

**Walchand College of Engineering, Sangli**  
*(An Autonomous Institute)*



**Curriculum (Structure)**

**M. Tech. Civil (Environmental Engineering)**

**With Effect From**

**Academic Year**

**2018-2019 (F. Y. M. Tech.)**

**2019-2020 (S. Y. M. Tech.)**

**Walchand College of Engineering, Sangli**  
(An Autonomous Institute)  
Teaching and Evaluation Scheme  
**First year M. Tech. in Civil (Environmental Engineering)**  
Semester

Course			Teaching Scheme				Evaluation Scheme			
Category	Code	Name	L	T	P	Credits	Component	Marks		
								Max	Min for Passing	
MC	3EV501	Research Methodology for Environmental Engineers	2	-	-	2	ISE 1	10	40	
							MSE	30		
							ISE 2	10		
							ESE	50		20
PC	3EV502	Physico-Chemical Methods for Water and Wastewater Treatment	3	1	-	4	ISE 1	10	40	
							MSE	30		
							ISE 2	10		
							ESE	50		20
PC	3EV503	Municipal Solid Waste Management	3	-	-	3	ISE 1	10	40	
							MSE	30		
							ISE 2	10		
							ESE	50		20
PC	3EV504	Environmental Chemistry and Microbiology	3	-	-	3	ISE 1	10	40	
							MSE	30		
							ISE 2	10		
							ESE	50		20
PE	3EV5**	Professional Elective 1	3	-	-	3	ISE 1	10	40	
							MSE	30		
							ISE 2	10		
							ESE	50		20
PC	3EV551	Environmental Chemistry and Microbiology Laboratory	-	-	4	2	ISE	50	20	
							ESE	50	20	
PC	3EV552	Water Treatability Studies Laboratory	-	-	2	1	ISE	50	20	
							ESE	50	20	
Total			14	1	6	18	<b>Total Credits: 18 Total Contact Hrs: 21</b>			

<b>Professional Elective 1</b>	
3EV511	Computational Methods and Optimization Techniques
3EV512	Geo-environmental Engineering
3EV513	Water Quality Modeling

**Walchand College of Engineering, Sangli**  
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 Teaching and Evaluation Scheme  
**First year M. Tech. in Civil (Environmental Engineering)**  
 Semester II

Course			Teaching Scheme				Evaluation Scheme			
Category	Code	Name	L	T	P	Credits	Component	Marks		
								Max	Min for Passing	
OE	3OE5**	Open Elective	3	-	-	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3EV521	Biological Methods for Wastewater Treatment	3	-	-	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3EV522	Air Pollution and Control	3	-	-	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PE	3EV5**	Professional Elective 2	3	-	-	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PE	3EV5**	Professional Elective 3	3	-	-	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3EV571	MSW Characterization and Air Quality Monitoring Laboratory	-	-	2	1	ISE	50	20	
							ESE	50	20	
PC	3EV572	Wastewater Treatability Studies Laboratory	-	-	4	2	ISE	50	20	
							ESE	50	20	
PC	3EV541	Pre-dissertation work and seminar	-	-	4	2	ISE	100	40	
<b>Total</b>			<b>15</b>	<b>-</b>	<b>10</b>	<b>20</b>	<b>Total Credits: 20 Total Contact Hrs: 25</b>			

<b>Professional Elective 2</b>	
3EV531	Environmental Management Systems
3EV532	Hydraulics of Transport Systems in Environmental Engineering
3EV533	Hazardous Waste Management
<b>Professional Elective 3</b>	
3EV536	Energy And Buildings
3EV537	Industrial Wastewater Pollution and Control
3EV538	Emerging Technologies in Water and Wastewater Treatment

