POORNIMA
COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

CURRICULUM DELIVERY PLAN

OUTLINE-EVEN SEM-2023-24

ISI-6, RIICO Institutional Area, Sitapura, Jaipur-302022 (Rajasthan)

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• Website: www.pce.poornima.org

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1 The Institution ensures effective curriculum planning and delivery through a well-planned and documented process including Academic calendar and conduct of Continuous Internal Assessment (CIA)

PCE is affiliated to RTU, Kota and follows the planned and prescribed curriculum of university. The Internal Quality Assurance Cell (IQAC) of PCE takes the responsibility of monitoring the effective delivery of the curriculum through a well-planned and documented process. To ensure effective curriculum delivery, a Curriculum Delivery Plan (CDP) is prepared by all PACs of the respective departments. A CDP includes detailed planning for preparation, verification, execution and adherence to all documents related to academic delivery of all courses. As per the directions received from IQAC, the Examination cell plans for the Continuous Internal Assessment. Examination cell then circulate CIA planning to the PAC. Examination cell sends all the CIE Data to Director's Office for the final approval before its submission to RTU. Detail outlines are as follows.

1. Director Office, PCE receives the curriculum from RTU, Kota through university website.
2. IQAC prepares institute academic calendar aligned with RTU academic calendar considering input received in last GC meeting and other stakeholders. IQAC forwards the Institute Academic Calendar to PAC (Program Assessment Committee) for identifying curriculum gaps and examination cell for CIE. PACs then prepares CDPs after consolidating the course specific planning received from the respective faculty members.
3. A CDP includes activities for gap abridgement which are proposed to be carried out by the faculty members.
4. IQAC also instructs PACs to prepare the department activity calendar. PACs receives approval of department activity calendars and CDPs from DABs before its final approval from IQAC.
5. IQAC also reviews the CDPs approved by DABs and gives suggestions/ approvals periodically. All the activities (SPL, Industrial visit, workshop etc.) planned are taken into consideration for the Department activity calendar after the approval from DABs.
6. Subject wise Course files are prepared by respective faculty, comprising of Syllabus, ABC analysis, Blown-Up, Deployment, Lecture notes, Zero Lecture, Tutorial and Assignment sheets, COs Statements, and Mapping with POs and PSOs.
7. Faculty frequently use ICT tools for more effective content delivery using PPTs, video lectures etc.
8. Student attendance is monitored by tutors and chief proctor office with help of SHARP ERP software. Attendance defaulters are regularly counseled through their tutors for improving their attendance.
9. Institute also conducts Annual Internal Academic Audit for the effectiveness of teaching-learning methodologies and the necessary actions are taken as suggested by the audit team.
10. Conferences, seminars, webinars, workshops, expert lectures, STTPs, and FDPs are organized throughout the year on the recent advances in the field of engineering.
11. Continuous Internal Assessment process includes Midterm exam, Tutorials, Assignments, Quizzes, presentation, Class Test, viva-voce etc.
12. As per the RTU examination scheme, mid semester examinations are conducted centrally by examination cell as per the planning & academic calendar and other assessments are conducted at departmental level.
13. All the evaluations are carried out by the faculty members which include COs-POs attainment, Gap identification & action taken for the fulfillment of gap.
14. Student feedback and attainment of COs-POs are reviewed by the PAC for any revision in planning & Delivery.
15. End term semester examinations are conducted by the RTU, Kota.

2 Vision & Mission Statements

2.1 Vision & Mission Statements of the Institute

Vision of Institution

To create knowledge-based society with scientific temper, team spirit and dignity of labor to face the global competitive challenges

Mission of Institution

To evolve and develop skill-based systems for effective delivery of knowledge so as to equip young professionals with dedication & commitment to excellence in all spheres of life

2.2 Vision & Mission Statements of the Program B. Tech. (Mechanical Engineering)

Vision and mission are the essential part of the growth of an institute, the vision and mission are as follows

2.2.1 Vision of Department

To be recognized for quality education in the field of Mechanical Engineering and identified for its innovation & excellence

2.2.2 Mission of Department

• To provide education that transforms students through rigorous teaching and thought process to fulfill the needs of the society and industry

• To collaborate with leading industry partners and other academic & research institutes around the world to strengthen the education and research ecosystem.

• To prepare students with life-long learning for their career by fostering in them the ethical & technical capabilities pertinent to mechanical & allied engineering.

2.2.3 PEO of the Department

Program Educational Objectives (PEOs

1. **PEO 1**: Graduate will have Fundamental & multidisciplinary knowledge with an ability to analyze, design, innovates and handles the realistic problems.
2. **PEO 2**: Graduate will possess ethical conduct, sense of responsibility to serve society and protect the environment.
3. **PEO 3**: Graduate will have strong foundation in academics, leadership qualities and lifelong learning for a prosperous professional career.

2.2.4 Program Specific Outcome (PSOs)

PSO1. Design, analyze and innovate solutions to technical issues in Thermal, Production and Design Engineering.

PSO2. Exhibit the knowledge and skills in the field of Mechanical & Allied engineering concepts.

PSO3. Apply the knowledge of skills in HVAC&R and Automobile engineering.

2.3 Program Outcomes (PO)

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.

3 Department Academic & Administrative Bodies - Structure & Functions

3.1 Department Advisory Board (DAB)

3.1.1 Primary Objective

Department Advisory Board (DAB) of Department of Mechanical Engineering, PCE, Jaipur is formed to provide necessary suggestions for developing a structured approach for continuous improvement in curriculum delivery, planning and incorporation of Curricular, Extra and Co-Curricular activities needed to abridge the pre-identified curriculum gaps.

3.1.2 Roles & Responsibilities

1. Suggest improvement in academic plans and recommend standard practices/system for attainment of Program Educational Objectives, Program Outcomes, Program Specific Outcomes and Course Outcomes.
2. Provide guidelines for industry-institute interactions to bridge up curriculum/industry gap and suggest quality improvement initiatives to enhance employability.
3. Develop a structured Curriculum Delivery Plan, Department Academic Calendar and seek approval for them from Internal Quality Assurance Cell.
4. Incorporate suggestions received from Program Assessment Committee (PAC) by including proposed activities for bridging curricular gaps identified.
5. To identify and suggest thrust areas to conduct various activities (final year projects, training courses and additional experiments to meet PEOs, and propose necessary action plan for skill development of students, required for entrepreneurship development and quality improvement.

3.1.3 Department-Wise Composition

S. No.	Category	Nominated by	Name of Members	Address
1	Chairman, DAB-ME	Chairman, IQAC	Dr. Mahesh M. Bundele (Principal & Director, PCE)	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
2	Member Secretary	Chairman, DAB-ME	Dr. Narayan Lal Jain Professor & Head. ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
3	Faculty representative-1	Chairman, DAB-ME	Dr. Rajkumar Satankar Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
4	Faculty representative-2	Chairman, DAB-ME	Dr. Akshay Jain Associate Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
5	Faculty representative-3	Chairman, DAB-ME	Dr. Mukesh Kumar Didwania Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur

6	Faculty representative-4	Chairman, DAB-ME	Dr. Amit Mandal Associate Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
7	Faculty representative-5	Chairman, DAB-ME	Mr. Sanjay Kumawat Assistant Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
8	Special Invitee	Chairman, DAB-ME	Dr. Rekha Nair Dean, First Year	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
9	Alumni Representative-1	Chairman, DAB-ME	Mr. Ashish Sonwal	Pinnacle Infotech Solution
10	Alumni Representative-2	Chairman, DAB-ME	Mr. Sudipt Sharma	Pinnacle Infotech Solution
11	Student Representative	Chairman, DAB-ME	Mr. Jatinder Kumar	ME, PCE, Final Year Student
12	Industry Representative	Chairman, DAB-ME	Mr. Ashok Joshi,	HR, Pinnacle Infotech Solution
13	Parents Representative-1	Chairman, DAB-ME	Mr. Gajendra Kumar Joshi	Panjab Keshri, Jaipur
14	Parents Representative-2	Chairman, DAB-ME	Mr. Mahipal Singh Yadav	Businessman Kalwad, Jaipur

3.1.4 Meeting Frequency & Objectives

Meeting No.	Meeting Code	Meeting Month-Week	Meeting Objective
1.	DAB-1	July First Week	● Consideration of gaps and proposed activities by PAC last meeting to be implemented in DAC and CDP. ● Prepares final draft of CDP and DAC to be proposed in upcoming IQAC meeting
2.	DAB-2	September Second Week	● Approval / Suggestions of proposals from last PAC Meeting. ● Revision of DAB Drafts for being proposed in upcoming GC
3	DAB-3	December First Week	● Draft preparation for DAC and CDP for upcoming semester after considering inputs from PAC. ● Review Semester closure draft from PAC.
4.	DAB-4	April Last Week / May First Week	● Draft of PCE Academic Calendar and CDP proposed ● Previous session closure with gaps and feedback. ● Completion of ATR-2 for current semester based on last GC sessions and compiling it with ATR-1

3.2 Program Assessment Committee

3.2.1 Primary Objective

The primary objective of Program Assessment Committee (PAC) is to identify, bridge and assess the gaps in Program's Curriculum received from university through attainment calculation.

3.2.2 Roles & Responsibilities

1. Identify gaps in curriculum laid down by university and propose activities for bridging identified gaps.
2. Implement academic plans and standard practices/system for attainment of Program Educational Objectives, Program Outcomes, Program Specific Outcomes and Course Outcomes.
3. Regular Monitoring of curriculum gap abridgement and course deployment practices through pre-defined methods.
4. Execute Industry-Institute Interactions to enhance the employability thereby meeting the industry standards and requirements.
5. Implement Curriculum Delivery Plan & Department Academic Calendar.

3.2.3 Department-Wise Composition

S. No.	Category	Nominated by	Name of Members	Address
1	Chairman, PAC	Chairman, IQAC / Head of Institution	Dr. Narayan Lal Jain Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
2	Faculty representative-1	Chairman, PAC-ME	Dr. Rajkumar Satankar Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
3	Faculty representative-4	Chairman, PAC-ME	Dr. Mukesh Didwania Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
4	Faculty representative-2	Chairman, PAC-ME	Dr. Akshay Jain Associate Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
5	Faculty representative-3	Chairman, PAC-ME	Dr. Amit Mandal Assoc. Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
6	Faculty representative-6	Chairman, PAC-ME	Mr. Sanjay Kumawat Asst. Professor, ME	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur

3.2.4 Meeting Frequency & Objectives

Meeting No.	Meeting Code	Meeting Month-Week	Meeting Objective
1.	PAC-1	July Last Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps
2.	PAC-2	August Last Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments

			● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps
3.	PAC-3	September Last Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of academics gaps as previous attainment ● Assessment of activities required for being proposed in upcoming GC ● Submit report to Governing Council about previous semester & planning of next semester.
4.	PAC-4	November Third Week	● Inclusion of suggestions for revising gaps ● Execution of Academic, Extra and Co-Curricular activities according to suggestions in GC ● Regular calculation of attainments ● Revision of academics gaps as previous attainment ● Regular assessment of Academic, Extra and Co-Curricular activities ● Identification and proposal of gaps and activities to be considered by DAB to prepare Department Academic Calendar and CDP for upcoming semester. ● Semester closure report draft to be prepared ● Elective proposals/CBCS
5.	PAC-5	January Last Week	● Incorporation of suggestions from IQAC and DAB meetings in execution of Semester activities ● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps
6.	PAC-6	March Last Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps
7.	PAC-7	April Second Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps ● Draft preparation of Semester closure
8.	PAC-8	June Last Week	● Report submission of Semester closure ● Identification and proposal of gaps and activities to be considered by DAB to prepare Department Academic Calendar and CDP for upcoming semester. ● Feedback of last IQAC and suggestions for new semester to be implemented in CDP and DAC ● Elective proposals/CBCS

