30	60	100	3
PCC	26102PCC507L	Design of Steel Structures Lab	--	--	4	--	60	--	40	100	2
PCC	26102PCC508L	Geotechnical Lab	--	--	2	--	60	--	40	100	1
PEC	26102PEC509L	Program Elective Course – I Lab	--	--	2	--	60	--	40	100	1
Total			18	00	08	06	240	180	480	900	22

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S – Self Study

CUMULATIVE CREDITS: 86+ 22 = 108





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

List of Programme Elective Courses (PEC) - I

Course Category	Course Code	Name of Course
PEC	26102PEC504A	Environmental Engineering
	26102PEC509AL	Environmental Engineering Lab
	OR	
	26102PEC504B	Water Treatment & Sanitary Engineering
	26102PEC509BL	Water Treatment & Sanitary Engineering Lab

List of MDM-III Courses

Department	Course Code	Course Title	Sem
Mechanical			V
Computer Science			V
Artificial Intelligence & Data Science			V
Electronics & Telecommunication			V
Civil Engineering	26102MDM505	Concrete Technology	V

List of Open Elective-III Courses

Department	Course Code	Open Elective-III Sem-V
Civil	26102OE506A	Total Quality Management
	26102OE506B	Engineering Economics
	26102OE506C	Environmental Impact Assessment
	26102OE506D	Renewable Energy Resource Management
Mechanical		
Computer Science		
Artificial Intelligence & Data Science		
Electronics & Telecommunication		





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

Third Year B. Tech. in Civil Engineering Semester-VI (w.e.f. 2028-29)

SEMESTER-VI												
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit	
			L	T	P	S	ISE	MSE	ESE/ POE	Total		
PCC	26102PCC601	Design of Concrete Structures	3	--	--	1	10	30	60	100	3	
PCC	26102PCC602	Transportation Engineering	3	--	--	1	10	30	60	100	3	
PCC	26102PCC603	Concrete Technology	2	--	--	1	10	30	60	100	2	
PEC	26102PCC604	Program Elective – II	3	--	--	1	10	30	60	100	3	
PEC	26102PCC605	Program Elective-III	3	--	--	1	10	30	60	100	3	
MDM	26102MDM606	Multidisciplinary Minor –IV	2	--	--	1	10	30	60	100	2	
PCC	26102PCC607	Concrete Technology Lab	--	--	2	--	60	--	40	100	1	
PCC	26102PCC608	Transportation Engineering Lab	--	--	2	--	60	--	40	100	1	
PEC	26102PCC609	Program Elective –II Lab	--	--	2	--	60	--	40	100	1	
PEC	26102PCC610	Program Elective-III- Lab	--	--	2	--	60	--	40	100	1	
VSEC	26102PCC611	Civil Engineering Software (STAAD PRO)	--	--	4	--	60	--	40	100	2	
Total			16	00	12	06	360	180	560	1100	22	

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

CUMULATIVE CREDITS: 108 + 22 = 130





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

List of Programme Elective Courses (PEC) - II

Course Category	Course Code	Name of Course
PEC	26102PCC604A	Soil Investigation and Foundation Design
	26102PCC609AL	Soil Investigation and Foundation Design Lab
	OR	
	26102PCC604B	Geotechnical Site Investigation
	26102PCC609BL	Geotechnical Site Investigation Lab

List of Programme Elective Courses (PEC) - III

Course Category	Course Code	Name of Course
PEC	26102PCC605A	Applications of Remote Sensing and Geographic Information Systems
	26102PCC610AL	Applications of Remote Sensing and Geographic Information Systems Lab
	OR	
	26102PCC605B	GEODESY, Remote Sensing & GNSS
	26102PCC610BL	GEODESY, Remote Sensing & GNSS Lab

List of MDM-IV Courses

Department	Course Code	Course Title	Sem
Mechanical			VI
Computer Science			VI
Artificial Intelligence & Data Science			VI
Electronics & Telecommunication			VI
Civil Engineering	26102MDM606	Geotechnical Engineering	VI





