

# **Walchand College of Engineering**

*(Government Aided Autonomous Institute)*

Vishrambag, Sangli. 416415



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

**2022-23**



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Credit System for Final Year B.Tech. (Mechanical Engineering) Sem-VII AY 2022-23

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	MSE/LA1	ISE/LA2	ESE	Ext
<b>Professional Core (Theory)</b>													
1	PC	5ME401	Mechanical Vibrations	3	0	0	0	3	3	30	20	50	
2	PC	5ME402	Refrigeration and Air Conditioning	2	0	0	0	2	2	30	20	50	
3	HS	5ME403	Humanities-4 Legal, IPR, Safety	1	0	0	0	1	1	15	10	25	
<b>Professional Core (Lab)</b>													
4	PC	5ME451	Mechanical Vibrations Lab	0	0	2	0	2	1	30	30	40	OE
5	PC	5ME452	Refrigeration and Air Conditioning Lab	0	0	2	0	2	1	30	30	40	POE
6	PR	5ME441	Mini-Project-5	0	0	2	0	2	1	30	30	40	
7	PR	5ME453	Techno-Socio Activity	0	0	0	1	1	1	15	15	20	
8	PR	5ME454	Project-I	0	0	6	0	6	3	30	30	40	OE
9	HS	5ME455	Humanities-3 Project Management	0	0	0	1	1	1	15	15	20	
<b>Professional Elective (Theory)</b>													
10	PE	Refer list	Elective-5	3	0	0	0	3	3	30	20	50	
<b>Open Elective</b>													
11	OE	Refer list	Open Elective-5	3	0	0	0	3	3	30	20	50	
<b>AICTE Mandatory Courses</b>													
12	MC	5IC401	Constitution of India	2	0	0	0	2	0	30	20	50	
<b>Total</b>				<b>14</b>	<b>0</b>	<b>12</b>	<b>2</b>	<b>28</b>	<b>20</b>				

**Notes:**

For Theory courses: There shall be MSE, ISE and ESE. The ESE is a separate head of passing.

For Lab courses: There shall be continuous assessment (LA1, LA2, ESE). The ESE is a separate head of passing. The Y in the PoE indicates external component for ESE.

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

The contact hours of guide for Final Year BTech project are 4 hrs for Sem VII and 8 hours/week for Sem VIII, for 9 students.

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



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## Elective Course List for Final Year B.Tech. (Mechanical Engineering) Sem-VII AY 2022-23

Sr.No.	Track	Course Code	Course Name
<b>Elective-5</b>			
1	Design Engineering	5ME411	Finite Element Method
2	Production Engineering	5ME412	Industrial Engineering
3	Design Engineering	5ME413	Solid Mechanics



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## Open Elective Course List for Final Year B.Tech. (Mechanical Engineering) Sem-VII AY 2022-23

Sr.No.	Offering Dept	Sem	Course Code	Course Name
<b>Open Elective 5</b>				
1	Civil	7	5OE415	Management for Engineers
2	Elect	7	5OE443	Industrial Automation NPTEL
3	Eln	7	5OE457	Medical Image Processing
4	CSE	7	5OE471	Cyber Security
5	IT	7	5OE485	Data Visualization & Interpretation



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## Credit System for Final Year B.Tech. (Mechanical Engineering) Sem-VIII AY 2022-23

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	MSE/LA1	ISE/LA2	ESE	Ext	
<b>Professional Core (Theory)</b>														
1	PC	5ME421	Automobile Engineering	3	0	0	0	3	3	30	20	50		
<b>Professional Core (Lab)</b>														
2	PR	5ME491	Project- II	0	0	12	0	12	6	30	30	40	POE	
<b>Professional Elective (Theory)</b>														
3	PE	Refer list	Elective-6	3	0	0	0	3	3	30	20	50		
4	PE	Refer list	Elective-7	3	0	0	0	3	3	30	20	50		
5	PE	Refer list	Elective-8	3	0	0	0	3	3	30	20	50		
<b>Total</b>				<b>12</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>24</b>	<b>18</b>					

### Notes:

For Theory courses: There shall be MSE, ISE and ESE. The ESE is a separate head of passing.

For Lab courses: There shall be continuous assessment (LA1, LA2, ESE). The ESE is a separate head of passing. The Y in the PoE indicates external component for ESE.

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

The contact hours of guide for Final Year BTech project are 4 hrs for Sem VII and 8 hours/week for Sem VIII, for 9 students.