4 List of Faculty Members

Sr. No.	Faculty Name	Emp. ID	Designation	Email ID	Mobile No.
1.	Dr. Narayan Lal Jain	6528	PROFESSOR	narayan.jain@poornima.org	9414728922
2.	Dr. Mukesh Didwania	1977	PROFESSOR	mukesh.didwania@poornima.org	9717420063
3.	Dr. Raj Kumar Satankar	6144	ASSOCIATE PROFESSOR	rajkumar.satankar@poornima.org	8561995290
4.	Dr. Akshay Jain	6371	ASSOCIATE PROFESSOR	Akshay.jain@poornima.org	9685223729
5.	Dr. Amit Mandal	3939	ASSOCIATE PROFESSOR	amit.mandal@poornima.org	9829708558
6.	Mr. Sanjay Kumawat	3554	ASST PROFESSOR	sanjay.kumawat@poornima.org	9784384269
7.	Mr. Anant Bhardwaj	8505	ASST PROFESSOR	anant.bhardwaj@poornima.org	8595126400

5 Institute Academic Calendar

JANUARY 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

FEBRUARY 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

MARCH 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

APRIL 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JUNE 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

JULY 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

POORNIMA
COLLEGE OF ENGINEERING

Affiliated to RTU, Kota • Approved by AICTE & UGC under 2(f) • NAAC A+ Accredited

ACADEMIC CALENDAR 2023-24*#

EVEN SEMESTER

January 2024

Monday, 8	First Day, B. Tech. VIII Sem.
Thursday, 26	Republic Day Celebration
	RTU THEORY EXAMINATION FOR III & V SEMESTER [ODD SEMESTER 2023-24]

February 2024

Monday, 19	First Day, B. Tech. IV & VI Sem.
	RTU THEORY EXAMINATION FOR I SEMESTER [ODD SEMESTER 2023-24]
Monday, 26	First Day, B. Tech. II Sem.

March 2024

Monday, 04 to Wednesday, 06	First Mid Term Examination for B.Tech VIII Sem
Thursday, 14 to Saturday 16	Aarohan -2024
During Second/Third Week	Wise Activity

April 2024

Monday, 15 to Saturday, 20	First Mid Term Examination for B.Tech IV & VI Sem
Wednesday, 24	Last Teaching Day for B.Tech VIII Sem
Thursday, 25 to Saturday, 27	Second Mid-Term Examination for B.Tech VIII Sem
Monday, 29 to Wednesday 01 (May)	End-Term Practical Exams for B.Tech VIII Sem
Monday, 29 to Saturday, 04 (May)	First Mid Term Examination for B.Tech II Sem
	Farewell Function Batch 2020-24

May 2024

As Per RTU Schedule	End-Term Theory Exams for B.Tech VIII Sem
Saturday, 25 to Sunday, 26	Students' Council Meet

June 2024

Saturday, 8	Last Teaching Day for B.Tech IV & VI Sem
Monday, 10 to Saturday, 15	Second Mid-Term Examination for B.Tech IV & VI Sem
Monday, 17 to Wednesday 19	End-Term Practical Examination for B.Tech IV & VI Sem
As Per RTU Schedule	End-Term Theory Examination for B.Tech IV & VI Sem
Friday, 21	Last Teaching Day for B.Tech II Sem
Monday, 24 to Saturday, 29	Second Mid-Term Examination for B.Tech II Sem

July 2024

Monday, 01 to Wednesday 03	End-Term Practical Examination for B.Tech II Sem
As Per RTU Schedule	End-Term Theory Examination for B.Tech II Sem

HOLIDAYS IN EVEN SEMESTER

New Year	-	01 January, Monday - 02 January, Tuesday
Makar Sakranti	-	14 January, Sunday, 2024
Republic Day Celebration	-	26 January, Friday - 27 January, Saturday, 2024
Holi	-	23 March, Saturday - 26 March, Tuesday, 2024
Eid-ul-Fiter	-	11 April , Thursday - 13 April, Saturday, 2024
Ambedkar Jayanti	-	13 April, Saturday - 14 April, Sunday, 2024
Eid-al-Adha	-	15 June, Saturday - 17 June, Monday, 2024

*Subject to revision as per RTU notifications

#Annual Alumni Meet in December 28, 2024

6 Department Activity Calendar

Poornima College of Engineering, Jaipur					
Calendar for Mechanical Engineering : Even Semester - Session 2023-24					
(A) Academic Processes					
S. No.	**Activity/ Process**	**B.Tech. II Sem.**	**B.Tech. IV Sem.**	**B.Tech. VI Sem.**	**B.Tech. VIII Sem.**
A1	Date of Registration & start of regular classes for students	Monday, February 26, 2024	Monday, February 19, 2024	Monday, February 19, 2024	Monday, January 8, 2024
A2	Orientation programme	Monday, February 26,, 2024 to Saturday, February 28,, 2024	Monday, February 19, 2024 to Wednesday, February 21, 2024	Monday, February 19, 2024 to Wednesday, February 21, 2024	Monday, January 8, 2024 to Wednesday, January 10, 2024
A3	Date of submission of question papers by faculty members to secrecy for 1st Mid-term	Monday, April 22, 2024	Monday, April 8, 2024	Monday, April 8, 2024	Wednesday, February 28, 2024
A5	I Mid Term Theory & Practical Exam	Monday, April 29, 2024 to Saturday, May 4, 2024	Monday, April 15, 2024 to Saturday, April 20, 2024	Monday, April 15, 2024 to Saturday, April 20, 2024	Monday, March 04, 2024 to Wednesday, March 06, 2024
A6	Showing evaluated answer books of 1st Mid-term exam to students in respective classes	Upto Saturday, May 11, 2024	Upto Saturday, April 27, 2024	Upto Saturday, April 27, 2024	Upto Saturday, March 09, 2024
A7	Last date of submission of Evaluated Answer Books and Mark of First Mid-term Theory & Practical exam to Exam and Secrecy Cell respectively	Upto Saturday, May 18, 2024	Upto Saturday, May 4, 2024	Upto Saturday, May 4, 2024	Upto Saturday, March 16, 2024
A8	Date of submission of question papers by faculty members to secrecy for 2nd Mid-term	Monday, June 19, 2024	Thursday, May 25, 2024	Thursday, May 25, 2024	Monday, May 01, 2024
A9	Revision classes	To be declared later according to RTU Exam Schedule			
A10	Last Teaching Day	Friday, June 21, 2024	Saturday, June 08, 2024	Saturday, June 08, 2024	Wednesday, April 24, 2024
A11	2nd Mid-term theory & Practical Exams	Monday-Saturday, June 24-29, 2024	Monday-Saturday, June 10-15, 2024	Monday-Saturday, June 10-15, 2024	Thursday-Saturday, April 25-27, 2024
A12	End-Term Practical Exams	Monday, July 01 to Wednesday, July 03, 2024	Monday-Wednesday, June 17-19, 2024	Monday-Wednesday, June 17-19, 2024	Monday-Wednesday, April 29-May 1, 2024
(B) Events and Activities					
B1	Alumni Session				
B2	Intellectual Property Rights, Product Development & Entrepreneurship	February 13-17, 2024			
B3	Workshop on Advanced Research Methodology	April 24-28, 2024			
B4	Industrial Visit	May 8,2024			
B5	Third International Conference on Sustainable Energy, Environment and Green Technologies (ICSEEGT 2024)	June 15-17, 2024			
(C) Holidays					
C1	New Year	01 January, Monday - 02 January, Tuesday			
C2	Makar Sankranti	14 January, Sunday, 2024			
C3	Celebration of Republic Day	26 January, Friday - 27 January, Saturday, 2024			
C4	Holi	23 March, Saturday - 26 March, Tuesday, 2024			
C5	Eid-Ul-Fitr	11 April , Thursday - 13 April, Saturday, 2024			
C6	Ambedkar Jayanti	13 April, Saturday			
C7	Eid-Al-Adha	15 June, Saturday - 17 June, Monday, 2024			
C8	Summer Break	As per RTU Examination Schedule			
"स्वच्छ भारत.. सम्पन्न भारत.."					

7 Teaching Scheme

7.1 RTU Teaching Scheme

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Teaching & Examination Scheme

B.Tech. : Mechanical Engineering
2nd Year - IV Semester

THEORY												
SN	**Category**	**Course**		**Contact hrs/week**			**Marks**					**Cr**
		Code	**Title**	**L**	**T**	**P**	**Exm Hrs**	**IA**	**ETE**	**Total**		
1	BSC	4ME2-01	Data analytics	2	0	0	2	30	70	**100**		**2**
2	HSMC	4ME1-03/ 4ME1-02	Managerial Economics and Financial Accounting/ Technical Communications	2	0	0	2	30	70	**100**		**2**
3	ESC	4ME3-04	Digital Electronics	2	0	0	2	30	70	**100**		**2**
4	PCC	4ME4-05	Fluid Mechanics and Fluid Machines	3	1	0	3	30	70	**100**		**4**
5		4ME4-06	Manufacturing Processes	3	0	0	3	30	70	**100**		**3**
6		4ME4-07	Theory of machines	3	1	0	3	30	70	**100**		**4**
			Sub Total	15	2	0						**17**
PRACTICAL & SESSIONAL												
7	PCC	4ME3-21	Digital Electronics lab	0	0	3		60	40	**100**		**1.5**
8		4ME4-22	Fluid Mechanics lab	0	0	3		60	40	**100**		**1.5**
9		4ME4-23	Production practice lab	0	0	3		60	40	**100**		**1.5**
10		4ME4-24	Theory of machines Lab	0	0	3		60	40	**100**		**1.5**
11	SODECA	4ME8-00	Social Outreach, Discipline & Extra Curricular Activities							**100**		**0.5**
			Sub- Total	0	0	12						**6.5**
			TOTAL OF IV SEMESTER	15	2	12						**23.5**

L: *Lecture,* ***T:*** *Tutorial,* ***P:*** *Practical,* ***Cr:*** *Credits*

ETE: *End Term Exam,* ***IA:*** *Internal Assessment*

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Teaching & Examination Scheme
B. Tech.: Mechanical Engineering
3rd Year – VI Semester

THEORY											
SN	Category	Course Code	Course Title	Contact hrs/week L	T	P	Marks Exm Hrs	IA	ETE	Total	Cr
1	ESC	6ME3-01	Measurement and Metrology	2	0	0	3	30	70	**100**	**2**
2	PCC/ PEC	6ME4-02	CIMS	3	0	0	3	30	70	**100**	**3**
3		6ME4-03	Mechanical Vibrations	3	0	0	3	30	70	**100**	**3**
4		6ME4-04	Design of Machine Elements II	3	0	0	3	30	70	**100**	**3**
5		6ME4-05	Quality Management	3	0	0	3	30	70	**100**	**3**
6		Professional Elective II (any one)		3	0	0	3	30	70	**100**	**3**
		6ME5-11	Refrigeration and Air Conditioning								
		6ME5-12	NON Conventional Machining Methods								
		6ME5-13	MEMS and Microsystems								
		Sub Total		**17**	**0**	**0**					**17**
PRACTICAL & SESSIONAL											
7	PCC	6ME4-21	CIMS Lab	0	0	3	3	60	40	**100**	**1.5**
8		6ME4-22	Vibration Lab	0	0	3	3	60	40	**100**	**1.5**
9		6ME4-23	Machine Design Practice II	0	0	3	3	60	40	**100**	**1.5**
10		6ME4-24	Thermal Engineering Lab I	0	0	3	3	60	40	**100**	**1.5**
11	SODECA	6ME8-00	Social Outreach, Discipline & Extra Curricular Activities						100	**100**	**0.5**
		Sub- Total		**0**	**0**	**12**					**6.5**
		TOTAL OF VI SEMESTER		**17**	**0**	**12**					**23.5**