UG Degree Level (5.5)
Exit Course after SEM VI

(Bachelor Degree in Vocation (B.Voc.) or B.Sc. in Engineering /Technology)

Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE	Total	
Exit		Structural Design Engineer (Level 5.5)					120	00	80	200	8
	OR										
		Smart City Civil Engineer (Level 5.5)					120	00	80	200	8
											16

EXIT 3:

1) Structural Design Engineer – Civil (NSQF Level 5.5)

- Offered by: Construction Skill Development Council of India (CSDCI) in collaboration with NSDC
- Mode: Online/Blended (Training partners or Skill India portal)
- Duration: 300–400 hours (~2 months full-time or 3 months part-time)
- Skills Covered:
 - Structural analysis using software like STAAD.Pro / ETABS
 - Load calculation and design of RCC and steel structures
 - Earthquake and wind load considerations (basic level)
 - Detailing of structural drawings
 - Introduction to IS codes
- Certification: Based on assessment by CSDCI / NSDC
- NSQF Level: 6
- Website: <https://learn.skilldzire.com/>

2) Smart City Civil Engineer (NSQF Level 5.5)

- Offered by: NASSCOM Future Skills Prime / NSDC in partnership with academic institutions
- Mode: Online (Self-paced and instructor-led modules)
- Duration: ~250–300 hours (flexible over 2–3 months)
- Skills Covered:
 - Urban infrastructure planning and design
 - Integration of IoT, sensors, and digital tech in civil infrastructure
 - Sustainable materials and construction practices
 - GIS and remote sensing basics
 - Environmental impact and smart governance
- Certification: Jointly by NASSCOM / NSDC / Industry Partners
- NSQF Level: 5.5
- website: <https://www.pertecnica.in/> or <https://futureskillsprime.in>





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Curriculum Structure
of
Final Year B.Tech. in Civil Engineering
With
Multidisciplinary Minor
Effective from
Academic Year 2029-30





Final Year B. Tech. in Civil Engineering Semester-VII

(w.e.f. 2029-30)

SEMESTER-VII												
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit	
			L	T	P	S	ISE	MSE	ESE/ POE	Total		
PCC	26102PCC701	Quantity Surveying and Valuation	2	--	--	1	10	30	60	100	2	
PCC	26102PCC702	Water Resource Engineering	2	--	--	1	10	30	60	100	2	
PEC	26102PEC703	Program Elective-IV	3	--	--	1	10	30	60	100	3	
PEC	26102PEC704	Program Elective-V	3	--	--	1	10	30	60	100	3	
MDM	26102MDM706	Multidisciplinary Minor -V	--	--	8	1	10	30	60	100	4	
RM	26102RM705	Research Methodologies	3	--	--	1	10	30	60	100	3	
PCC	26102PCC707L	Quantity Surveying and Valuation Lab	--	--	2	--	60	--	40	100	1	
PCC	26102PCC708L	Structural Design and Drawing Lab	--	--	2	--	60	--	40	100	1	
RM	26102RM709L	Research Methodologies Lab	--	--	2	--	60	--	40	100	1	
PR	26102PR710L	Project	--	--	8	--	60	--	40	100	4	
Total			13	00	22	06	300	180	520	1000	24	

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

PROGRESSIVE TOTAL CREDITS: 130 + 24 = 154





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

List of Programme Elective Courses (PEC) - IV

Course Category	Domain	Course Code	Name of Course
PEC	Construction Management	26102PEC703A	Advanced construction Techniques
	Structural Engineering	26102PEC703B	Bridge Engineering
	Environmental Engineering	26102PEC703C	Solid Waste Management
	Infrastructural Engineering	26102PEC703D	Pavement Analysis & Design