<b>Open Elective</b>		
Course Code	Course Name	Offered by Department
3OE501	Design Optimization	Applied Mechanics
3OE502	Structural Health Monitoring and Smart Materials	
3OE515	Life Cycle Assessment and Ecolabelling	Civil Engineering
3OE516	Construction Equipment	
3OE529	Business Analytics	Mechanical Engineering
3OE530	Industrial Safety	
3OE531	Operations Research	
3OE532	Cost Management of Engineering Projects	
3OE533	Composite Materials	
3OE534	Waste to Energy.	
3OE535	Project Based Learning with Embedded System	
3OE543	Control Techniques for Electrical Drives.	Electrical Engineering
3OE544	Neural Network and Fuzzy Control.	
3OE557	Remote sensing and Image Analysis	Electronics Engineering
3OE558	Automotive Electronics	
3OE559	Mechatronics	
3OE560	Digital Image processing	
3OE561	Nano materials and Nano-technology	
3OE562	Numerical Methods for Engineers	
3OE563	Optimization Techniques	Computer Science and Engineering
3OE571	Business Intelligence	
3OE 572	Cyber Security	Information Technology
3OE585	Geographic Information Systems	
3OE586	Data Visualization & Interpretation	
3OE587	Computational Engineering using Python	
3OE588	3D Modeling, Animation and Computer Simulation	

**Walchand College of Engineering, Sangli**  
**(An Autonomous Institute)**  
 Teaching and Evaluation Scheme  
**Second year M. Tech. in Civil (Environmental Engineering)**  
 Semester III

Course			Teaching Scheme				Evaluation Scheme			
Category	Code	Name	L	T	P	Credits	Component	Marks		
								Max	Min for Passing	
PE	3EV6**	Professional Elective 4	3	-	-	3	ISE 1	10	40	
							MSE	30		
							ISE 2	10		
							ESE	50		20
PC	3EV690	Dissertation phase I	-	-	5	4	ISE	100	40	
	3EV691	Dissertation phase II				2	ISE	100	40	
						4	ESE	100	40	
MC	3IC6**	Mandatory Non Credit Course	2	-	-	-	ISE 1	35	40	
							MSE	30		
							ISE 2	35		
Total			5	-	5	13	<b>Total Credits: 13 Total Contact Hrs:10</b>			

**Semester IV**

Course			Teaching Scheme				Evaluation Scheme			
Category	Code	Name	L	T	P	Credits	Component	Marks		
								Max	Min for Passing	
PC	3EV692	Dissertation phase III	-	-	5	4	ISE	100	40	
	3EV693	Dissertation phase IV				4	ISE	100	40	
						8	ESE	100	40	
PC	3EV694	Summer Internship	0	0	0	1	ISE	100	40	
MC	3IC6**	Mandatory Non Credit Course	2	-	-	-	ISE 1	35	40	
							MSE	30		
							ISE 2	35		
Total			2	-	5	17	<b>Total Credits: 17 Total Contact Hrs: 7</b>			

<b>Professional Elective 4</b>	
3EV611	Project Management
3EV612	Operation and Maintenance of Environmental Facilities

<b>List of Mandatory Non Credit Course</b>	
3IC601	Constitution of India
3IC602	Pedagogy of Studies
3IC603	Disaster Management
3IC604	Value Education

Semester	I	II	III	IV	Total
Credits	18	20	13	17	68

**Walchand College of Engineering, Sangli**  
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**Curriculum Comparison for WCE and AICTE**

<b>M. Tech. Civil (Environmental Engineering)</b>					
<b>Sr. No.</b>	<b>Category</b>	<b>Credits</b>		<b>%</b>	
		<b>AICTE</b>	<b>Dept</b>	<b>AICTE</b>	<b>Dept</b>
1	PC	12	16	17.6	23.5
2	PE	15	12	22.1	17.6
3	PCL	10	6	14.7	8.8
4	OE	3	3	4.4	4.4
5	PC	26	26	38.2	38.2
6	MC	2	2	2.9	2.9
7	PC	0	2	0	2.9
8	PC	0	1	0	1.5
9	MC	0	0	0	0
<b>Total Credits</b>		<b>68</b>	<b>68</b>	<b>100</b>	<b>100</b>

**Category**

Core theory courses (PC)

Programme Elective courses relevant to chosen specialization/ branch& (PE)

Core/Elective laboratory courses (PCL)

Open subjects – Electives from other technical and /or emerging subjects (OE)

Dissertation (PC)

Mandatory course on Research Methodology (MC)