L: *Lecture,* ***T:*** *Tutorial,* ***P:*** *Practical,* ***Cr:*** *Credits*

ETE: *End Term Exam,* ***IA:*** *Internal Assessment*

Office of Dean Academic Affairs
Rajasthan Technical University, Kota

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Scheme & Syllabus

IV Year- VII & VIII Semester: B. Tech. (Mechanical Engineering)

Teaching & Examination Scheme
B.Tech.: Mechanical Engineering
4th Year – VIII Semester

SN	Category	Course		Contact hrs/week			Marks				Cr
		Code	Title	L	T	P	Exm Hrs	IA	ETE	Total	
THEORY											
1	PEC	8ME5-11	Hybrid and Electric Vehicles	3	0	0	3	30	120	**150**	**3**
2		8ME5-12	Supply and Operations Management								
3		8ME5-13	Additive Manufacturing								
4	OE		Open Elective - II	3	0	0	3	30	120	**150**	**3**
			Sub Total	**6**	**0**	**0**		**60**	**240**	**300**	**6**
PRACTICAL & SESSIONAL											
5	PCC	8ME4-21	Industrial Engineering Lab	0	0	2	2	30	20	**50**	**1**
6		8ME4-22	Metrology Lab	0	0	2	2	30	20	**50**	**1**
7	PSIT	8ME7-50	Project *#	3	0	0	3	210	140 #	**350**	**7**
8	SODECA	8ME8-00	Social Outreach, Discipline & Extra Curricular Activities	0	0	0		0	25	**25**	**0.5**
			Sub- Total	**3**	**0**	**4**		**270**	**205**	**475**	**9.5**
			TOTAL OF VIII SEMEESTER	**9**	**0**	**4**		**330**	**445**	**775**	**15.5**

*for the purpose of counting teaching load

#Evaluation by one internal and one external examiner (External examiner will preferably be from Industry)

L: *Lecture,* ***T:*** *Tutorial,* ***P:*** *Practical,* ***Cr:*** *Credits*

ETE: *End Term Exam,* ***IA:*** *Internal Assessment*

Office of Dean Academic Affairs
Rajasthan Technical University, Kota

8 PCE Teaching Scheme

POORNIMA COLLEGE OF ENGINEERING, JAIPUR

Department of Mechanical Engineering

Teaching Scheme 2023-24 (Even Semester)

Working Group	Year	Sem	Students	Deptt.	Teaching Scheme				Course Name	Subject Code	No. of Sec	No. of Batches	Batch Size (T/H/F)	Total Load (L)	Total Load (T)	Total Load (P)	Total Load (L+T+P)	Teaching Dept.	Cat.	Level of Difficulty
					L	T	P	Credit												
ME/Civil	2	4	22	ME	2	0	0	2	Data analytics	4ME2-01	1	1	F	3	0	0	3	ME	PCC	A
ME/Civil	2	4	22	ME	2	0	0	2	Managerial Economics and Financial Accounting	4ME1-03	1	1	F	3	0	0	3	HM	BSC	B
ME/Civil	2	4	22	ME	3	0	0	2	Digital Electronics	4ME3-04	1	1	F	3	0	0	3	EC	PCC	B
ME/Civil	2	4	22	ME	3	1	0	4	Fluid Mechanics and Fluid Machines	4ME4-05	1	1	F	3	1	0	4	ME	PCC	A
ME/Civil	2	4	22	ME	3	0	0	3	Manufacturing Processes	4ME4-06	1	1	F	3	0	0	3	ME	HSMC	B
ME/Civil	2	4	22	ME	3	1	0	4	Theory of Machines	4ME4-07	1	1	F	3	1	0	4	ME	PCC	A
ME/Civil	2	4	22	ME	0	0	3	1.5	Digital Electronics lab	4ME3-21	1	1	F	0	0	2	2	EC	PCC	B
ME/Civil	2	4	22	ME	0	0	3	1.5	Fluid Mechanics lab	4ME4-22	1	1	F	0	0	2	2	ME	PCC	B
ME/Civil	2	4	22	ME	0	0	3	1.5	Production Practice lab	4ME4-23	1	1	F	0	0	2	2	ME	PCC	B
ME/Civil	2	4	22	ME	0	0	3	1.5	Theory of machines Lab	4ME4-24	1	1	F	0	0	2	2	ME	PCC	B
ME/CIVIL	2	4	22																	
ME/Civil	3	6	22	ME	3	0	0	2	Measurement and Metrology	6ME3-01	1	1	F	3	0	0	3	ME	PCC	C
ME/Civil	3	6	22	ME	3	0	0	3	CIMS	6ME4-02	1	1	F	3	0	0	3	ME	PCC	C
ME/Civil	3	6	22	ME	3	0	0	3	Mechanical Vibrations	6ME4-03	1	1	F	4	0	0	4	ME	ESC	A
ME/Civil	3	6	22	ME	3	0	0	3	Design of Machine Elements II	6ME4-04	1	1	F	4	0	0	4	ME	PCC	A
ME/Civil	3	6	22	ME	3	0	0	3	Quality Management	6ME4-05	1	1	F	3	0	0	3	ME	PCC	B
ME/Civil	3	6	22	ME	3	0	0	3	Refrigeration and Air Conditioning	6ME5-11	1	1	F	3	0	0	3	ME	HSMC	A
ME/Civil	3	6	22	ME	0	0	3	1.5	CIMS Lab	6ME4-21	1	1	T	0	0	2	2	ME	PCC	B
ME/Civil	3	6	22	ME	0	0	3	1.5	Vibration Lab	6ME4-22	1	1	T	0	0	2	2	ME	PCC	B
ME/Civil	3	6	22	ME	0	0	3	1.5	Machine Design Practice II	6ME4-23	1	1	T	0	0	2	2	ME	ESC	B
ME/Civil	3	6	22	ME	0	0	3	1.5	Thermal Engineering Lab I	6ME4-24	1	1	T	0	0	2	2	ME	PCC	B
ME/CIVIL	2	4	22																	
ME/Civil	4	8	61	ME	3	0	0	3	Hybrid and Electric Vehicle	8ME5-11	1	1	F	3	0	0	3	ME	PCC/PEC	B
ME/Civil	4	8	61	ME	3	0	0	3	Open Elective	OE	1	NA	F	3	0	0	3	ME	OE	A
ME/Civil	4	8	61	ME	0	0	2	1	Industrial Engineering Lab	8ME4-21	1	1	T	0	0	2	2	ME	PCC	B
ME/Civil	4	8	61	ME	0	0	2	1	Metrology Lab	8ME4-22	1	1	T	0	0	2	2	ME	PCC	B
ME/Civil	4	8	61	ME	0	0	6	7	Project	8ME7-50	1	1	T	0	0	6	6	ME	PCC	B
ME/Civil	4	8	61	ME	0	0	2	NA	Non Syllabus CAD Lab	8MECAD	1	1	T	0	0	2	2	ME	PSIT	C

8.1 Marking Scheme

MARKING SCHEME FOR PRACTICAL EX 4M, EVEN SEM., 2022-23,								EXAM & SECF ECY CELL, PCE			
		I+II Mid Term Exam			Atten & Performance.			End Term Exam			Max.
Code	SUBJECT	Exp.	Viva	Total	Attn.	Perf.	Total	Exp.	Viva	Total	Marks
4ME3-21	Digital Electronics lab	30	10	40	10	30	40	30	10	40	100
4ME4-22	Fluid Mechanics lab	30	10	40	10	30	40	30	10	40	100
4ME4-23	Production practice lab	30	10	40	10	30	40	30	10	40	100
4ME4-24	Theory of machines Lab	30	10	40	10	30	40	30	10	40	100
6ME4-21	CIMS Lab	30	10	40	10	30	40	30	10	40	100
6ME4-22	Vibration Lab	30	10	40	10	30	40	30	10	40	100
6ME4-23	Machine Design Practice II	30	10	40	10	30	40	30	10	40	100
6ME4-24	Thermal Engineering Lab I	30	10	40	10	30	40	30	10	40	100
8IT7-50	Project	210						140			350
8ME4-21	Industrial Engineering Lab	15	5	20	5	15	20	15	5	20	50
8ME4-22	Metrology Lab	15	5	20	5	15	20	15	5	20	50
8ME7-50	Project *#	210						140			350

NOTE: - (1) In Attendance & Performance marks should be given on the basis of student overall performance in semester i. e. continuous evaluation.
(2) In Common Pool marks should be given by HOD on the basis of student Assignment,Non Syllabus Activity,Online Exam Exam,Application/Survey / Case Study based Learning, Pre-Placement Activity, Department Level Career Oriented Activities through out the semester.

9 Department Load Allocation

Department of Mechanical Engineering														
Class Wise Load Allotment Session 2023-24 (EVEN Semester)														
Section	Subject Code	Subject Name	L	T	P	Batch Size	Total L	Total T	Total P	Total Load	Faculty-1 Name		Faculty-2 Name	Teaching Assistant
A	4ME2-01	Data Analytics	2	0	0	1	2	0	0	2	Dr. Mukesh Didwania		-	-
A	4ME01-3	Managerial Economics & Financial Accounting	2	0	0	1	2	0	0	2	Ms. Kalpna Sharma		-	-
A	4ME3-04	Digital Electronics	3	0	0	1	3	0	0	3	Dr. Nitesh Mudgal		-	-
A	4ME4-05	Fluid Mechanics & Fluid Machines	3	1	0	1	3	1	0	4	Dr. Amit Mandal		-	-
A	4ME4-06	Manufacturing Process	3	0	0	1	3	0	0	3	Dr. Akshay Jain		-	-
A	4ME4-07	Theory of Machines	3	1	0	1	3	1	0	4	Dr. Raj Kumar Satankar		-	-
A	4ME3-21	Digital Electronics lab	0	0	3	1	0	0	3	3	Dr. Nitesh Mudgal		-	NA
A	4ME4-22	Fluid Mechanics lab	0	0	3	1	0	0	3	3	Dr. Amit Mandal		-	Mr. Narendra Singh
A	4ME4-23	Production Practice lab	0	0	3	1	0	0	3	3	Dr. Akshay Jain		-	Mr. Anurag Tiwari
A	4ME4-24	Theory of Machines Lab	0	0	3	1	0	0	3	3	Dr. Raj Kumar Satankar		-	Mr. Suneel Kumar Sharma
A	6ME3-01	Measurement and Metrology	3	0	0	1	3	0	0	3	Dr. Akshay Jain		-	-
A	6ME4-02	CIMS	3	0	0	1	3	0	0	3	Dr. Akshay Jain		-	-
A	6ME4-03	Mechanical Vibrations	3	0	0	1	3	0	0	3	Dr. Amit Mandal		-	-
A	6ME4-04	Design of Machine Elements II	3	0	0	1	3	0	0	3	Mr. Sanjay Kumawat		-	-
A	6ME4-05	Quality Management	3	0	0	1	3	0	0	3	Dr. Raj Kumar Satankar		-	-
A	6ME5-11	Refrigeration and Air Conditioning	3	0	0	1	3	0	0	3	Dr. Narayan Lal Jain		-	-
A	6ME4-21	CIMS Lab	0	0	3	1	0	0	3	3	Dr. Akshay Jain			Mr. Suneel Kumar Sharma
A	6ME4-22	Vibration Lab	0	0	3	1	0	0	3	3	Dr. Amit Mandal		-	Mr. Narendra Singh
A	6ME4-23	Machine Design Practice II	0	0	3	1	0	0	3	3	Mr. Sanjay Kumawat		MR. Sanjay Kumawat	NA
A	6ME4-24	Thermal Engineering Lab I	0	0	3	1	0	0	3	3	Dr. Mukesh Didwania		-	Mr. Narendra Singh
A	8ME5-11	Hybrid and Electric Vehicle	3	0	0	1	3	0	0	3	Dr. Mukesh Didwania		-	
A	8ME4-21	Industrial Engineering Lab	0	0	2	1	0	0	2	2	Dr. Akshay Jain		-	Mr. Anurag Tiwari
A	8ME4-22	Metrology Lab	0	0	2	1	0	0	2	2	Dr. Mukesh Didwania			Mr. Anurag Tiwari
A	8MENSP	CAD NSP LAB (Beyond Syllabus)	0	0	2	1	0	0	2	2	Mr. Sanjay Kumawat			Mr. Chandra Mohan
A	8ME7-50	Project	0	0	6	1	0	0	6	6	Mr. Sanjay Kumawat	Dr. Rajkumar Satankar	Dr.Narayan Lal Jain	Mr. Suneel Kumar Sharma/Mr. Narendra Singh/Mr. Anurag Tiwari
OE	8ME6-60.1	Operations Research	3	0	0	1	3	0	0	3	Mr. Sanjay Kumawat		-	