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## Elective Course List for Final Year B.Tech. (Mechanical Engineering) Sem-VIII AY 2022-23

Sr.No.	Track	Course Code	Course Name
<b>Elective-6</b>			
1	Thermal Engineering	5ME431	Computational Fluid Dynamics
2	Production Engineering	5ME432	Total Quality Management
3	Design Engineering	5ME433	Condition Monitoring of Machines and Signal Processing
<b>Elective-7</b>			
1	Thermal Engineering	5ME434	Gas Dynamics and Jet Propulsion
2	Production Engineering	5ME435	Computer Integrated Manufacturing
3	Design Engineering	5ME436	Design of Transmission Systems
<b>Elective-8</b>			
1	Thermal Engineering	5ME437	Combustion
2	Production Engineering	5ME438	Product Life Cycle Management
3	Design Engineering	5ME439	Mechanical System Design



# Walchand College of Engineering

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## Tracks and Semester-wise Elective Courses for B.Tech. (Mechanical Engineering) AY 2022-23

Sr.No.	Sem	Elective	Course Code	Course Name
<b>Design Engineering</b>				
1	5	Elective 1	5ME312	Advanced Strength of Materials
2	5	Elective 2 Lab	5ME356	Industrial Hydraulics and Pneumatics Lab
3	5	Elective 2 Lab	5ME357	Mechanical Mesurment and Control Lab
4	6	Elective 3	5ME334	Design and Optimization of Mechanical Elements
5	7	Elective-5	5ME411	Finite Element Method
6	7	Elective-5	5ME413	Solid Mechanics
7	8	Elective-6	5ME433	Condition Monitoring of Machines and Signal Processing
8	8	Elective-7	5ME436	Design of Transmission Systems
9	8	Elective-8	5ME439	Mechanical System Design
<b>Production Engineering</b>				
1	5	Elective 1	5ME311	Plastic Technology
2	5	Elective 1	5ME313	Composite Materials
3	5	Elective 2 Lab	5ME354	Mechatronics Systems Lab
4	5	Elective 2 Lab	5ME355	Microprocessors in Automation Lab
5	6	Elective 3	5ME333	Operations Research
6	6	Elective 4 Lab	5ME374	Robotics Lab
7	6	Elective 4 Lab	5ME376	Industry 4.0 Lab
8	7	Elective-5	5ME412	Industrial Engineering
9	8	Elective-6	5ME432	Total Quality Management
10	8	Elective-7	5ME435	Computer Integrated Manufacturing
11	8	Elective-8	5ME438	Product Life Cycle Management

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## Tracks and Semester-wise Elective Courses for B.Tech. (Mechanical Engineering) AY 2022-23

Sr.No.	Sem	Elective	Course Code	Course Name
<b>Thermal Engineering</b>				
1	6	Elective 3	5ME331	Energy Conservation and Management
2	6	Elective 3	5ME332	Power Plant engineering
3	6	Elective 4 Lab	5ME375	Internal Combustion Engine Lab
4	8	Elective-6	5ME431	Computational Fluid Dynamics
5	8	Elective-7	5ME434	Gas Dynamics and Jet Propulsion
6	8	Elective-8	5ME437	Combustion





# Walchand College of Engineering

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## List of Professional Core (Theory) Courses for B.Tech. (Mechanical) AY 2022-23

Sr.No.	Sem	Course Code	Course Name
<b>Professional Core (Theory) Courses</b>			
1	1	6PH101	Engineering Physics
2	1	6MA101	Engineering Mathematics-I
3	1	6CV101	Engineering Mechanics
4	1	6HS101	Communication Skills
5	1	6BS104	Life Science
6	2	6CH101	Engineering Chemistry
7	2	6MA102	Engineering Mathematics-II
8	2	6ME101	Engineering Graphics and CAD
9	2	6EL101	Basic Electrical Engineering
10	2	6EN101	Basic Electronics Engineering
11	3	6MA202	Probability and Statistics
12	3	6ME201	Thermodynamics
13	3	6ME202	Materials Engineering
14	3	6ME203	Strength of Materials
15	3	6ME204	Manufacturing Processes-I
16	4	6MA221	Applied Mathematics for Mechanical Engineers
17	4	6ME222	Fluid Mechanics and Fluid Machines
18	4	6ME223	Manufacturing Processes-II
19	4	6ME224	Kinematics and Theory of Machines
20	4	6ME225	Design of Machine Elements
21	5	5ME301	Heat Transfer
22	5	5ME302	Applied Thermodynamics
23	6	5ME321	Design of Machine Elements
24	6	5ME322	Automation in Manufacturing
25	6	5ME323	Engineering Metrology
26	7	5ME401	Mechanical Vibrations
27	7	5ME402	Refrigeration and Air Conditioning
28	7	5ME403	Humanities-4 Legal, IPR, Safety
29	8	5ME421	Automobile Engineering



