Walchand College of Engineering

(Government Aided Autonomous Institute)

Vishrambag, Sangli. 416415

*** Platinum Jubilee Year ***

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

2021-22

Credit System for Final Year B.Tech. (Mechanical 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		Solid Mechanics	3	1	0	0	4	4	20	20	60
			Professional Core (Lab)									
2	PR		Project I and Seminar	0	0	6	0	6	3	30	30	40
			Professional Elective (Theory)									
3	PE	Refer list	Elective 4	3	0	0	0	3	3	20	20	60
4	PE	Refer list	Elective 5	3	0	0	0	3	3	20	20	60
5	PE	Refer list	Elective 6	3	0	0	0	3	3	20	20	60
			Professional Elective (Lab)									
6	PE	Refer list	Elective 4 Lab	0	0	2	0	2	1	30	30	40
7	PE	Refer list	Elective 5 Lab	0	0	2	0	2	1	30	30	40
8	PE	Refer list	Elective 6 Lab	0	0	2	0	2	1	30	30	40
			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	17	1	12	0	30	22			

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

Sr.No.	Track	Course Code	Course Name
Elective 4			
1	Design Engineering		Finite Element Analysis
2	Thermal Engineering		Computational Fluid Dynamics
3	Production Engineering		Foundry Technology
4	Production Engineering		Industrial Engineering
Elective 4 Lab			
1	Design Engineering		Finite Element Analysis Lab
2	Thermal Engineering		Computational Fluid Dynamics Lab
3	Production Engineering		Foundry Technology Lab
4	Production Engineering		Industrial Engineering Lab
Elective 5			
1	Design Engineering		Dynamics of Machines
2	Thermal Engineering		Gas Dynamics and Jet Propulsion
3	Production Engineering		Computer Integrated Manufacturing
Elective 5 Lab			
1	Design Engineering		Dynamics of Machines Lab
2	Thermal Engineering		Gas Dynamics and Jet Propulsion Lab
3	Production Engineering		Computer Integrated Manufacturing Lab
Elective 6			
1	Production Engineering		Computer Aided Design
2	Production Engineering		Non-Conventional Machining
3	Thermal Engineering		Refrigeration and Air Conditioning
Elective 6 Lab			
1	Production Engineering		Computer Aided Design Lab
2	Production Engineering		Non-Conventional Machining Lab
3	Thermal Engineering		Refrigeration and Air Conditioning Lab

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

Sr.No.	Offering Dept	Sem	Course Code	Course Name
			Open Elective 3	
1	Civil	7		Management for Engineers
2	Elect	7		Industrial Automation NPTL
3	Eln	7		Medical Image Processing
4	CSE	7		Cyber Security
5	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. (Mechanical 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	PR		Project 2	0	0	16	0	16	8	30	30	40
2	PC		Skill Based Learning	0	0	2	0	2	1	30	30	40
3	PC		Summer Internship	0	0	0	1	1	1	30	30	40
Professional Elective (Theory)												
4	PE	Refer list	Elective 7	3	0	0	0	3	3	20	20	60
5	PE	Refer list	Elective 8	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	1	25	16			

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

Sr.No.	Track	Course Code	Course Name
Elective 7			
1	Production Engineering		Product Life Cycle Management
2	Production Engineering		Robotics
3	Production Engineering		Total Quality Management
Elective 8			
1	Design Engineering		Mechanical System Design
2	Design Engineering		Design of Transmission Systems
3	Design Engineering		Experimental Stress Analysis

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.

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   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.

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

Sr.No.	Sem	Elective	Course Code	Course Name
Design Engineering				
1	5	Elective 1		Advanced Strength of Materials
2	5	Elective 2 Lab		Industrial Hydraulics and Pneumatics Lab
3	5	Elective 2 Lab		Mechanical Measurement and Control Lab
4	6	Elective 3		Design and Optimization of Mechanical Elements
5	7	Elective 4		Finite Element Analysis
6	7	Elective 5		Dynamics of Machines
7	7	Elective 4 Lab		Finite Element Analysis Lab
8	7	Elective 5 Lab		Dynamics of Machines Lab
9	8	Elective 8		Mechanical System Design
10	8	Elective 8		Design of Transmission Systems
11	8	Elective 8		Experimental Stress Analysis
Production Engineering				
1	5	Elective 1		Plastic Technology
2	5	Elective 1		Composite Materials
3	5	Elective 2 Lab		Mechatronics Systems Lab
4	5	Elective 2 Lab		Microprocessors in Automation Lab
5	6	Elective 3		Operations Research
6	6	Elective 4 Lab		Robotics Lab
7	6	Elective 4 Lab		Industry 4.0 Lab
8	7	Elective 4		Foundry Technology
9	7	Elective 4		Industrial Engineering
10	7	Elective 5		Computer Integrated Manufacturing
11	7	Elective 6		Computer Aided Design
12	7	Elective 6		Non-Conventional Machining
13	7	Elective 4 Lab		Foundry Technology Lab
14	7	Elective 4 Lab		Industrial Engineering Lab
15	7	Elective 5 Lab		Computer Integrated Manufacturing Lab
16	7	Elective 6 Lab		Computer Aided Design Lab