10 Time Table

10.1 Orientation Time Table

10.2 Academic Time Table II Year

POORNIMA COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

ME 2ND YEAR SECTION A

EVEN SEM 2023-24 VERSION 5.0
W.E.F 18 MAR. 2024

	1 08:00 - 09:00AM	2 09:00 - 10:00AM	3 10:00 - 11:00AM	LUNCH 11:00 - 11:50AM	4 11:50AM - 12:50PM	5 12:50 - 01:50PM	6 01:50 - 02:50PM
Mo	1B04 4ME4-05 FLUID MECHANICS DR. AMIT KUMAR MANDAL	1B04 4ME4-06 MANUFACTURING PROCESS DR. AKSHAY JAIN	1B04 4ME3-04 DIGITAL ELECTRONICS MR. MANISH SHARMA (EC)	LUNCH BREAK	1302 DIGI LAB 4ME3-21 DE LAB MR. MANISH SHARMA (EC)		
Tu	1B04 4ME4-05 FLUID MECHANICS DR. AMIT KUMAR MANDAL	1B04 4ME4-07 THEORY OF MACHINES DR. RAJ KUMAR SATANKAR	1B04 4ME4-06 MANUFACTURING PROCESS DR. AKSHAY JAIN		1B04 4ME2-01 DATA ANLYTICS MR. ANANT BHARDWAJ	1B04 4ME01-3 MANAGERIAL ECONOMICS & FINANCIAL ACCOUNTING MS. KALPANA SHARMA (HM)	1B01 MST LAB-A 4ME4-07 TOM- TUTORIAL DR. RAJ KUMAR SATANKAR
We	1B04 4ME2-01 DATA ANLYTICS MR. ANANT BHARDWAJ	1B04 4ME4-07 THEORY OF MACHINES DR. RAJ KUMAR SATANKAR	1B04 4ME3-04 DIGITAL ELECTRONICS MR. MANISH SHARMA (EC)		1B10 FM LAB 4ME4-22 FM LAB DR. AMIT KUMAR MANDAL / MR. ANURAG TIWARI		
Th	1B04 4ME4-06 MANUFACTURING PROCESS DR. AKSHAY JAIN	1B04 4ME4-05 FLUID MECHANICS DR. AMIT KUMAR MANDAL	1B04 4ME3-04 DIGITAL ELECTRONICS MR. MANISH SHARMA (EC)		1B01 MST LAB-A 4ME4-24 TOM LAB DR. RAJ KUMAR SATANKAR / MR. SUNEEL KUMAR SHARMA		
Fr	1B04 4ME01-3 MANAGERIAL ECONOMICS & FINANCIAL ACCOUNTING MS. KALPANA SHARMA (HM)	1B04 4ME4-07 THEORY OF MACHINES DR. RAJ KUMAR SATANKAR	1B10 FM LAB,1B04 4ME4-05 FM- TUTORIAL DR. AMIT KUMAR MANDAL		1B09 LAB 4ME4-23 PP LAB MR. ANURAG TIWARI / MR. ANANT BHARDWAJ		
Sa	----	----	----		----	----	----

MR. SANJAY KUMAWAT
(TIME TABLE COORDINATOR)

DR. NARAYAN LAL JAIN
(HOD-ME-PCE)

DR. MAHESH BUNDELE
(DIRECTOR-PCE)

Academic Time Table III Year

POORNIMA
COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

ME 3RD YEAR SECTION A

EVEN SEM 2023-24 VERSION 5.0
W.E.F 18 MAR. 2024

	1 08:00 - 09:00AM	2 09:00 - 10:00AM	3 10:00 - 11:00AM	LUNCH 11:00 - 11:50AM	4 11:50AM - 12:50PM	5 12:50 - 01:50PM	6 01:50 - 02:50PM
Mo	1B12 THER LAB,1B05 6ME4-23 MD-II LAB MR. SANJAY KUMAWAT / MR. NARENDRA SINGH			LUNCH BREAK	1B05 6ME4-02 CIMS MR. ANANT BHARDWAJ	1B05 6ME4-03 MECHANICAL VIBRATION DR. AMIT KUMAR MANDAL	1B05 6ME4-05 QUALITY MANAGEMENT DR. AKSHAY JAIN
Tu	1B05 6ME4-02 CIMS MR. ANANT BHARDWAJ	1B05 6ME5-11 REFRIGERATION & AIR CONDITIONING DR. NARAYAN LAL JAIN	1B05 6ME-04 DESIGN OF MACHINE ELEMENT-II. MR. SANJAY KUMAWAT		1B05 6ME4-03 MECHANICAL VIBRATION DR. AMIT KUMAR MANDAL	1B05 6ME4-05 QUALITY MANAGEMENT DR. AKSHAY JAIN	1B05 6ME3-01 MEASUREMENT & METROLOGY MR. ANANT BHARDWAJ
We	1B05 6ME4-03 MECHANICAL VIBRATION DR. AMIT KUMAR MANDAL	1B05 6ME-04 DESIGN OF MACHINE ELEMENT-II. MR. SANJAY KUMAWAT	1B05 6ME5-11 REFRIGERATION & AIR CONDITIONING DR. NARAYAN LAL JAIN		1B02 CNC LAB 6ME4-21 CIMS LAB DR. AKSHAY JAIN / MR. SUNEEL KUMAR SHARMA		
Th	1B12 THER LAB 6ME4-24 THERMAL LAB DR. MUKESH DIDWANIA / MR. NARENDRA SINGH				1B05 6ME4-02 CIMS MR. ANANT BHARDWAJ	1B05 6ME4-05 QUALITY MANAGEMENT DR. AKSHAY JAIN	1B05 6ME3-01 MEASUREMENT & METROLOGY MR. ANANT BHARDWAJ
Fr	1B05 6ME3-01 MEASUREMENT & METROLOGY MR. ANANT BHARDWAJ	1B05 6ME5-11 REFRIGERATION & AIR CONDITIONING DR. NARAYAN LAL JAIN	1B05 6ME-04 DESIGN OF MACHINE ELEMENT-II. MR. SANJAY KUMAWAT		1B08 VIB LAB 6ME4-22 VE LAB DR. AMIT KUMAR MANDAL / MR. SUNEEL KUMAR SHARMA		
Sa	----	----	----		----	----	----

MR. SANJAY KUMAWAT
(TIME TABLE COORDINATOR)

DR. NARAYAN LAL JAIN
(HOD-ME-PCE)

DR. MAHESH BUNDELE
(DIRECTOR-PCE)

Academic calendar IV Year

POORNIMA COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

ME 4TH YEAR SECTION A

EVEN SEM 2023-24 VERSION 5.0
W.E.F 18 MAR. 2024

	1 08:00 - 09:00AM	2 09:00 - 10:00AM	3 10:00 - 11:00AM	LUNCH 11:00 - 11:50AM	4 11:50AM - 12:50PM	5 12:50 - 01:50PM	6 01:50 - 02:50PM
Mo	OPEN ELCTIVE OPEN ELCTIVE-I- 4TH-A	1B09 LAB 8ME7-50 PROJECT MR. SUNEEL KUMAR SHARMA / MR. ANANT BHARDWAJ		LUNCH BREAK	1005 8ME5-11 HEV-DEPT. ELECTIVE DR. MUKESH DIDWANIA	1B09 LAB 8ME4-21 INDUSTRIAL ENGINEERING LAB MR. ANURAG TIWARI / MR. ANANT BHARDWAJ	
Tu	OPEN ELCTIVE OPEN ELCTIVE-I- 4TH-A	1B09 LAB 8ME4-22 METROLOGY LAB DR. MUKESH DIDWANIA / MR. NARENDRA SINGH			1005 8ME5-11 HEV-DEPT. ELECTIVE DR. MUKESH DIDWANIA	1B09 LAB 8ME7-50 PROJECT MR. SANJAY KUMAWAT / MR. NARENDRA SINGH	
We	OPEN ELCTIVE OPEN ELCTIVE-I- 4TH-A	1005 8ME5-11 HEV-DEPT. ELECTIVE DR. MUKESH DIDWANIA	1B13 COMP LAB 8MENSP CAD LAB MR. SANJAY KUMAWAT / MR. CHANDRAMOHAN SHARMA		1B13 COMP LAB 8MENSP CAD LAB MR. SANJAY KUMAWAT / MR. CHANDRAMOHAN SHARMA	1B09 LAB 8ME7-50 PROJECT DR. RAJ KUMAR SATANKAR / MR. NARENDRA SINGH	
Th	----	----	----		----	----	----
Fr	----	----	----		----	----	----
Sa	----	----	----		----	----	----
	MR. SANJAY KUMAWAT (TIME TABLE COORDINATOR)		DR. NARAYAN LAL JAIN (HOD-ME-PCE)			DR. MAHESH BUNDELE (DIRECTOR-PCE)	

