

Walchand College of Engineering

(Government Aided Autonomous Institute)

Vishrambag, Sangli. 416415



***** Platinum Jubilee Year *****

**Credit System for
Final Year B.Tech. (Civil Engineering)
Sem-VII and VIII**

2021-22



Walchand College of Engineering

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Credit System for Final Year B.Tech. (Civil Engineering) Sem-VII AY 2021-22

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	T1/LA1	T2/LA2	ESE	
Professional Core (Theory)													
1	PC	4CV401	Transportation Engineering	3	0	0	0	3	3	20	20	60	
2	HS	4HS401	Fundamentals of Management and Economics for Engineers	4	0	0	0	4	4	20	20	60	
Professional Core (Lab)													
3	PR	4CV451	Mini Project 4: Reinforced Concrete Design and Drawing	0	0	2	0	2	1	30	30	40	
4	PC	4CV452	Highway Engineering Lab	0	0	2	0	2	1	30	30	40	
5	PR	4CV453	Mini Project 5: Construction Project Management	0	0	2	0	2	1	30	30	40	
6	PR	4CV441	Project 1 and Seminar	0	0	6	0	6	3	30	30	40	
Professional Elective (Theory)													
7	PE	Refer list	Elective 3	3	0	0	0	3	3	20	20	60	
8	PE	Refer list	Elective 4	3	0	0	0	3	3	20	20	60	
Open Elective													
9	OE	Refer list	Open Elective 3	3	0	0	0	3	3	20	20	60	
AICTE Mandatory Courses @													
10	MC	4IC401	Constitution of India	2	0	0	0	2	0	20	20	60	
Value Added Professional Courses #													
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Value Added Life-Skill Courses #													
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Total				18	0	12	0	30	22				



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Elective Course List for Final Year B.Tech. (Civil Engineering) Sem-VII AY 2021-22

Sr.No.	Track	Course Code	Course Name
Elective 3			
1	Structural Engineering	4CV411	Earthquake Engineering
2	Structural Engineering	4CV412	Advanced Structural Analysis
3	Environmental Engineering	4CV413	Advances in Water and Wastewater Treatment
4	Environmental Engineering	4CV414	Air Pollution and Control
5	Infrastructure Engineering	4CV415	Maintenance and Rehabilitation of Structures
6	Infrastructure Engineering	4CV416	Sustainability and Energy in Buildings
7	Transportation Engineering	4CV417	Bridge and Airport Engineering
8	Structural Engineering	4CV418	Earth Retaining Structures
Elective 4			
1	Structural Engineering	4CV419	Computer Applications in Structural Engineering
2	Structural Engineering	4CV420	Geosynthetics and Reinforced Soil Structures
3	Environmental Engineering	4CV421	Environmental Management Systems
4	Infrastructure Engineering	4CV422	Construction Equipment and Techniques
5	Transportation Engineering	4CV423	Highway Construction and Pavement Design
6	Structural Engineering	4CV424	Design of Concrete Structure- II
7	Infrastructure Engineering	4CV425	Engineering Economics and Valuation
8	Environmental Engineering	4CV426	Solid and Hazardous Waste Management



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Open Elective Course List for Final Year B.Tech. (Civil Engineering) Sem-VII AY 2021-22

Sr.No.	Offering Dept	Sem	Course Code	Course Name
Open Elective 3				
1	Mech	7	4OE429	Automobile Engineering
2	Elect	7	4OE443	Industrial Automation NPTEL
3	Eln	7	4OE457	Medical Image Processing
4	CSE	7	4OE471	Cyber Security
5	IT	7	4OE485	Data Visualization & Interpretation

Notes:

For Lab courses: There shall be only internal continuous assessment (LA1, LA2, ESE). LA1 and LA2 together shall be Lab ISE. The ESE is a separate head of passing.

For Theory courses: There shall be two tests (T1 and T2) and one ESE. The ESE is a separate head of passing.

The Value Added Courses are Optional Courses. The mode of teaching (LTPI) is decided by the resource person.

The credits earned from these courses will be shown on grade card. For SGPA and CGPA calculation, these courses will be excluded.

The list of Value added courses will be updated from time to time. The courses may be on paid basis. These courses will be offered as per availability of faculty.

@ Minimum two AICTE mandatory courses need to be completed for award of degree.

The contact hours of each Final Year BTech project batch (of min 5 students) with the guide shall be 1 hour/week for Sem VII and 2 hours/week for Sem VIII.

For further details, refer to Academic and Examination rules and regulations.