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## List of Professional Core (Lab) Courses for B.Tech. (Mechanical) AY 2022-23

Sr.No.	Sem	Course Code	Course Name
<b>Professional Core (Lab) Courses</b>			
1	1	6CV151	Engineering Mechanics Lab
2	1	6ME152	Workshop Practice
3	1	6CS151	Programming for Problem Solving Lab
4	1	6PH151	Engineering Physics Lab
5	2	6ME151	Engineering Graphics and CAD Lab
6	2	6EL151	Basic Electrical Engineering Lab
7	2	6CH151	Engineering Chemistry Lab
8	2	6EN151	Basic Electronics Engineering Lab
9	3	6ME251	Thermodynamics Lab
10	3	6ME252	Materials Engineering Lab
11	3	6ME254	Manufacturing Processes-I Lab
12	4	6ME272	Fluid Mechanics and Fluid Machines Lab
13	4	6ME273	Manufacturing Processes-II Lab
14	4	6ME274	Kinematics and Theory of Machines Lab
15	4	6ME275	Machine Drawing and CAD Lab
16	4	6HS201	Presentation and Report Writing
17	5	5ME353	Manufacturing Technology Lab
18	5	5ME351	Heat Transfer Lab
19	5	5ME352	Applied Thermodynamics Lab
20	5	5ME345	Mini-Project 1
21	5	5ME346	Mini-Project 2
22	5	5HS301	Humanities-1: German Language
23	6	5ME371	Design of Machine Elements Lab
24	6	5ME372	Automation in Manufacturing Lab
25	6	5ME373	Engineering Metrology Lab
26	6	5ME391	Mini-Project 3
27	6	5ME392	Mini-Project 4
28	6	5HS302	Humanities-2: Human Relations at Work
29	7	5ME451	Mechanical Vibrations Lab
30	7	5ME452	Refrigeration and Air Conditioning Lab
31	7	5ME441	Mini-Project-5
32	7	5ME453	Techno-Socio Activity
33	7	5ME454	Project-I
34	7	5ME455	Humanities-3 Project Management
35	8	5ME491	Project- II



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## Open Electives offered by B.Tech. (Mechanical) to other programmes AY 2022-23

Sr.No.	Offering Dept	Sem	Course Code	Course Name
<b>Open Electives Offered</b>				
1	Mech	5	5OE330	Energy Engineering
2	Mech	5	5OE329	Non-conventional Machining Processes
3	Mech	6	5OE336	3D Printing
4	Mech	6	5OE337	Basics of Automobile Engineering
5	Mech	7	5OE429	Industrial Automation



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## Open Electives available from other programmes to B.Tech. (Mechanical) AY 2022-23

Sr.No.	Offering Dept	Sem	Course Code	Course Name
<b>Open Electives Available</b>				
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	5OE415	Management for Engineers
6	Elect	5	5OE343	Electrical Machine Technology
7	Elect	5	5OE344	Industrial Instrumentation
8	Elect	6	5OE350	Renewable Energy
9	Elect	6	5OE351	Energy Management
10	Elect	7	5OE443	Industrial Automation NPTEL
11	Eln	5	5OE356	Signals and Systems
12	Eln	5	5OE357	Introduction to Electronics system
13	Eln	6	5OE364	Cyber Physical System
14	Eln	6	5OE365	Biomedical Engineering
15	Eln	7	5OE457	Medical Image Processing
16	CSE	5	5OE372	Data Science using Python
17	CSE	5	5OE371	Software Engineering and Database Essentials
18	CSE	6	5OE378	Fundamentals of Internet of Things
19	CSE	6	5OE379	Artificial Intelligence and Machine Learning
20	CSE	7	5OE471	Cyber Security
21	IT	5	5OE385	Joy of Python Programming
22	IT	5	5OE386	Cloud Computing System
23	IT	6	5OE392	Web Development & Applications
24	IT	6	5OE393	Fundamentals Of Machine Learning
25	IT	7	5OE485	Data Visualization & Interpretation