11 Course Outcome Attainment Process:

11.1 Course Outcome Attainment Process

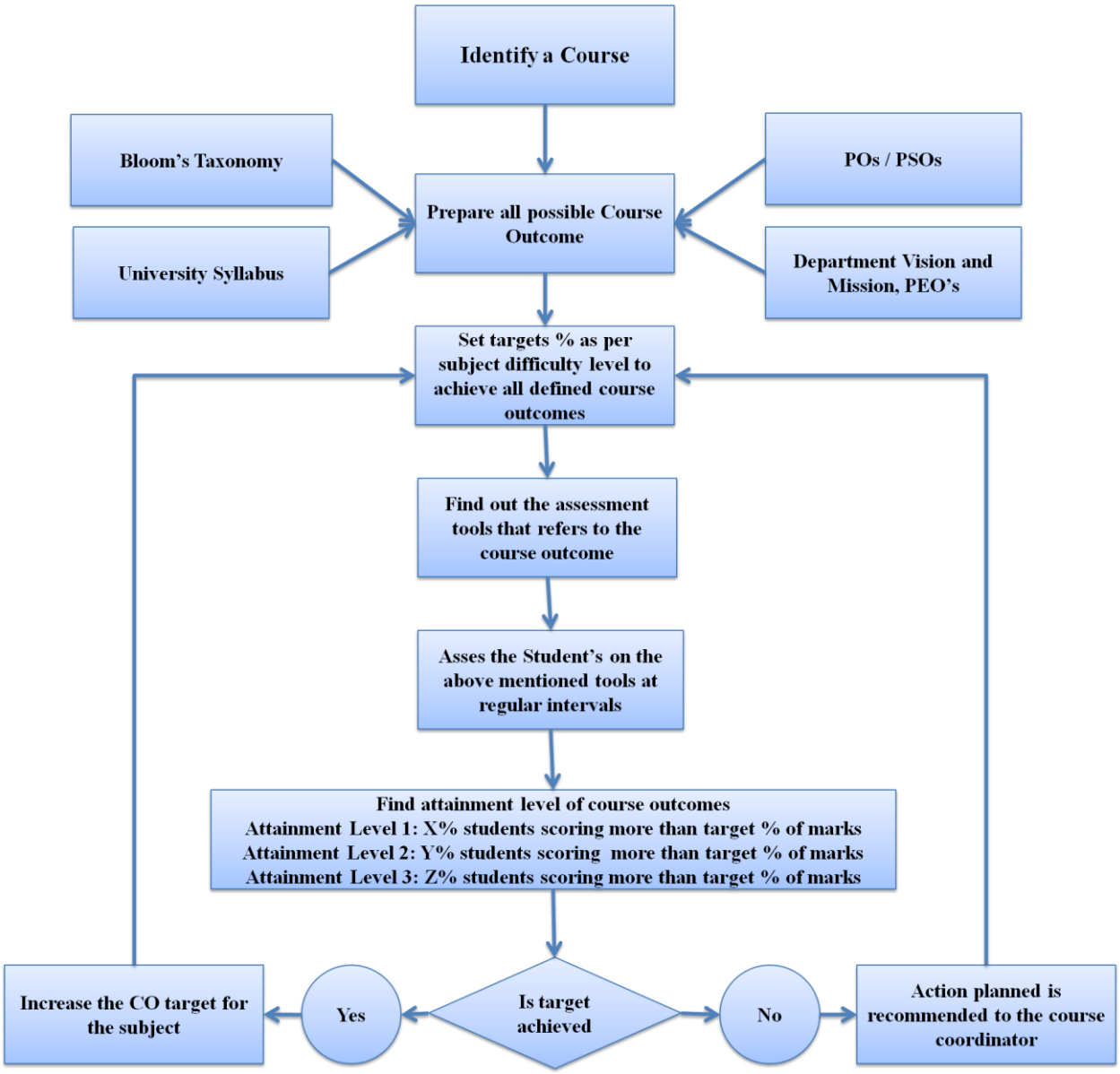


Figure. Course Outcome Attainment Process

11.2 List of CO & CO mapping with PO

0					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
1	3ME1-02	Technical Communications	CO1	Explain the fundamentals characteristics and structure of	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO2	Apply the fundamentals of technical writing to prepare the professional	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO3	Analyse the professional documents in grametical perspective	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Prepare report, artical, research	-	-	2	-	-	-	-	2	2	3	-	2	-	-	-
					2.5	**2**	**2**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**-**	**2**	**-**	**-**	**-**
2	3ME2-01	Advanced Engineering Mathematics	CO1	Understanding the concept of num	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO2	Explain numerical methods to find	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO3	Apply the appropriate technology	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Analyze the Fundamentals of the F	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO5	Solve differential equations involv	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
					2.00	**3.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3	3ME3-04	Engineering Mechanics	CO1	Explain the Statics and Dynamic forces in Mechanical System	2	-	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO2	Apply the motion characteristics of a body subjected to a System of	3	-	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO3	Analyse the equilibrium and motion of various Mechanical systems and	-	3	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO4	Evaluate the engineering problems of statics and dynamics systems	-	-	2	-	-	-	-	-	-	-	-	-	3	2	2
					2.50	**3.00**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.00**	**2.00**	**2.00**
4	3ME4-05	Engineering Thermodynamics	CO1	Describe the basic concept of the	2	-	-	-	-	-	-	-	-	-	-	-	3	2	3
			CO2	Apply the basic concepts of therm	3	-	-	-	-	-	-	-	-	-	-	-	3	2	3
			CO3	Analyze the thermodynamic powe	-	3	-	-	-	-	-	-	-	-	-	-	3	2	3
			CO4	Evaluate the various thermodynan	-	2	-	-	-	-	-	-	-	-	-	-	3	2	3
					2.50	**2.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.00**	**2.00**	**3.00**
5	3ME4-06	Material Science And Engineering	CO1	Describe the various mechanical properties and the testing methods	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO2	Identify general crystal structures and engineering materials on the	3	-	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO3	Analyze the iron carbon equilibrium diagram and the phase	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Justify the isothermal transformation diagrams and heat treatment	-	-	2	-	-	-	-	-	-	-	-	-	2	2	-
					2.50	**2.00**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.25**	**2.00**	**2.00**
6	3ME4-07	Mechanics of Solids	CO1	Explain basic concepts of stress, strain, torsion, bending and strain Energy	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO2	Apply the concept of stresses and strain, theories of failure, bending & torsion on different types of loading conditions and members	3	-	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO3	Analyze the stresses in shafts, cylindrical and sperical thin wall pressure vessels, long and short columns for different end conditions	-	2	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO4	Evaluate the detection of beams and stresses in principal plane by analytical & graphical method	-	3	-	-	-	-	-	-	-	-	-	-	3	2	-
					2.50	**2.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.75**	**2.00**	**2.00**
7	3ME4-21	Machine Drawing Practice	CO1	Draw & illustrate simple mechanical parts & their assembly using fundamental Engineering Drawing Standards by using conventional	2	-	-	-	-	-	-	_	_	-	-	-	3	2	2
			CO2	Apply the Geometrical Limits & tolerances using BIS Codes to Machine Parts drawings & their	3	-	-	-	-	-	_	-	-	-	-	-	3	2	2
			CO3	Analyze dimensioning, sectioning and development of views of complex feature components & improve their technical	-	3	-	-	-	-	-	-	-	2	-	-	3	2	2
			CO4	Create 2D and 3D drafting of components using CAD software &	-	-	3	-	2	-	_	-	_	-	-	-	3	2	2
					2.50	**3.00**	**3.00**	**-**	**2.00**	**-**	**-**	**-**	**-**	**2.00**	**-**	**-**	**3.00**	**2.00**	**2.00**
8	3ME4-22	Material Testing Lab-I	CO1	Explain the crystal structrure of engin	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO2	Apply the basic concepts of material science for material testings through	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Identify mechanical properties of engineering materials through	-	2	-	-	-	-	-	-	-	-	-	2	2	2	-
			CO4	Compare the micro-structures and mechanical properties of metallic	-	3	-	-	-	-	-	-	-	-	-	-	2	2	-
					2.50	**2.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**	**-**
9	3ME4-23	Basic Mechanical Engineering Lab	CO1	Explain the various component and working of the machines like	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO2	Identify the various types of Washing Machine, AC, Refrigerator	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO3	Analyse the basic engineering concepts in the equipments like	-	3	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Write and present the report on	-	-	-	-	-	-	-	2	2	2	-	2	-	-	-
					2.00	**2.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**
10	3ME4-24	Programming Using MATLAB	CO1	Apply Basic commands, built-in functions, applications of MATLAB	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO2	Analyse the mathematical problems encountered in Mechanical	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Design and Develop code for problems involving different types of	-	-	3	-	3	-	-	-	-	-	-	-	2	2	-
			CO4	Execute the coding for evaluation and simulation of problems in	-	-	-	-	2	-	-	2	2	-	-	2	2	2	-
					3.00	**2.00**	**3.00**	**-**	**2.50**	**-**	**-**	**2.00**	**2.00**	**-**	**-**	**2.00**	**2.00**	**2.00**	**-**

11	3ME7-30	Industrial Training	CO1	Relating the real time applications to the mechanical engineering	-	3	-	-	-	-	-	-	-	-	-	2	2	-	1
			CO2	Develop the problem solving approach by developing projects in	-	-	3	-	2	-	-	-	2	-	2	2	2	-	2
			CO3	Build skills to be working as a team member and become employable.	-	-	-	-	-	-	-	-	3	-	-	-	-	3	2
			CO4	Create a well organized report employing elements of technical	-	-	-	-	-	-	-	2	-	3	-	3	-	2	1
					-	3.00	3.00	-	2.00	-	-	2.00	2.50	3.00	2.00	2.33	2.00	2.50	1.50
12	4ME1-03	Managerial Economics and Financial Accounting	CO1	Describe the fundamental concepts of Economics and Financial Management and define the terms	-	-	-	-	-	1	-	-	-	2	3	-	-	-	1
			CO2	Calculate the domestic product, national product and elasticity of price on demand and supply	-	2	-	-	-	-	-	-	-	-	3	-	-	-	1
			CO3	Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect market structures	3	-	2	-	2	-	-	-	-	-	-	-	-	-	1
			CO4	Compare the financial statements to interpret the financial position of the firm and evaluate the project investment decisions	-	3	-	2	-	-	-	-	-	-	3	-	-	1	-
					3.00	2.50	2.00	2.00	2.00	1.00	-	-	-	2.00	3.00	-	-	1.00	1.00
13	4ME2-01	Data Analytics	CO1	Apply statistical tools for different types of problems in Data Analytics.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO2	Analyze sample data and interpret the same for given problem.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Formulate data analysis problems by selecting appropriate analysis	-	3	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Evaluate complex engineering	-	-	2	-	-	-	-	-	-	-	-	-	2	2	-
					2.00	2.50	-	-	-	-	-	-	-	-	-	-	2.00	2.00	-
14	4ME3-04	Digital Electronics	CO1	Explain the concepts of electronics components like Diodes, BJT,	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Apply the concepts of electronics to	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO3	Analyse the performance.parameters	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Design and develop the application b	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
					2.50	3.00	-	-	-	-	-	-	-	-	-	-	-	2.00	-
15	4ME4-05	Fluid Mechanics and Fluid Machines	CO1	Explain the basic principles of fluid mechanics and its application	2	-	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO2	Apply the concept of pressure, Flow characteristics and theory of rota-	3	-	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO3	Analyse basic equation of fluid statics and fluid dynamics	-	3	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO4	Evaluate the work done and efficiencies of pump and turbines	-	-	2	-	-	-	-	-	-	-	-	-	3	2	-
					2.50	3.00	2.00	-	-	-	-	-	-	-	-	-	3.00	2.00	-
16	4ME4-06	Manufacturing Processes	CO1	Describe the principle and applications of Manufacturing	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO2	Apply the concepts of manufacturing processes to develop a product.	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Identify the possible defects in manufacturing processes and their	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Anlayse the various processing parameters of manufacturing	2	3	-	-	-	-	-	-	-	-	-	-	2	2	-
					2.33	2.50	-	-	-	-	-	-	-	-	-	-	2.00	2.00	-
17	4ME4-07	Theory of Machines	CO1	Explain the basic principles of machines, mechanisms & its	2	-	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO2	Solve the basic problems on various fundamental machine mechanisms	3	-	-	-	-	-	-	-	-	-	-	-	3	2	1
			CO3	Evaluate the various mechanisms and motion of various mechanical	-	2	-	-	-	-	-	-	-	-	-	-	3	2	3
			CO4	Analyse the terms, laws and concepts related with machines,	-	-	2	-	-	-	-	-	-	-	-	-	3	2	3
					2.50	2.00	2.00	-	-	-	-	-	-	-	-	-	3.00	2.00	2.25
18	4ME3-21	Digital Electronics Lab	CO1	Explain the various types of logic gates, digital ICs, Boolean algebra	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO2	Identify the digital cicuits in electronics systems	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO3	Analysis of the combinational and sequential circuits using digital ICs.	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Design of the various arithmatic a	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
					2.25	2.33	2.50	-	-	-	-	-	-	-	-	-	3.00	2.00	2.25
19	4ME4-22	Fluid Mechanics Lab	CO1	Determine the various fluid parameters for venturimeter,	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO2	Apply the concepts of fluid mechanics theorems for its	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Detrermine various parameter and losses in flow pipes.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Analyse the characteristic curves drawn through experimental data of	-	3	-	-	-	-	-	-	-	-	-	-	2	2	-
					2.50	2.50	-	-	-	-	-	-	-	-	-	-	2.00	2.00	-
20	4ME4-23	Production Practise Lab	CO1	Explain the working principle of general machine tools such as	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO2	Apply the knowledge of the machining to perform operations on	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Prepare the tool layout for capastor	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Analyse the moulding sand properties like moisture content,	-	3	-	-	-	-	-	-	2	-	-	2	2	2	-
					2.50	2.50	-	-	-	-	-	-	2.00	-	-	2.00	2.00	2.00	-

