

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		Transportation Engineering	3	0	0	0	3	3	20	20	60
2	HS		Fundamentals of Management and Economics for Engineers	4	0	0	0	4	4	20	20	60
Professional Core (Lab)												
3	PR		Mini Project 4: Reinforced Concrete Design and Drawing	0	0	2	0	2	1	30	30	40
4	PR		Highway Engineering Lab	0	0	2	0	2	1	30	30	40
5	PR		Mini Project 5: Construction Project Management	0	0	2	0	2	1	30	30	40
6	PR		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		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		Earth Retaining Structures
2	Structural Engineering		Advanced Structural Analysis
3	Environmental Engineering		Advances in Water and Wastewater Treatment
4	Environmental Engineering		Air Pollution and Control
5	Infrastructure		Maintenance and Rehabilitation of Structures
6	Infrastructure		Sustainability and Energy in Buildings
7	Transportation Engineering		Bridge and Airport Engineering
Elective 4			
1	Structural Engineering		Computer Applications in Structural Engineering
2	Structural Engineering		Geosynthetics and Reinforced Soil Structures
3	Environmental Engineering		Environmental Management Systems
4	Infrastructure		Construction Equipment and Techniques
5	Transportation Engineering		Highway Construction and Pavement Design



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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		Automobile Engineering
2	Mech	7		Industrial Automation
3	Mech	7		Aerospace Engineering
4	Elect	7		Industrial Automation NPTEL
5	Eln	7		Medical Image Processing
6	CSE	7		Cyber Security
7	IT	7		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		Civil Engineering Software Lab	0	0	2	0	2	1	30	30	40	
2	PR		Project 2	0	0	16	0	16	8	30	30	40	
3	PC		Skill Based Learning	0	0	0	1	1	1	30	30	40	
4	PC		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		Advanced Structural Design
2	Structural Engineering		Structural Health Monitoring
3	Environmental Engineering		Industrial Wastewater Treatment
4	Environmental Engineering		Urban Drainage and Management
5	Infrastructure		Contracts Management
6	Transportation Engineering		Intelligent Transportation systems
Elective 6			
1	Structural Engineering	#REF!	Design of Concrete Bridges
2	Structural Engineering		Computational Methods and Optimization Techniques
3	Environmental Engineering		Geoenvironmental Engineering
4	Infrastructure		Valuation of Imovable Properties
5	Infrastructure		Structural Geology
6	Transportation Engineering		Infrastructure Planning and Design
7			#REF!

Notes:

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

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



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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
1	8	Elective 6		#REF!
Environmental Engineering				
1	5	Elective 1		Water Distribution System
2	6	Elective 2		Municipal Solid Waste Management
3	6	Elective 2		Hazardous Waste Management
4	6	Elective 3 Lab		Municipal Solid Waste Management
5	6	Elective 3 Lab		Hazardous Waste Management
6	7	Elective 3		Advances in Water and Wastewater Treatment
7	7	Elective 3		Air Pollution and Control
8	7	Elective 4		Environmental Management Systems
9	8	Elective 5		Industrial Wastewater Treatment
10	8	Elective 5		Urban Drainage and Management
11	8	Elective 6		Geoenvironmental Engineering
Infrastructure				
1	5	Elective 1		Town and Country Planning
2	6	Elective 2		Design of Hydraulic Structure
3	6	Elective 2		Advanced Surveying
4	6	Elective 3 Lab		Design of Hydraulic Structure
5	6	Elective 3 Lab		Advanced Surveying
6	7	Elective 3		Maintenance and Rehabilitation of Structures
7	7	Elective 3		Sustainability and Energy in Buildings
8	7	Elective 4		Construction Equipment and Techniques
9	8	Elective 5		Contracts Management
10	8	Elective 6		Valuation of Imovable Properties
11	8	Elective 6		Structural Geology

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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
Structural Engineering				
1	5	Elective 1		Structural Mechanics
2	6	Elective 2		Advanced Concrete Technology
3	6	Elective 2		Earthquake Engineering
4	6	Elective 3 Lab		Advanced Concrete Technology
5	6	Elective 3 Lab		Earthquake Engineering
6	7	Elective 3		Earth Retaining Structures
7	7	Elective 3		Advanced Structural Analysis
8	7	Elective 4		Computer Applications in Structural Engineering
9	7	Elective 4		Geosynthetics and Reinforced Soil Structures
10	8	Elective 5		Advanced Structural Design
11	8	Elective 5		Structural Health Monitoring
12	8	Elective 6	#REF!	Design of Concrete Bridges
13	8	Elective 6		Computational Methods and Optimization Techniques
Transportation Engineering				
1	5	Elective 1		Remote Sensing and GIS
2	7	Elective 3		Bridge and Airport Engineering
3	7	Elective 4		Highway Construction and Pavement Design
4	8	Elective 5		Intelligent Transportation systems
5	8	Elective 6		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		Soil Mechanics	Soil Mechanics
13	5		Water Treatment Technology	Env. Engg.
14	5		Design of Steel Structures	Design of Steel Structures
15	5		Highway Engineering	Transportation Engineering
16	6		Foundation Engineering	Foundation Engineering
17	6		Sewage and Sewage Treatment	Environmental Engg.
18	6		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		Soil Mechanics
25	5		Water Treatment Technology
26	5		Design of Steel Structures
27	5		Highway Engineering
28	6		Foundation Engineering
29	6		Sewage and Sewage Treatment
30	6		Design of Concrete Structures
31	7		Transportation Engineering
32	7		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		Water Quality Analysis Lab
19	5		Soil Mechanics Lab
20	5		Mini Project 2: Concrete Technology
21	5		Mini Project 3
22	5		Humanities-1: German Language
23	6		Highway Materials and Traffic Engineering Lab
24	6		Mini Project 4:Civil Engineering Software Application
25	6		Mini-Project 5: Steel Structures Design and Drawings
26	6		Humanities 2: Human Relations at Work
27	7		Mini Project 4: Reinforced Concrete Design and Drawing
28	7		Highway Engineering Lab
29	7		Mini Project 5: Construction Project Management
30	7		Project 1 and Seminar
31	8		Civil Engineering Software Lab
32	8		Project 2
33	8		Skill Based Learning
34	8		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		Basic Civil Engineering
2	Civil	5		Application of Remote Sensing
3	Civil	6		Physical Geology
4	Civil	6		Diaster Management
5	Civil	7		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		Energy Engineering
2	Mech	5		Non-conventional Machining Processes
3	Mech	6		3D Printing
4	Mech	7		Automobile Engineering
5	Mech	7		Industrial Automation
6	Mech	7		Aerospace Engineering
7	Elect	5		Electrical Machine Technology
8	Elect	5		Industrial Instrumentation
9	Elect	6		Renewable Energy
10	Elect	6		Energy Management
11	Elect	7		Industrial Automation NPTL
12	Eln	5		Signals and Systems
13	Eln	5		Introduction to Electronics system
14	Eln	6		Cyber Physical System
15	Eln	6		Biomedical Engineering
16	Eln	7		Medical Image Processing
17	CSE	5		Data Science using Python
18	CSE	5		Software Engineering and Database Essentials
19	CSE	6		Fundamentals of Internet of Things
20	CSE	6		Artificial Intelligence and Machine Learning
21	CSE	7		Cyber Security
22	IT	5		Joy of Python Programming
23	IT	5		Cloud Computing System
24	IT	6		Web Development & Applications
25	IT	6		Fundamentals Of Machine Learning
26	IT	7		Data Visualization & Interpretation