17	7	Elective 6 Lab		Non-Conventional Machining Lab
18	8	Elective 7		Product Life Cycle Management
19	8	Elective 7		Robotics
20	8	Elective 7		Total Quality Management
Thermal Engineering				
1	6	Elective 3		Energy Conservation and Management
2	6	Elective 3		Power Plant Engineering
3	6	Elective 4 Lab		Internal Combustion Engine Lab
4	7	Elective 4		Computational Fluid Dynamics
5	7	Elective 5		Gas Dynamics and Jet Propulsion
6	7	Elective 6		Refrigeration and Air Conditioning
7	7	Elective 4 Lab		Computational Fluid Dynamics Lab
8	7	Elective 5 Lab		Gas Dynamics and Jet Propulsion Lab
9	7	Elective 6 Lab		Refrigeration and Air Conditioning Lab

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

Sr.No.	Sem	Course Code	Course Name	GATE Mapping
				GATE Mapping
1	1	5MA101	Engineering Mathematics-I	Differential equations
2	1	5CV101	Engineering Mechanics	Free body Diagram, Kinematics and Dyamics
3	2	5MA102	Engineering Mathematics-II	Linear Algebra
4	3	5MA201	Probability and Statistics	Probability and Statistics
5	3	5ME201	Thermodynamics	Laws of Thermodynamics
6	3	5ME202	Materials Engineering	Material Properties
7	3	5ME203	Strength of Materials	Stress-strain diagram, beams, columns
8	3	5ME204	Manufacturing Processes	Manufacturing Processes
9	4	5ME221	Applied Mathematics for Mechanical Engineers	Vector, Fourier Series, Differential Equations
10	4	5ME222	Fluid Mechanics and Fluid Machines	Fluid Properties, Bernoulies Equations
11	4	5ME223	Metal Forming	Behaviour of Materials
12	4	5ME224	Kinematics and Theory of Machines	Plane Mechanisms
13	5		Heat Transfer	Heat Conduction and Radiation
14	5		Manufacturing Technology Lab	Tools used for Machining
15	6		Design of Machine Elements	Design of Static and Dynamic Loading
16	6		Engineering Metrology	Limit, Fit and Tolerances

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List of Professional Core (Theory) Courses for B.Tech. (Mechanical 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	5ME201	Thermodynamics
14	3	5ME202	Materials Engineering
15	3	5ME203	Strength of Materials
16	3	5ME204	Manufacturing Processes
17	4	5ME221	Applied Mathematics for Mechanical Engineers
18	4	5ME222	Fluid Mechanics and Fluid Machines
19	4	5ME223	Metal Forming
20	4	5ME224	Kinematics and Theory of Machines
21	4	5ME225	Instrumentation and Control
22	5		Heat Transfer
23	5		Applied Thermodynamics
24	6		Design of Machine Elements
25	6		Automation in Manufacturing
26	6		Engineering Metrology
27	7		Solid Mechanics

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List of Professional Core (Lab) Courses for B.Tech. (Mechanical 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	5ME251	Thermodynamics Lab
10	3	5ME252	Materials Engineering Lab
11	3	5ME256	Workshop-1
12	4	5ME272	Fluid Mechanics and Fluid Machines Lab
13	4	5ME273	Metal Forming and Manufacturing Lab
14	4	5ME274	Kinematics and Theory of Machines Lab
15	4	5ME276	Presentation and Report Writing
16	5		Manufacturing Technology Lab
17	5		Heat Transfer Lab
18	5		Applied Thermodynamics Lab
19	5		Mini-Project 1
20	5		Mini-Project 2
21	5		Humanities-1: German Language
22	6		Design of Machine Elements Lab
23	6		Automation in Manufacturing Lab
24	6		Engineering Metrology Lab
25	6		Mini-Project 3
26	6		Mini-Project 4
27	6		Humanities-2: Human Relations at Work
28	7		Project I and Seminar
29	8		Project 2
30	8		Skill Based Learning
31	8		Summer Internship

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

Sr.No.	Offering Dept	Sem	Course Code	Course Name
1	Mech	5		Energy Engineering
2	Mech	5		Non-conventional Machining Processes
3	Mech	6		3D Printing
4	Mech	6		Basics of Automobile Engineering
5	Mech	7		Automobile Engineering
6	Mech	7		Industrial Automation
7	Mech	7		Aerospace Engineering

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

Sr.No.	Offering Dept	Sem	Course Code	Course Name
Open Electives Available				
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
6	Elect	5		Electrical Machine Technology
7	Elect	5		Industrial Instrumentation
8	Elect	6		Renewable Energy
9	Elect	6		Energy Management
10	Elect	7		Industrial Automation NPTL
11	Eln	5		Signals and Systems
12	Eln	5		Introduction to Electronics system
13	Eln	6		Cyber Physical System
14	Eln	6		Biomedical Engineering
15	Eln	7		Medical Image Processing
16	CSE	5		Data Science using Python
17	CSE	5		Software Engineering and Database Essentials
18	CSE	6		Fundamentals of Internet of Things
19	CSE	6		Artificial Intelligence and Machine Learning
20	CSE	7		Cyber Security
21	IT	5		Joy of Python Programming
22	IT	5		Cloud Computing System
23	IT	6		Web Development & Applications
24	IT	6		Fundamentals Of Machine Learning
25	IT	7		Data Visualization & Interpretation