21	4ME4-24	Theory of Machines Lab	CO1	Explain the basic mechanism of Mechanical elements and systems.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO2	Demonstrate the models of stearing mechanism, cam followers,	3	-	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO3	Analyse the velocity acceleration diagram, coefficient of friction and	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Evaluate theoritical and experimental parameter of gyroscope, governers,	-	-	2	-	-	-	-	2	2	-	-	2	2	2	2
					2.50	**2.00**	**2.00**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**-**	**-**	**2.00**	**2.00**	**2.00**	**2.00**
22	5ME3-01	Mechatronic Systems	CO1	Explain the basic fundamentals and applications of Mechatronic systems	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Apply the concept of sensors, actuators, pneumatic & hydraulic	3	-	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO3	Analyze the role of controls and modeling in mechatronics.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Design Instrumentation and Data Acquisition system for automation.	-	3	-	-	-	-	-	-	-	-	-	-	2	2	2
					2.50	**2.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**
23	5ME4-02	Heat Transfer	CO1	Explain the concept of heat transfer and its different modes conduction,	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO2	Apply the concept of heat transfer to calculate the heat transfer	3	-	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO3	Analize the heat tranfer parametrs	-	2	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO4	Design the Heat exchangers for suitable applications .	-	-	2	-	-	-	-	-	-	-	-	-	2	2	2
					2.50	**2.00**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.25**	**2.00**	**2.00**
24	5ME4-03	Manufacturing Technology	CO1	Explain different types of machining and finishing processes and their	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Apply the machining process concepts in assessing the	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO3	Analyse the machining processes in calculation of the forces acting	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Design the process of machining to develop a industrial product using	-	-	2	-	2	-	-	-	-	-	-	-	2	2	-
					2.50	**2.00**	**2.00**	**-**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**-**
25	5ME4-04	Design of Machine Elements-I	CO1	Explain fundamentals of mechanical components design subjected to static loading based on material &	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
			CO2	Apply the basic design concept to design various Mechanical components, such as joints, beam,	3	-	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO3	Analyse the problems of various machine members which are subjected to different loading	-	3	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO4	Evaluate the design stresses & parameters of mechanical components like beam, shaft, joints,	-	-	3	-	-	-	-	-	-	-	-	-	3	2	2
					2.50	**3.00**	**3.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.00**	**2.00**	**2.00**
26	5ME4-05	Principles of Management	CO1	Explain the different concepts of management.	2	-	-	-	-	-	-	-	-	-	2	-	-	2	-
			CO2	Apply the concepts of the management on the functions and	3	-	-	-	-	-	-	-	-	-	2	-	-	2	-
			CO3	Analys the function of management for leading, organising, planning,	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Prepare a leadership profile using c	-	-	2	-	-	-	-	-	-	2	-	-	-	2	-
			CO5	Plan the course of action using case studies to solve behavioural	-	-	3	-	-	-	-	-	-	2	2	-	-	2	-
					2.50	**2.00**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**-**	**-**	**2.00**	**-**
27	5ME5-12	Automobile Engineering	CO1	Explain various parts, their mechanism and functions of	2	-	-	-	-	-	-	-	-	-	-	-	-	2	3
			CO2	Identify the Gear boxes, brakes, cluches and drives for specific	3	-	-	-	-	-	-	-	-	-	-	-	-	2	3
			CO3	Analyse the various automobile systems like wheel and tyre, steering , suspenssion, electrical, ignition, automobile AC and safety	-	2	-	-	-	-	-	-	-	-	-	-	-	2	3
			CO4	Evaluate the various parameter of automobile systems.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	3
					2.50	**2.00**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**3.00**
28	5ME5-11	NDET	CO1	Describe NDT methods used for evaluation of materials	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Apply the various inspection processes in accordance with the	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO3	Analyze various defect occurs in materials and select the appropriate	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Identify the effect of Regenerative	-	3	-	-	-	-	-	-	-	-	-	-	2	2	-
					2.50	**2.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**-**
29	5ME3-21	Mechatroncs Lab	CO1	Explain the fundamental knowledge of Transducers, mobile robot, PLC	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Apply the knowledge of programming for mobile robots as	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO3	Analyse the programmimg parameters for PLC and MAT Lab	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Develop a mini project with integra	-	-	3	-	-	-	-	2	2	2	2	2	-	2	2
					2.50	**2.00**	**3.00**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**	**2.00**	**2.00**	**-**	**2.00**	**2.00**
30	5ME4-22	Heat Transfer Lab	CO1	Apply the concepts of conduction, convection and radiation heat	3	-	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO2	Compare the Effectiveness in Parallel and Counter Flow Heat	-	2	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO3	Analyse the rates of heat transfer for different materials and	-	3	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Evaluate the importance and validity of engineering assumptions through	-	-	3	-	-	-	-	-	-	-	-	-	2	2	2
					3.00	**2.50**	**3.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**

31	5ME4-23	Production Engineering Lab	CO1	Apply the principle of metrology for measuring various parameters like	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO2	Analyzing the force generated on the workpiece during various	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Testing the learning and skills of measurement and metrology to	-	-	-	-	-	-	-	2	2	2	-	2	2	2	-
			CO4	Create mini project using various	-	-	3	-	3	-	-	2	2	2	2	2	2	-	-
					2.50	**2.25**	**3.00**	**-**	**3.00**	**-**	**-**	**2.00**	**2.00**	**2.00**	**2.00**	**2.00**	**2.00**	**2.00**	**2.00**
32	5ME4-24	Machine Design Practice - I	CO1	Explain the material properties, manufacturing considerations. ISO standards for selection of materials, selection of fits for various	2	-	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO2	Apply the design procedure and acquire skill of finding resisting areas against failure of designing under static load to various machine	-	3	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO3	Evaluate the efficient design criteria related with manufacturing, production, strength and stiffness,	-	-	3	-	-	-	-	-	-	-	-	-	3	2	-
			CO4	Synthesize or compile mechanical elements using modern tools and compile the results with help of mini	-	-	-	-	2	2	-	-	2	-	-	2	3	2	-
					2.00	**3.00**	**3.00**	**-**	**2.00**	**2.00**	**-**	**-**	**2.00**	**-**	**-**	**2.00**	**3.00**	**2.00**	**-**
33	5ME7-30	Industrial Training	CO1	Relating the real time applications to the mechanical engineering	-	3	-	-	-	-	-	-	-	-	-	2	2	-	1
			CO2	Develop the problem solving approach by developing projects in	-	-	3	-	2	-	-	-	2	-	2	2	2	-	2
			CO3	Build skills to be working as a team member and become employable.	-	-	-	-	-	-	-	-	3	-	-	-	-	3	2
			CO4	Create a well organized report employing elements of technical	-	-	-	-	-	-	-	2	-	3	-	3	-	2	-
					-	**3.00**	**3.00**	**-**	**2.00**	**-**	**-**	**2.00**	**2.50**	**3.00**	**2.00**	**2.33**	**2.00**	**2.50**	**1.67**
34	6ME3-01	Measurement and Metrology	CO1	Describe the measuring concept and working principle of metrological	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Identify the appropriate measuring device and method as per their	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO3	Apply metrological concept for measuring engineering parameters.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Evaluate various parameters of measurement in Instrumentation and Metrological Engineering	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
					3.00	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**-**
35	6ME4-02	CIMS	CO1	Describe the importance and scope CIM in fabrication/ manufacturing	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Explain and compare the different components of CIM.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO3	Apply modern tools in manufacturing industry for automation i.e.	3	-	-	-	3	-	-	-	-	-	-	-	-	2	-
			CO4	Create program for varies parts made by CNC machine.	-	-	3	-	-	-	-	-	-	-	-	-	3	2	-
					2.33	**-**	**3.00**	**-**	**3.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.00**	**2.00**	**-**
36	6ME4-03	Mechanical Vibrations	CO1	Explain the fundamentals of mechanical vibrations, sound and	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Apply different methods to formulate the equation of motion for free	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO3	Analyse and compute the natural frequencies and mode shapes of 2	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Evaluate the natural frequency of vibrations of continous system.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
					2.50	**2.00**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**-**
37	6ME4-04	Design of Machine Elements-II	CO1	Explain the fundamentals on designing of machine elements subjected to variable load.	2	-	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO2	Apply the basic design concept to design Shaft, IC Engine components, bolts, springs, rope and belt drives and other	3	-	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO3	Analyse and solve the problems of components when designed for variable stresses, considering stress concentration, fatigue and combined	-	3	-	-	-	-	-	-	-	-	-	-	3	2	-
			CO4	Evaluate the design, stresses & parameters of mechanical components like beam, shaft, bolts, bearings, IC Engine Components	-	-	2	-	-	-	-	-	-	-	-	-	3	2	2
					2.50	**3.00**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.00**	**2.00**	**2.00**
38	6ME4-05	Quality Management	CO1	Describe the basic concept of Quality Management.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Implement the process to meet desired needs within limits using	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO3	Identify the technique of Design of experiments to solve engineering	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Analize the concept of Quality Assurance, Acceptance sampling	-	3	-	-	-	-	-	-	-	-	-	-	2	3	-
					2.50	**2.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.25**	**-**
39	6ME4-21	CIMS Lab	CO1	Explain the concept of G & M codes and cutting tool path of CNC	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Write the CNC programming using G codes and M codes	3	-	-	-	2	-	-	-	-	-	-	-	-	2	-
			CO3	Analyse the Tool Path for different	-	3	-	-	-	-	-	-	-	-	-	2	2	2	-
			CO4	Develop program for parts made by	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
					2.50	**3.00**	**3.00**	**-**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**	**-**
40	6ME4-22	Vibration Lab	CO1	Explain various aspects of mechanical vibrations and their	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Apply the concept of vibration to m	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO3	Analyse the different mechanical properties like moment of inertia,	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Evaluate the frequency of simple and compound pendulum, damped	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
					2.50	**2.00**	**3.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**-**

