

Bharati Vidyapeeth Deemed University
College of Engineering, Pune- 411043
The Structure of the Curriculum: 2014 Course
Choice Based Credit System (CBCS)

B. TECH. MECHANICAL: SEMESTER- I to VIII



Bharati Vidyapeeth University
College of Engineering, Pune
Department of Mechanical Engineering



Vision of the Bharati Vidyapeeth (Deemed to be University) College of Engineering is:

To be a World Class Institute for Social Transformation through Dynamic Education

Missions of the Bharati Vidyapeeth (Deemed to be University) College of Engineering are:

- *To provide quality technical education with advanced equipment, qualified faculty members, infrastructure to meet needs of profession & society.*
- *To provide an environment conducive to innovation, creativity, research and entrepreneurial leadership.*
- *To practice and promote professional ethics, transparency and accountability for social community, economic & environmental conditions.*

Goals of the Bharati Vidyapeeth (Deemed to be) University College of Engineering are:

- *Recruiting experienced faculty.*
- *Organizing faculty development programs.*
- *Identifying socio-economically relevant areas & emerging technologies.*
- *Constant review & up gradation of curricula.*
- *Up gradation of laboratories, library & communication facilities.*
- *Collaboration with industry and research & development organizations.*
- *Sharing of knowledge, infra-structure and resources.*
- *Training, extension, testing and consultancy services.*
- *Promoting interdisciplinary research.*

Vision of the Mechanical Engineering Department is:

To develop, high quality Mechanical Engineers through dynamic education to meet social and global challenges.

Mission Statements of the Mechanical Engineering Department are:

- *To provide extensive theoretical and practical knowledge to the students with well-equipped laboratories and ICT tools through motivated faculty members.*
- *To inculcate aptitude for research, innovation and entrepreneurial qualities in students.*
- *To acquaint students with ethical, social and professional responsibilities to adapt to the demands of working environment.*

Program Educational Objectives (PEOs) of the B. Tech. Mechanical are:

Graduates will be able,

- *To fulfill need of industry and society with theoretical and practical knowledge.*
- *To engage in research, innovation, lifelong learning and continued professional development.*
- *To fulfill professional ethics and social responsibilities.*

PROGRAM OUTCOMES

Engineering Graduates will be able to:

- 1. Engineering knowledge:*** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:*** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:*** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:*** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage:*** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society:*** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:*** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics:*** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and team work:*** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. Communication:*** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11. Project management and finance:*** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: *Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.*

Statements of Programme Specific Outcomes (PSOs)

PSO1: Apply the knowledge of thermal, design, manufacturing engineering and computational sciences to solve Mechanical Engineering problems.

PSO2: Apply Mechanical Engineering principles for research, innovation and develop entrepreneurial skills.

PSO3: Apply concepts of mechanical engineering to assess' societal, environmental, health and safety issues with professional ethics.

B. TECH. MECHANICAL: SEMESTER- I (2014 Course)

S.N.	Course	Teaching Scheme (Contact Hrs./ week)			Examination Scheme (Marks)						Total Credits		
		L	P/D	T	End Sem. Exam	Continuous Assessment				Total	TH	TW	Total
						Unit Test	Attendance	Assignments	TW				
1.	Engineering Mathematics – I	3	-	1	60	20	10	10	-	100	3	1	4
2.	Fundamentals of Civil Engineering	3	2	-	60	20	10	10	25	125	3	1	4
3.	Engineering Graphics *	4	2	-	60	20	10	10	25	125	4	1	5
4.	Engineering Physics	4	2	-	60	20	10	10	25	125	4	1	5
5.	Fundamentals of Electrical Engineering	3	2	-	60	20	10	10	25	125	3	1	4
6.	Professional skill Development – I	2	-	-	50		-	-	-	50	2	-	2
7.	Workshop Technology	-	2	-	-	-	-		50	50	-	1	1
	Total	19	10	1	350	100	50	50	150	700	19	6	25

L: Lectures, P/D: Practical/ drawing, T: Tutorial, TH: Theory, TW: Term work

* End Semester examination of duration 4 Hours.