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Credit System for Final Year B.Tech. (Civil Engineering) Sem-VIII AY 2021-22

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	T1/LA1	T2/LA2	ESE	
Professional Core (Theory)													
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Professional Core (Lab)													
1	PC	4CV471	Civil Engineering Software Lab	0	0	2	0	2	1	30	30	40	
2	PR	4CV491	Project 2	0	0	16	0	16	8	30	30	40	
3	PC	4CV492	Skill Based Learning	0	0	0	1	1	1	30	30	40	
4	PC	4CV493	Summer Internship	0	0	0	1	1	1	30	30	40	
Professional Elective (Theory)													
5	PE	Refer list	Elective 5	3	0	0	0	3	3	20	20	60	
6	PE	Refer list	Elective 6	3	0	0	0	3	3	20	20	60	
Value Added Professional Courses #													
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Value Added Life-Skill Courses #													
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Total				6	0	18	2	26	17				



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Elective Course List for Final Year B.Tech. (Civil Engineering) Sem-VIII AY 2021-22

Sr.No.	Track	Course Code	Course Name
Elective 5			
1	Structural Engineering	4CV431	Advanced Structural Design
2	Structural Engineering	4CV432	Structural Health Monitoring
3	Environmental Engineering	4CV433	Industrial Wastewater Treatment
4	Environmental Engineering	4CV434	Urban Drainage and Management
5	Infrastructure Engineering	4CV435	Contracts Management
6	Transportation Engineering	4CV436	Intelligent Transportation systems
7	Infrastructure Engineering	4CV444	Contract Management and Valuation of Immovable Properties
8	Structural Engineering	4CV445	Bridge and Airport Engineering
Elective 6			
1	Structural Engineering	4CV437	Design of Concrete Bridges
2	Structural Engineering	4CV438	Computational Methods and Optimization Techniques
3	Environmental Engineering	4CV439	Geoenvironmental Engineering
4	Infrastructure Engineering	4CV440	Valuation of Imovable Properties
5	Infrastructure Engineering	4CV442	Structural Geology
6	Transportation Engineering	4CV443	Infrastructure Planning and Design
7	Environmental Engineering	4CV446	Advanced Water and Wastewater Treatment
8	Infrastructure Engineering	4CV447	Repair and Rehabilitation of Building



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Tracks and Semester-wise Elective Courses for B.Tech. (Civil Engineering) AY 2021-22

Sr.No.	Sem	Elective	Course Code	Course Name
Environmental Engineering				
1	5	Elective 1	5CV312	Water Distribution System
2	6	Elective 2	5CV333	Municipal Solid Waste Management
3	6	Elective 2	5CV334	Hazardous Waste Management
4	6	Elective 3 Lab	5CV374	Municipal Solid Waste Management
5	6	Elective 3 Lab	5CV375	Hazardous Waste Management
6	6	Elective 3 Lab	5CV379	Sewerage and Sewage Treatment Laboratory
7	7	Elective 3	4CV413	Advances in Water and Wastewater Treatment
8	7	Elective 3	4CV414	Air Pollution and Control
9	7	Elective 4	4CV421	Environmental Management Systems
10	7	Elective 4	4CV426	Solid and Hazardous Waste Management
11	8	Elective 5	4CV433	Industrial Wastewater Treatment
12	8	Elective 5	4CV434	Urban Drainage and Management
13	8	Elective 6	4CV439	Geoenvironmental Engineering
14	8	Elective 6	4CV446	Advanced Water and Wastewater Treatment
Infrastructure Engineering				
1	5	Elective 1	5CV313	Town and Country Planning
2	6	Elective 2	5CV335	Design of Hydraulic Structure
3	6	Elective 2	5CV336	Advanced Surveying
4	6	Elective 3 Lab	5CV376	Design of Hydraulic Structure
5	6	Elective 3 Lab	5CV377	Advanced Surveying
6	6	Elective 3 Lab	5CV378	Foundation Engineering Laboratory
7	7	Elective 3	4CV415	Maintenance and Rehabilitation of Structures
8	7	Elective 3	4CV416	Sustainability and Energy in Buildings
9	7	Elective 4	4CV422	Construction Equipment and Techniques
10	7	Elective 4	4CV425	Engineering Economics and Valuation
11	8	Elective 5	4CV435	Contracts Management
12	8	Elective 5	4CV444	Contract Management and Valuation of Immovable Properties
13	8	Elective 6	4CV440	Valuation of Imovable Properties