41	**6ME4-23**	**Machine Design Practice - II**	CO1	Apply the knowledge of machine design principles to solve various problems related to fatigue Loading.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
			CO2	Evaluate & Compare mechanical components (Bolts, Shaft, Bearings, IC Engine Components, Gears etc.) under variable stresses	-	2	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO3	Analyze Fatigue life cycle & failure criteria of IC engine and other mechanical components	-	3	-	-	-	-	-	-	-	-	-	-	3	2	2
			CO4	Synthesize mechanical components (Shaft, IC Engine components, springs, rope and belt drives, Gear etc.) using data book and document	-	-	2	-	-	-	-	2	2	2	-	2	3	2	2
					3.00	**2.50**	**2.00**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**	**-**	**2.00**	**3.00**	**2.00**	**2.00**
42	**6ME4-24**	**Thermal Engineering Lab I**	CO1	Explain the working of I C Engines, Boilers and automobile systems	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO2	Apply the basics of thermal enginer	3	-	3	-	-	-	-	-	-	-	-	-	-	2	2
			CO3	Analyse the valve timing diagram of single cylinder diesel engines and	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Write a term paper on advanced thermal technilogy and present it in	-	-	3	-	-	-	-	2	2	2	-	2	-	2	2
					2.50	**2.00**	**3.00**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**	**-**	**2.00**	**2.00**	**2.00**	**2.00**
43	**6ME5-11**	**Refrigeration and Air Conditioning (Elective-1)**	CO1	Explain the fundamentals of refrigeration and air-conditioning	2	-	-	-	-	-	-	-	-	-	-	-	-	2	3
			CO2	Apply the basics of refrigeration an	3	2	-	-	-	-	-	-	-	-	-	-	-	2	3
			CO3	Identify the suitable refrigeration and air conditioning systems as per the	-	3	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Design the refrigeration and air-conditioning system for various	-	-	3	-	-	-	-	-	-	-	-	-	3	2	3
					2.50	**2.50**	**3.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.50**	**2.00**	**2.75**
44	**6ME5-12**	**Non Conventional Machining Methods (Elective-2)**	CO1	Explain the various non conventional machining methods.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO2	Apply the principle and mechanics of metal removal for non conventional	3	-	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO3	Identify the non conventional machining methods for real time	-	2	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO4	Analyse the process parameters of non conventional machining	-	3	-	-	-	-	-	-	-	-	-	-	2	2	2
					2.50	**2.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**
45	**7ME5-11**	**I. C. Engines**	CO1	Explain the fundamental concepts and working of I C engine systems	3	-	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO2	Identify fuel metering, fuel supply, lubricating and Ignition systems for I	-	2	-	-	-	-	-	-	-	-	-	-	-	2	2
			CO3	Analyze the performance, emission and combustion characteristics of I	-	3	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Evaluate the fuel mixture ratio for	-	-	2	-	-	-	-	-	-	-	-	-	-	2	2
					3.00	**2.50**	**2.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.00**	**2.00**	**2.00**
46	**7ME5-13**	**Turbo Machine**	CO1	Explain the fundamentals concepts of turbomachines	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO2	Apply the basic concepts of turbomachines to solve real time	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Analyze the basic principles of gas turbines through velocity triangles	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-

12 Course File Sample

Outcome Based Process Implementation Guidelines for Faculty

12.1 Labelling your course file

- **Name of faculty:**
- **Class- SEM:**
- **Branch:**
- **Course Code:**
- **Course Name:**
- **Session:**

12.2 List of Documents:

1. **Vision & Mission Statements of the Institute**
2. **Vision & Mission Statements of the Department**
3. **List of PEO, PSO and PO of department**
4. **Personal Time Table**
5. **RTU Syllabus**
6. **Document as per point no. 1-4 in guidelines**
7. **Course Plan**
8. **Document as per point no 6-12 in guidelines**
9. **Document for CO Assessment Stage 1: As per point no 13, up to 13.2.5**
10. **Document for CO Assessment Stage 2: As per point no 13, up to 13.2.5, with comparison to previous**
11. **Document for CO Assessment Stage 3: As per point no 13, up to 13.2.5, with comparison to previous**
12. **Document for CO Attainment through RTU Component: Previous RTU Result: point no. 13.3 upto 13.3.2**
13. **Document for PO attainment through RTU Component: Previous RTU Result: point no. 13.4 upto 13.4.2**
14. **Document for Overall Attainment of PO through CO: As per point no 13.5**
15. **Document for last three years (Repeat process from 6-14 above): Comparative data should be included in course file**
16. **Lecture Notes**
17. **Copy of Assignments questions given from time to time**
18. **Copy of Tutorial Sheets given (if applicable)**
19. **RTU Question Papers with answer**
20. **Internal Assessment Question Papers with answer from time to time**
21. **Topics covered beyond syllabus- References**
22. **Details of any other activity and its assessment through rubric be included**
23. **Mapping department level/ focus activities with your COs**

13 Outcome Based Process Implementation Guidelines for Faculty

Course CO-PO, Preparation, Assessment Formats

Academic Session: 2021-2022 **Class:** **Semester:**

Name of the Faculty:

Subject: **Subject Code:**

This document is meant as guidelines for implementing Outcome based education system as a part of NBA process.

1. **Vision & Mission of Department: Statement and Mapping with Institute Mission** **Here you have to include department mission & vision statements and show mapping of keywords with institute mission.**
2. **Program Educational Objectives (PEOs): Statement and Mapping with Department Vision & Mission**
   Here you have to include department PEO statements and show mapping of keywords with department vision & mission.
3. **Program Specific Outcome (PSOs): Statement and Mapping with Department Vision & Mission**
   Here you have to include department PSO statements and show mapping of keywords with department vision & mission.
4. **Program Outcome (POs): Statement and Mapping with PEO and PSO**
   Here you have to include PO statements and show mapping of keywords with department PEOs & PSOs.
5. **Course Plan (Deployment):**

(Please write how you intend to cover the contents: i.e., coverage of Units by lectures, guest lectures, design exercises, solving numerical problems, demonstration of models, model preparation, or by assignments, etc.), **for example**

- **coverage of Units by lectures**
- **design exercises**
- **demonstration of models**
- **by assignments**

Lecture No.	Lect. No.	Topics, Problems, Applications	CO/LO	Target Date of Coverage	Actual Date of Coverage	Ref. Book/Journal with Page No.
1.	1	Introduction of OS	CO1	12/07/2019	12/07/2019	T1 Page 121 - 126
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						

Example T1: Principles of OS, By Ramesh Soni, Tata MGHill, Edition 2019

6. **Course Outcomes:** Look for strong mapping of course with specific PO (2-3). Define Generic Course Outcomes (max 4 to 6) using Blooms Taxonomy. (In case of Lab Course define generic Lab Outcomes LO and refer CO as LO in this document).

i. **3CSA101.1(CO1)-**
ii. **3CSA101.2(CO2)-**
iii. **3CSA101.3(CO3)-**
iv. **3CSA101.4(CO4)-**
v. **3CSA101.5(CO5)-**

7. **CO-PO-PSO Mapping: Mapping Levels: 1- Low, 2- Moderate, 3-Strong**
   First try to find out 2-3 PO those are strongly related to your subject contents. Go through the contents and try to formulate 4-5 Course Outcome as per bloom taxonomy. Map each CO with PO and PSO as above. While mapping please rethink if you map any PO with 3, it means you are planning to deliver the contents of that
   level and you will also examine the students at that level.

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2															
CO3															
CO4															
CO5															

7.1 PO Strongly Mapped: (Example):

- **PO2: Write full statement with keywords highlighted**
- **PO3: Write full statement with keywords highlighted**
- **PO4: Write full statement with keywords highlighted**

7.2 PO Moderately Mapped: (Example)

- **PO1: Write full statement with keywords highlighted**
- **PO11: Write full statement with keywords highlighted**

7.3 PO Low Mapped: (Example)

- **PO12: Write full statement with keywords highlighted**

7.4 PSO Strongly Mapped: (Example)

- **PSO 1 : Write full statement with keywords highlighted**

7.5 PSO Moderately Mapped: (Example)

- **PSO 2: Write full statement with keywords highlighted**

6.6 PSO Low Mapped: (Example)

- **PSO 3: Write full statement with keywords highlighted**

8. **Rules for CO/LO Attainment Levels: (Targets)**

All the courses of your department should be divided into three categories A-Most Difficult course, B-Medium level of Difficulty, C- Low level of Difficulty –(Easy)
According to difficulty level, you can decide specific range for CO attainment targets for Continuous assessment from the following table.
Remember that targets for internal assessment should be higher.

Course Category	Level 3	Level 2	Level 1
A	**60 % of students getting > 60% marks**	**50-60 % of students getting > 60% marks**	**40-50 % of students getting > 60% marks**
B	**80 % of students getting > 60% marks**	**60-80 % of students getting > 60% marks**	**40-60 % of students getting > 60% marks**
C	**90 % of students getting > 60% marks**	**70-90 % of students getting > 60% marks**	**40-70 % of students getting > 60% marks**

9. End Term RTU Component: CO Attainment Levels

All the courses of your department should be divided into three categories A-Most Difficult course, B-Medium level of Difficulty, C- Low level of Difficulty –(Easy)
According to difficulty level and the results of past 3-5 years, you can decide specific range for CO attainment targets for RTU component from the following table.

Course Category	Level 3	Level 2	Level 1
A	**50 % of students getting > 60% marks**	**40-50 % of students getting > 60% marks**	**30-40 % of students getting > 60% marks**
B	**60 % of students getting > 60% marks**	**40-60 % of students getting > 60% marks**	**30-40 % of students getting > 60% marks**
C	**80 % of students getting > 60% marks**	**60-80 % of students getting > 60% marks**	**40-60 % of students getting > 60% marks**

For the specific CO/LO attainment levels of your respective course please use the above tables as reference according your subject difficulty level and prepare following table.

S. No.	Course Type	Attainment Level=1	Attainment Level=2	Attainment Level=3
1	**Theory Courses** Mid Semester Exams			
2	**Theory Courses** University Exam			
4	**Practical Courses** – Internal Exams			
5	**Practical Courses** - University Exam			
6	**Assignments/Unit Test**			
7.	**Any other**			

10. CO wise Assessment Activities (as Mentioned in Session Plan):
You can plan for each CO, activities/ assessment tools to be conducted/ used for its achievement.
Use X to those you select for specific CO. Remove all unused columns.

	Activities															
CO	**Pre Mid I Test**	**Post Mid I Test**	**Quiz 1**	**Quiz 2**	**Pre Mid II Test**	**Post Mid II Test**	**Assignment 1**	**Assignment 2**	**Workshop**	**Seminar**	**Project**	**Training**	**Discussion**	**Mid 1**	**Mid 2**	**Ind. visit**
CO1																
CO2																
CO3																
CO4																
CO5																
CO6																

In case of Lab course some activities are as follows:

LO	Internal Practical exams	Laboratory Tests	Viva	Records	Project Presentation	Project Evaluation	External practical exams
LO1							
LO2							
LO3							
LO4							

11. CO wise Assessment Activities:

Based on CO-PO mapping, determine targets for each CO as average of targets of all relevant POs.