B. TECH. (MECHANICAL) SEM.-II (2014 COURSE)

S. N	Course	Teaching Scheme (Contact Hrs./week)			Examination Scheme (Marks)						Total Credits		
		L	P/D	T	End Sem. Exam	Continuous Assessment				Total	TH	TW	Total
						Unit Test	Attendance	Assignments	TW				
1.	Engineering Mathematics – II	3	-	1	60	20	10	10	-	100	3	1	4
2.	Fundamentals of Mechanical Engineering	3	2	-	60	20	10	10	25	125	3	1	4
3.	Engineering Mechanics	4	2	-	60	20	10	10	25	125	4	1	5
4.	Engineering Chemistry	4	2	-	60	20	10	10	25	125	4	1	5
5.	Mechanical Engineering Drawing*	2	4	-	60	20	10	10	25	125	2	2	4
6.	Professional skill Development-II	2	-	-	50	-	-	-	-	50	2	-	2
7.	Production Practice- I	-	2	-	-	-	-	-	50	50	-	1	1
	Total	18	12	1	350	100	50	50	150	700	18	7	25

L: Lectures, P/D: Practical/ drawing, T: Tutorial, TH: Theory, TW: Term work

* End Semester examination of duration 4 Hours.

Total Credits Sem. I - 25

Total Credits Sem. II -25

Grand Total -50

B. TECH. MECHANICAL: SEMESTER- III (2014 Course)

S.N	Course	Teaching Scheme (Contact Hrs./week)			Examination Scheme (Marks)							Total Credits		
		L	P/D	T	End Sem. Exam	Continuous Assessment					Total	TH	TW	Total
						Unit Test	Attendance	Assignments	TW/ OR	TW/ PR				
1.	Solid Mechanics	4	-	-	60	20	10	10	-	-	100	4	-	4
2.	Fluid Mechanics	4	2	-	60	20	10	10	-	50	150	4	1	5
3.	Engineering Thermodynamics	3	2	-	60	20	10	10	50	-	150	3	1	4
4.	Engineering Mathematics III	3	-	-	60	20	10	10	-	-	100	3	-	3
5.	Computer Programming and Simulation	3	2	-	60	20	10	10	-	50	150	3	1	4
6.	Professional skill Development-III	4	-	-	100	-	-	-	-	-	100	4	-	4
7.	Production Practice- II #	-	2	-	-	-	-	-	-	50	50	-	1	1
	Total	21	08	0	400	100	50	50	50	150	800	21	4	25

L: Lectures, P/D: Practical/ drawing, T: Tutorial, TH: Theory, TW: Term work

Practical examination of duration 3 Hours.

B. TECH. (MECHANICAL) SEM.-IV (2014 COURSE)

S.N	Course	Teaching Scheme (Contact Hrs./week)			Examination Scheme (Marks)							Total Credits		
		L	P/D	T	End Sem Exam	Continuous Assessment					Total	TH	TW	Total
						Unit Test	Attendance	Assignments	TW/ OR	TW/ PR				
1.	Mechanisms of Machines*	4	2	-	60	20	10	10	50	-	150	4	1	5
2.	Manufacturing Process	3	-	-	60	20	10	10	-	-	100	3	-	3
3.	Material Science	3	2	-	60	20	10	10	-	50	150	3	1	4
4.	Turbomachinery	3	-	-	60	20	10	10	-	-	100	3	-	3
5.	Numerical. Methods. and Optimization Techniques	3	2	1	60	20	10	10	--	50	150	3	2	5
6.	Professional skill Development -IV	4	-	-	100	-		-	-	-	100	4	-	4
7.	Production Practice – III #	-	2	-	-	-	-	-	-	50	50	-	1	1
	Total	20	8	1	400	100	50	50	50	150	800	20	5	25

L: Lectures, P/D: Practical/ drawing, T: Tutorial, TH: Theory, TW: Term work

* End Semester examination of duration 4 Hours.

Practical examination of duration 3 Hours.

Total Credits Sem. III– 25

Total Credits Sem. IV – 25

Grand Total - 50

B. TECH. MECHANICAL: SEMESTER- V (2014 Course)

S. N.	Course	Teaching Scheme (Contact Hrs. /week)			Examination Scheme (Marks)							Total Credits		
		L	P/ D	T	End Sem. Exam.	Continuous Assessment					Total	TH	TW	Total
						Unit Test	Attendance	Assignments	TW/ OR	TW/ PR				
1.	Machine Design –I*	3	2	-	60*	20	10	10	50	--	150	3	1	4
2	Theory of Machines	4	2	-	60	20	10	10	50	--	150	4	1	5
3.	Advanced Computer Graphics & Solid Modelling	3	2	-	60	20	10	10	--	50	150	3	1	4
4.	Heat and Mass Transfer	4	2	-	60	20	10	10	50	--	150	4	1	5
5.	Advanced Manufacturing Processes	3	--	-	60	20	10	10	--	--	100	3	--	3
6.	Professional skill Development-V	4	--	-	100	-		-	--	--	100	4	--	4
	Total	21	08	0	400	100	50	50	150	50	800	21	4	25

* End Semester examination of duration 4 Hours.