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14	8	Elective 6	4CV442	Structural Geology
15	8	Elective 6	4CV447	Repair and Rehabilitation of Building
Structural Engineering				
1	5	Elective 1	5CV311	Structural Mechanics
2	6	Elective 2	5CV331	Advanced Concrete Technology
3	6	Elective 2	5CV332	Earthquake Engineering
4	6	Elective 3 Lab	5CV372	Advanced Concrete Technology
5	6	Elective 3 Lab	5CV373	Earthquake Engineering
6	7	Elective 3	4CV411	Earthquake Engineering
7	7	Elective 3	4CV412	Advanced Structural Analysis
8	7	Elective 3	4CV418	Earth Retaining Structures
9	7	Elective 4	4CV419	Computer Applications in Structural Engineering
10	7	Elective 4	4CV420	Geosynthetics and Reinforced Soil Structures
11	7	Elective 4	4CV424	Design of Concrete Structure- II
12	8	Elective 5	4CV431	Advanced Structural Design
13	8	Elective 5	4CV432	Structural Health Monitoring
14	8	Elective 5	4CV445	Bridge and Airport Engineering
15	8	Elective 6	4CV437	Design of Concrete Bridges
16	8	Elective 6	4CV438	Computational Methods and Optimization Techniques
Transportation Engineering				
1	5	Elective 1	5CV314	Remote Sensing and GIS
2	7	Elective 3	4CV417	Bridge and Airport Engineering
3	7	Elective 4	4CV423	Highway Construction and Pavement Design
4	8	Elective 5	4CV436	Intelligent Transportation systems
5	8	Elective 6	4CV443	Infrastructure Planning and Design



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Mapping between Courses and GATE Topics for B.Tech. (Civil Engineering) AY 2021-22

Sr.No.	Sem	Course Code	Course Name	GATE Mapping
GATE Mapping				
1	1	5MA101	Engineering Mathematics-I	Diff. equations
2	1	5CV101	Engineering Mechanics	Applied Mechanics
3	3	5MA201	Probability and Statistics	Statistics
4	3	5CV202	Fluid Mechanics	Fluid Mechanics
5	3	5CV203	Building Materials and Construction	Building Materials
6	3	5CV205	Engineering Surveying	Engg. Surveying
7	3	5CV206	Solid Mechanics	Solid Mechanics
8	4	5CV221	Hydraulics and Hydraulic Machinery	Hydraulics
9	4	5CV223	Water Resources Engineering	WRE
10	4	5CV224	Structural Analysis	Structural Analysis
11	4	5CV225	Concrete Technology	Concrete Technology
12	5	5CV301	Soil Mechanics	Soil Mechanics
13	5	5CV302	Water Treatment Technology	Env. Engg.
14	5	5CV303	Design of Steel Structures	Design of Steel Structures
15	5	5CV304	Highway Engineering	Transportation Engineering
16	6	5CV321	Foundation Engineering	Foundation Engineering
17	6	5CV322	Sewerage and Sewage Treatment	Environmental Engg.
18	6	5CV323	Design of Concrete Structures	Design of Concrete Structures



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List of Professional Core (Theory) Courses for B.Tech. (Civil Engineering) AY 2021-22

Sr.No.	Sem	Course Code	Course Name
Professional Core (Theory) Courses			
1	1	5PH101	Engineering Physics
2	1	5MA101	Engineering Mathematics-I
3	1	5CV101	Engineering Mechanics
4	1	5HS101	Communication Skills
5	1	5CS101	Programming for Problem Solving
6	2	5CH101	Engineering Chemistry
7	2	5MA102	Engineering Mathematics-II
8	2	5ME101	Engineering Graphics and CAD
9	2	5EL101	Basic Electrical Engineering
10	2	5EN101	Arduino Based Systems
11	2	5BS104	Life Science
12	3	5MA201	Probability and Statistics
13	3	5CV202	Fluid Mechanics
14	3	5CV203	Building Materials and Construction
15	3	5CV204	Engineering Geology
16	3	5CV205	Engineering Surveying
17	3	5CV206	Solid Mechanics
18	4	5MA202	Applied Mathematics
19	4	5CV221	Hydraulics and Hydraulic Machinery
20	4	5CV222	Building Planning and Design
21	4	5CV223	Water Resources Engineering
22	4	5CV224	Structural Analysis
23	4	5CV225	Concrete Technology
24	5	5CV301	Soil Mechanics
25	5	5CV302	Water Treatment Technology
26	5	5CV303	Design of Steel Structures
27	5	5CV304	Highway Engineering
28	6	5CV321	Foundation Engineering
29	6	5CV322	Sewerage and Sewage Treatment
30	6	5CV323	Design of Concrete Structures
31	7	4CV401	Transportation Engineering
32	7	4HS401	Fundamentals of Management and Economics for Engineers