Pre-dissertation work and seminar (PC)

Summer Internship (PC)

Mandatory Non- credit Courses (MC)

# **Walchand College of Engineering, Sangli**

(An Autonomous Institute)



## **Curriculum (Structure)**

**for**

**M.Tech. Civil (Structural Engineering)**

**With Effect From**

**Academic Year**

**2018-2019 (F. Y. M. Tech.)**

**2019-2020 (S. Y. M. Tech.)**

**Walchand College of Engineering, Sangli**  
(An Autonomous Institute)  
Teaching and Evaluation Scheme effective  
**First year M. Tech. Program in Civil (Structural Engineering)**  
Semester I

Course			Teaching Scheme				Evaluation Scheme			
Category	Code	Name	L	T	P	Credits	Component	Marks		
								Max	Min for Passing	
MC	3ST501	Research Methodology for Structural Engineers	2	-	-	2	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3ST502	Theory of Elasticity and Plasticity	3	--	--	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3ST503	Mechanics of Structures	3	--	--	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3ST 504	Structural Dynamics and Earthquake Engineering	3	--	--	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PE	3ST 5**	Professional Elective 1	3			3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3ST 551	Modern Materials and Testing Laboratory	--	--	4	2	ISE	50	20	
							ESE	50	20	
PC	3ST 552	Dynamics of Structures Laboratory	--	--	2	1	ISE	50	20	
							ESE	50	20	
Total			14	--	6	17	<b>Total Credits: 17 Total Contact Hrs: 20</b>			

<b>Professional Elective 1</b>	
3ST511	Advanced Design of Reinforced Concrete Structures
3ST512	Advances in Composites



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 Teaching and Evaluation Scheme  
**First year M. Tech. Program in Civil (Structural Engineering)**  
 Semester II

Course			Teaching Scheme				Evaluation Scheme			
Category	Code	Name	L	T	P	Credits	Component	Marks		
								Max	Min for Passing	
OE	3OE5**	Open Elective	3	-	--	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3ST521	Theory of Plates and Shells	3	--	--	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3ST522	Finite Element Method	3	--	--	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PE	3ST 5**	Professional Elective 2	3	--	--	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PE	3ST 5**	Professional Elective 3	3	--	--	3	ISE 1	10	20	40
							MSE	30		
							ISE 2	10		
							ESE	50		
PC	3ST571	Structural Health Monitoring Laboratory				1	ISE	50	20	
							ESE	50		
PC	3ST572	Finite Element Laboratory				2	ISE	50	20	
							ESE	50		
PC	3ST573	Modeling and Simulation Laboratory				1	ISE	50	20	
							ESE	50		
PC	3ST541	Pre-dissertation work and seminar	-	-	4	2	ISE	100		40
Total			15	--	12	21	<b>Total Credits: 21 Total Contact Hrs: 27</b>			

<b>Professional Elective 2</b>	
3ST531	Numerical Methods in Structural Engineering
3ST532	Advanced Design of Steel Structures
<b>Professional Elective 3</b>	
3ST533	Advanced Prestressed Concrete
3ST534	Computer Aided Analysis and Design
3ST535	Design Optimization

<b>Open Elective</b>		
Course Code	Course Name	Offered by Department
3OE501	Design Optimization	Applied Mechanics
3OE502	Structural Health Monitoring and Smart Materials	
3OE515	Life Cycle Assessment and Ecolabelling	Civil Engineering
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Total			5	-	5	13	<b>Total Credits: 13 Total Contact Hrs: 10</b>			

**Semester IV**

Course			Teaching Scheme				Evaluation Scheme			
Category	Code	Name	L	T	P	Credits	Component	Marks		
								Max	Min for Passing	
PC	3ST692	Dissertation phase III	-	-	5	4	ISE	100	40	
	3ST693	Dissertation phase IV				4	ISE	100	40	
						8	ESE	100	40	
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3IC602	Pedagogy of Studies
3IC603	Disaster Management
3IC604	Value Education

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Mandatory course on Research Methodology (MC)

Pre-dissertation work and seminar (PC)

Summer Internship (PC)

Mandatory Non- credit Courses (MC)