B. TECH. MECHANICAL: SEMESTER- VI (2014 Course)

S. N.	Course	Teaching Scheme (Contact Hrs. /week)			Examination Scheme (Marks)							Total Credits		
		L	P/ D	T	End Sem. Exam	Continuous Assessment					Total	TH	TW	Total
						Unit Test	Attendance	Assignments	TW/ OR	TW/ PR				
1.	Machine Design –II*	4	2	--	60*	20	10	10	50	--	150	4	1	5
2	Refrigeration Air Conditioning	3	2	--	60	20	10	10	50	--	150	3	1	4
3.	Internal Combustion Engines	3	2	-	60	20	10	10	-	50	150	3	1	4
4.	Mechanical Measurement & Metrology	4	2	--	60	20	10	10	--	50	150	4	1	5
5.	Elective -I	3	--	--	60	20	10	10	--	--	100	3	--	3
6.	Professional skill Development-VI	4	--	--	100	-		-	--	--	100	4	--	4
	Total	21	8	--	400	100	50	50	100	100	800	21	4	25

* End Semester examination of duration 4 Hours.

Total Credits Sem. V – 25

Total Credits Sem. VI – 25

Grand Total – 50

Elective-I

- 1) Machine Tool Design
- 2) Energy Audit and Management
- 3) Reliability Engineering
- 4) Design of Pumps, Blowers and Compressors
- 5) Management Information System

B. Tech. Mechanical Sem.- VII

Sr. No.	Course	Teaching Scheme (Contact Hrs./Week)			Examination Scheme (Marks)							Total Credits		
		L	P/D	T	End Sem. Exam	Continuous Assessment					Total	TH	TW	Total
						Unit Test	Attendance	Assignments	TW/OR	TW/PR				
1	Mechanical Vibration	3	2	--	60	20	10	10	50	--	150	3	1	4
2	Automatic Control System	3	2	--	60	20	10	10	50	--	150	3	1	4
3	Automobile Engineering	3	--	--	60	20	10	10	--	--	100	3	--	3
4	Industrial Fluid Power	3	--	--	60	20	10	10	--	--	100	3	--	3
5	Elective - II	3	-	--	60	20	10	10	--	--	100	3	--	3
6	Inplant Training	-	--	--	--	--	--	--	50	--	50	--	4	4
7	Project Stage -I	--	2		--	--	--	--	100	--	100	--	4	4
Total		15	06	00	300	100	50	50	250	--	750	15	10	25

Elective-II Courses: a) Computational Fluid Dynamics; b) Industrial Engineering & Management; c) Nanotechnology; d) Production Planning & Control
e) Experimental Methods in Mechanical Engineering

B. Tech. Mechanical Sem.- VIII

Sr. No.	Course	Teaching Scheme (Contact Hrs./Week)			Examination Scheme (Marks)							Total Credits		
		L	P/D	T	End Sem. Exam	Continuous Assessment					Total	TH	TW	Total
						Unit Test	Attendance	Assignments	TW/OR	TW/PR				
8	Power Plant Engineering	4	2	--	60	20	10	10	50	--	150	4	1	5
9	Industrial Product Design	3	2	--	60	20	10	10	50	--	150	3	1	4
10	Optimum Design*	4	2	--	60	20	10	10	50	--	150	4	1	5
11	Elective-III	3	--	--	60	20	10	10	--	--	100	3	--	3
12	Project Stage –II	-	4	--	--	--	--	--	200	--	200	--	8	8
13	Environmental Sciences	3	--	--	100	--	--	--	--	--	100	3	--	3
Total		14	10	00	240	80	40	40	350	--	750	14	11	25

* End Sem. examination of duration 4 hours

Elective – III Courses: a) Industrial Automation & Robotics; b) Cryogenics; c) Project Management & Ethics; d) Total Quality Management;
e) Finite Element Analysis