List of Programme Elective Courses (PEC) - V

Course Category	Domain	Course Code	Name of Course
PEC	Construction Management	26102PEC704A	Project Formulation, DPR & EPC Contract Management
	Structural Engineering	26102PEC704B	Advanced Prestressed Concrete
	Environmental Engineering	26102PEC704C	Air Quality Monitoring & Control
	Infrastructural Engineering	26102PEC704D	Infrastructure Engineering

List of MDM-V Courses

Department	Course Code	Course Title	Sem
Mechanical			VII
Computer Science			VII
Artificial Intelligence & Data Science			VII
Electronics & Telecommunication			VII
Civil Engineering	26102MDM706	Capstone Project	VII





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

Final Year B. Tech. in Civil Engineering Semester-VIII (w.e.f. 2029-30)

SEMESTER-VIII											
Course Category	Course Code	Name of Course	Weekly Teaching Scheme				Evaluation Scheme				Credit
			L	T	P	S	ISE	MSE	ESE/ POE	Total	
PCC	26102PCC801	Self-Learning Course-I (NPTEL)	2	--	--	1	10	30	60	100	2
PCC	26102PCC802	Self-Learning Course-II (NPTEL)	2	--	--	1	10	30	60	100	2
PEC	26102PEC804	Program Elective -VI (NPTEL)	2	--	--	1	10	30	60	100	2
IT	26102IT805	Internship	--	--	24	--	60	--	40	100	12
Total			06	00	24	03	90	90	220	400	18

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical, S- Self Study.

PROGRESSIVE TOTAL CREDITS: 154 + 18 = 172





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

List of MDM-VI Courses

Department	Course Code	Course Title	Sem
Mechanical			VIII
Computer Science			VIII
Artificial Intelligence & Data Science			VIII
Electronics & Telecommunication			VIII
Civil Engineering	26102MDM803	Infrastructure Engineering (NPTEL)	VIII

Multidisciplinary Minor Courses of Department of Civil Engineering

Sem	Subject Code	Subject Name	Credit
III	26102MDM304	Building Construction	2
IV	26102MDM404	Environmental Engineering	3
V	26102MDM505	Concrete Technology	3
VI	26102MDM606	Geotechnical Engineering	2
VII	26102MDM706	Project Management	4
Total Credit			14





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Curriculum Structure
of
B.Tech. in Civil Engineering
with
Double Minor
(Multidisciplinary and Specialization Minor)
Effective from
Academic Year 2029-30





List of Multi-Disciplinary Double Minor Courses

1. It is required to complete **SIX Courses** from **NPTEL platform** to earn total of 18 credits under Double Minor (DM) certification.
2. The Double Minor Track should be other than Multidisciplinary Minor (MDM)
3. Student must complete and earn the credits for all the six courses starting from 3rd semester to 8th semester.
4. Students can choose any one basket from the following options. Once selected, the basket cannot be changed under any circumstances.

Double Minor in Civil Engineering					
Sr. No.	SEM	Course Code	Course Name	NPTEL Weeks	Credit
1	III	26102DM301	Engineering Geology https://nptel.ac.in/courses/105105226	8	3
2	IV	26102DM401	Building materials and Construction https://nptel.ac.in/courses/105102088	8	3
3	V	26102DM501	Concrete Technology https://nptel.ac.in/courses/105102012	8	3
4	VI	26102DM601	Remote Sensing and GIS https://nptel.ac.in/courses/105103193	8	3
5	VII	26102DM701	Mechanics of Solids https://nptel.ac.in/courses/105103684	8	3
6	VIII	26102DM801	Project Planning & Control https://nptel.ac.in/courses/105106149	8	3





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara

Department of Civil Engineering

Double Minor in Artificial Intelligence & Data Science					
Sr. No.	SEM	Course Code	Course Name	NPTEL Weeks	Credit
1	III				
2	IV				
3	V				
4	VI				
5	VII				
6	VIII				

Double Minor in Computer Science & Engineering					
Sr. No.	SEM	Course Code	Course Name	NPTEL Weeks	Credit
1	III				
2	IV				
3	V				
4	VI				
5	VII				
6	VIII				