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List of Professional Core (Lab) Courses for B.Tech. (Civil Engineering) AY 2021-22

Sr.No.	Sem	Course Code	Course Name
Professional Core (Lab) Courses			
1	1	5CV151	Engineering Mechanics Lab
2	1	5ME152	Workshop Practice
3	1	5CS151	Programming for Problem Solving Lab
4	1	5PH151	Engineering Physics Lab
5	2	5ME151	Engineering Graphics and CAD Lab
6	2	5EL151	Basic Electrical Engineering Lab
7	2	5CH151	Engineering Chemistry Lab
8	2	5EN151	Arduino Based Systems Lab
9	3	5CV252	Fluid Mechanics Lab
10	3	5CV253	Building Materials and Construction Lab
11	3	5CV254	Engineering Geology Lab
12	3	5CV255	Surveying Lab
13	4	5CV271	Hydraulics Lab
14	4	5CV272	Mini Project 1-Building Planning and Design
15	4	5CV274	Advanced Surveying Lab
16	4	5CV275	Material Testing Lab
17	4	5CV277	Presentation and Report Writing
18	5	5CV351	Water Quality Analysis Lab
19	5	5CV352	Soil Mechanics Lab
20	5	5CV345	Mini Project 2: Concrete Technology
21	5	5CV346	Mini Project 3
22	5	5HS301	Humanities-1: German Language
23	6	5CV371	Highway Materials and Traffic Engineering Lab
24	6	5CV347	Mini Project 4:Civil Engineering Software Application
25	6	5CV348	Mini-Project 5: Steel Structures Design and Drawings
26	6	5HS302	Humanities 2: Human Relations at Work
27	7	4CV451	Mini Project 4: Reinforced Concrete Design and Drawing
28	7	4CV452	Highway Engineering Lab
29	7	4CV453	Mini Project 5: Construction Project Management
30	7	4CV441	Project 1 and Seminar
31	8	4CV471	Civil Engineering Software Lab
32	8	4CV491	Project 2
33	8	4CV492	Skill Based Learning
34	8	4CV493	Summer Internship



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Open Electives offered by B.Tech. (Civil Engineering) to other programmes AY 2021-22

Sr.No.	Offering Dept	Sem	Course Code	Course Name
Open Electives Offered				
1	Civil	5	5OE301	Basic Civil Engineering
2	Civil	5	5OE315	Application of Remote Sensing
3	Civil	6	5OE322	Physical Geology
4	Civil	6	5OE323	Diaster Management
5	Civil	7	4OE415	Management for Engineers



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Open Electives available from other programmes to B.Tech. (Civil Engineering) AY 2021-22

Sr.No.	Offering Dept	Sem	Course Code	Course Name
Open Electives Available				
1	Mech	5	5OE330	Energy Engineering
2	Mech	5	5OE329	Non-conventional Machining Processes
3	Mech	6	5OE336	3D Printing
4	Mech	7	4OE429	Automobile Engineering
5	Elect	5	5OE343	Electrical Machine Technology
6	Elect	5	5OE344	Industrial Instrumentation
7	Elect	6	5OE350	Renewable Energy
8	Elect	6	5OE351	Energy Management
9	Elect	7	4OE443	Industrial Automation NPTEL
10	Eln	5	5OE356	Signals and Systems
11	Eln	5	5OE357	Introduction to Electronics system
12	Eln	6	5OE364	Cyber Physical System
13	Eln	6	5OE365	Biomedical Engineering
14	Eln	7	4OE457	Medical Image Processing
15	CSE	5	5OE372	Data Science using Python
16	CSE	5	5OE371	Software Engineering and Database Essentials
17	CSE	6	5OE378	Fundamentals of Internet of Things
18	CSE	6	5OE379	Artificial Intelligence and Machine Learning
19	CSE	7	4OE471	Cyber Security
20	IT	5	5OE385	Joy of Python Programming
21	IT	5	5OE386	Cloud Computing System
22	IT	6	5OE392	Web Development & Applications
23	IT	6	5OE393	Fundamentals Of Machine Learning
24	IT	7	4OE485	Data Visualization & Interpretation