Double Minor in Electronics & Telecommunication Engineering					
Sr. No.	SEM	Course Code	Course Name	NPTEL Weeks	Credit
1	III				
2	IV				
3	V				
4	VI				
5	VII				
6	VIII				

Double Minor in Mechanical Engineering					
Sr. No.	SEM	Course Code	Course Name	NPTEL Weeks	Credit
1	III				
2	IV				
3	V				
4	VI				
5	VII				
6	VIII				





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Curriculum Structure
of
B.Tech. in Civil Engineering
with
Honors and Multidisciplinary Minor
Effective from
Academic Year 2029-30





B.Tech. in Civil Engineering with Honors and Multidisciplinary Minor

1. It is required to complete SIX Courses (each of 3 credits) from ONLINE platform to earn total of 18 credits under Honor certification.
2. Student must complete and earn the credits for all the six courses starting from Second Year First semester (3rd semester) to Final Year Second Semester (8th semester).
3. Basket of the Honor courses (HN) and respective semester is mentioned in the following table.
4. To select course platform, first preference must be given to NPTEL.
5. While selecting online course, following points must be taken care of,
 - a. Selected course must be of advanced level and not basic or fundamental level.
 - b. Contents of the course should not be covered in any of the course offered in regular curriculum or not listed in any elective (Open or Program elective)

Honors in Civil Engineering Courses					
Sr. No.	SEM	Course Code	Course Name	NPTEL Weeks	Credit
1	III	26102HR301	Advanced Concrete Technology https://nptel.ac.in/courses/105106176	8	3
2	IV	26102HR401	Admixtures and Special Concretes https://nptel.ac.in/courses/105106225	8	3
3	V	26102HR501	Advanced Structural Analysis https://nptel.ac.in/courses/105105690	8	3
4	VI	26102HR601	Advanced Reinforced Concrete Design https://nptel.ac.in/courses/105106224	8	3
5	VII	26102HR701	Advanced Prestressed Concrete Design https://nptel.ac.in/courses/105106686	8	3
6	VIII	26102HR801	Geotechnical Earthquake Engineering https://nptel.ac.in/courses/105105224	8	3





Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Civil Engineering

Curriculum Structure
of
B.Tech. in Civil Engineering
Honours
with
Research and Multidisciplinary Minor
Effective from
Academic Year 2029-30





Department of Civil Engineering

B. Tech. in Civil Engineering – Honors with Research and Multidisciplinary Minor

Category	Sem.	Name of the Course	Teaching Scheme				Evaluation Scheme		Total	Credits
			L	T	P	Total	ISE	ESE		
	VII	Research Project Phase I	-	-	18	18	200	100	300	09
	VIII	Research Project Phase II	-	-	18	18	200	100	300	09
Total			00	00	36	36	400	200	600	18

1. The students will work on a research project or dissertation for 18 credits in the fourth year in the respective Major Engineering / Tech. Discipline.
 2. The decision regarding the distribution of 18 credits for Research Project in **Semesters VII and VIII** of the Fourth Year will be taken by Academic Authorities of University/ Autonomous Engineering Colleges.
 3. These 18 Credits will be over and above the min.160-max.176 Credits prescribed for Four Year Multidisciplinary Bachelor's Degree in Engg. / Tech. Program.
 4. *Research Project to be treated successful upon publishing of minimum two research papers in reputed Research Journals.
- Note 1: The Program will have declaration pool of these courses/MOOCs from which the aspirants will choose the courses/MOOCs.
 - Note 2: These courses or MOOCs will be different than those to be opted in the VIII semester of B. Tech Major.
 - Note 3: A successful B. Tech (Honor with Research) will be eligible to get enrolled to Ph.D. in same or allied field.
 - Note 4: Students may complete these courses/MOOCs when they enter in FY B.Tech. and they may complete the same before their departure.