CO	PO												Avg.	PSO		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**CO Targets**	**PSO1**	**PSO2**	**PSO3**
CO1																
CO2																
CO3																
CO4																
CO5																

12. Activity wise Assessment Tools:

This gives you generalized view of different direct and indirect tools those can be used for assessment / achievement of CO/PO. (Decide which tools are required for assessing a particular CO/LO and in reference to Course A, B, C difficulty level).

Sr. No.	Activity	Assessment Method	Tools	Weightage Marks	Recommendation
1.	Pre-Mid Term 1	Direct	Marks	10	For CO
2.	Post-Mid Term 1	Direct	Marks	10	For CO
3.	Quiz 1	Direct	Marks	10	For CO
4.	Quiz 2	Direct	Marks	10	For CO
5.	Pre Mid Term 2	Direct	Marks	10	For CO
6.	Post Mid Term 2	Direct	Marks	10	For CO
7.	Mid Term 1	Direct	Marks	20	For CO
8.	Mid Term 2	Direct	Marks	20	For CO
9.	Assignment 1	Direct	Marks	10	For CO
10.	Assignment 2	Direct	Marks	10	For CO
11.	Workshop	Indirect	Rubrics	5	For LO
12.	Seminar/ SPL	Indirect	Rubrics	5	For CO/LO
13.	Project (Mini or NSP)	Indirect	Rubrics	20	For LO
14.	Discussion	Indirect	Rubrics	5	For LO
15.	Training	Indirect	Rubrics	20	For LO
16.	Industrial Visit	Indirect	Rubrics	20	For LO
17.	Or any other activity	Direct/ Indirect	Marks/ Rubrics	any	For LO
18.					
Note that for every rubrics you need to decide assessment criteria, range of marks or weightage – above values are indicative					

13. CO Assessment Process:

After every activity (Ideally as per above table): (Frequency of Assessment- Can be taken as monthly). So the assessment can be for all activities held during the month. Do the following.

13.1 Attainment of COs

13.1.1 Attainment Table for CO1: 3CSA101.1

CO1: 3CSA101.1: Attainment Table (Columns) As Applicable CO wise-Monthly									
Student	**Pre Mid I Test 10**	**Quiz 1 10**	**Assignment 10**	**Quiz 1 10**	**WS 10**	**Training 10**	**Total (60)**	**% 0f Marks**	**Level of Attainment**
Name1									**3**
Name2									**2**
Name 3									**1**
Name 4									**2**
Name 5									**1**
Name 6									**2**
----									**--**
------									**--**
	No. of Students attained level 3=					**% of Students Attained Level 3=**			
	No. of Students attained level 2=					**% of Students Attained Level 2=**			
	No. of Students attained level 1=					**% of Students Attained Level 1=**			
	Target Achieved= ? (Check Level 3 % attainment -If No Find Gap)								
	Mark X for absent- Take avg. of all present								

(Repeat it for all other COs, (CO2 – CO5))

13.1.2 CO-Gap Identifications

COs	CO 1	CO 2	CO 3	CO4	CO5
Target					
Achieved					
Gap					

13.1.3 Gaps Identified:

Describe what the reasons for gaps are

i.

ii.

Overall CO Attainment Table: Example

COs	CO 1	CO 2	CO 3	CO4	CO5	Co6
Attainment level as per rules set	3	1	3	3	3	3
Average CO attainment through internal assessment	**2.67**					

13.1.4: Activities Decided to bridge the gap

Please do analyze whether you could get improvement through activities decided and conducted for improvements. Reason should be noted why / how it is improved or not.

13.2 Attainment of POs & PSO:

13.2.1 Target-Expected Attainment of PO by attainment of CO- Put all mappings of 3, 2 and 1. Based on CO-PO mapping, determine targets for each PO as average of targets of all relevant COs.

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
3CSA101.1															
3CSA101.2															
3CSA101.3															
3CSA101.4															
3CSA101.5															
Obtain Average-PO/PSO Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets

13.2.2 Attainment of POs & PSO through CO as Continuous Evaluation:

Put all attainment values of CO as per mappings with 3, 2, 1 as evaluated in 13.1.1 (Frequency- Monthly)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
3CSA101.1															
3CSA101.2															
3CSA101.3															
3CSA101.4															
3CSA101.5															
Obtain Avg. PO/PSO Attainment	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved

13.2.3 PO Gap Identification:

	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Targets															
Achieved															
Gap															

13.2.4 Gaps Identified:

Describe what the reasons for gap (for PO) are.

i.

ii.

13.2.5 Activities Decided to bridge the gap

Please do analyze whether you could get improvement through activities decided and conducted for improvements. Reason should be noted why / how it is improved or not.

Repeat whole process after one month, Two months, and three months. Plot bar chart for improvement in CO, PO & PSO. (Every month)

13.3 Attainment of CO through RTU Exam:

This may be possible for previous semester results so overall attainment. If faculty is changed, data will be evaluated by concerned faculty who taught and handed over to current faculty. If faculty not available, then current faculty will do the same.

Attainment of CO: 3CSA101: Subject:			
Student	**RTU Marks (80)**	**% 0f Marks**	**Level of Attainment**
Name1			**3**
Name2			**2**
Name 3			**1**
Name 4			**2**
Name 5			**1**
Name 6			**2**
----			**--**
------			**--**
No. of Students attained level 3=		**% of Students Attained Level 3=**	
No. of Students attained level 2=		**% of Students Attained Level 2=**	
No. of Students attained level 1=		**% of Students Attained Level 1=**	
CO Attainment = ? (Check Level 3 % attainment -If No Find Gap)			
Mark X for absent- Take avg. of all present			

13.3.1 Attainment of CO through RTU Component:

CO: Course Code: Course Name					
Target					
Achieved					
Gap					

13.3.1 Gaps for CO attainment through RTU Component:

Analyze RTU Question paper with respect to COs formulated, contents delivered and students examined, find out reasons for gaps

i.

ii.

13.3.2 Action to be taken:

Prepare recommendations for improvement in planning & teaching for gaps identified.

13.4 Attainment of PO through CO (RTU) Component

Put RTU Results as per target achieved only and mapping level, in following table

Attainment of PO through CO (RTU) Component															
CO	**PO**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
3CSA101															

Attainment of PO through CO (RTU) Component															
3CSA101	**PO**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
Targets															
Achieved															
Gap															

13.4.1 Gaps in PO through CO from RTU component:

Analyze RTU Question paper with respect to COs formulated & mapped, contents delivered and students examined, find out reasons for gaps

Describe what are the reasons for gap

i.

ii.

13.4.2 Action to be taken:

Prepare recommendations for improvement in planning & teaching for gaps identified.

13.5 Overall Attainment of PO & PSO: Through Continuous Assessment & RTU

While combining attainment through Continuous evaluation and RTU component, following weightage be considered.

1. **Internal Assessment – Total weightage- 40 %**
2. **RTU Component ------- Weightage – 60 %**

Put all attainments in the following table and compute.

13.5.1: Table 1

	RTU Component			Internal Assessment				
Student	**RTU Marks (80)**	**% of Marks**	**60% Weightage X6/100 (A)**	**Overall CO (-----)**	**% of Marks**	**Weightage X4/100 (B)**	**Total (A+B)**	**Level of Attainment**
Name1								**3**
Name2								**2**
Name 3								**1**
Name 4								**2**
Name 5								**1**
Name 6								**2**
----								**--**
------								**--**
No. of Students attained level 3=					**% of Students Attained Level 3=**			
No. of Students attained level 2=					**% of Students Attained Level 2=**			
No. of Students attained level 1=					**% of Students Attained Level 1=**			
PO Attainment = ? (Check Level 3 % attainment -If No Find Gap)								
Mark X for absent- Take avg. of all present								

OR

13.5.2: Table 2

	RTU			Internal CO1/ Activity 1 (Weightage %)			Internal CO2/ Activity 2 (Weightage			Internal CO3/ Activity 3 (Weightage %)				
Student	**RTU Marks (80)**	**% 0f Marks**	**60% Weightage X-----/100 A**	**Overall CO (-----)**	**% 0f Marks**	**Weightage X--/100 B**	**Overall CO (-----)**	**% 0f Marks**	**Weightage X--/100 C**	**Overall CO (-----)**	**% 0f Marks**	**Weightage X--/100 D**	**Total (A+B+C+D)**	**Level of Attainment**
Name1														**3**
Name2														**2**
Name 3														**1**
Name 4														**2**
Name 5														**1**
Name 6														**2**
----														**--**
------														**--**

No. of Students attained level 3= Attained Level 3=	**% of Students**
No. of Students attained level 2= Attained Level 2=	**% of Students**
No. of Students attained level 1= Attained Level 1=	**% of Students**
PO Attainment = ? (Check Level 3 % attainment -If No Find Gap)	
Mark X for absent- Take avg. of all present	

13.5.3: Overall PO & PSO Attainment through Course:
Put Overall PO & PSO attainment as per mapping 3,2,1 above:

Attainment of Overall PO for Session 2018-2019															
CO	**PO**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
3CSA101															
PO Attainment															

13.5.4: Overall Gaps for Attainment of PO and PSO from the Course
Put Overall PO & PSO targets & attainment as per mapping 3,2,1 above:

Attainment & Gap of Overall PO Session ----------															
3CSA101	**PO**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
Targets															
Achieved															
Gap															

13.5.5. Overall Gaps for Course taught:
Go through all gaps identified above and summarize. Describe what the reasons are.
i.
ii.

13.5.6 Action to be taken:
Prepare recommendations for improvement in planning & teaching (Internal & RTU) for gaps identified. Decide Activities to be conducted to bridge the gaps in COs.

Repeat whole process after One year before, Two year before, and three year before. Plot bar charts for Continuous improvements check in CO, PO & PSO. (Every Year).

14 File Formats

14.1 List of File Formats

i. Front Page of Course File
ii. ABC Analysis Format
iii. Blown-up Format
iv. Deployment Format
v. Zero Lecture Format
vi. Tutorial Format
vii. Assignment Format
viii. Lecture Note Format
ix. Mid Term Question Paper Format
x. Mid Term Practical Exam Format
xi. Evaluation Sheets Format
xii. Activity Report Format

14.2 Front Page of Course File

POORNIMA
COLLEGE OF ENGINEERING

TEACHING MANUAL

COURSE: _____

SEMESTER: _____

SUBJECT: _____

SUB. CODE: _____

CONTENT: PGC Syllabus, Blown-up, Deployment, Zero Lectures, Detailed lecture notes with cover page, Tutorial/Home-Assignment Sheets

_____

SESSION: 20___-___

NAME OF FACULTY: _____

DEPARTMENT: _____

CAMPUS: _____

14.3 ABC Analysis Format

POORNIMA
COLLEGE OF ENGINEERING
Department of Mechanical Engineering
Even Semester 2021-22

ABC Analysis

Course: B. Tech. **Class/Section: 3rd Year/A** **Date: 10/01/2022**
Name of Faculty: XYZ **Name of Subject: DME-II** **Subject Code: 6ME4-04**

Sr. No.	Category A (Hard topics)	Category B (Topics with average hardness level)	Category C (Easy to understand topics)	Preparedness for "A" topics
1	Bolts subjected to variable stresses.	Goodman line, Soderberg line, Design of machine members subjected to combined, steady and alternating stresses. Design for finite life, Design of Shafts under Variable Stresses,	Variable load, loading pattern, endurance stresses, Influence of size, surface finish, notch sensitivity and stress concentration.	PPT & Notes
2	Design of IC Engine parts: Piston, Connecting rod, Crank shaft	----------	----------	PPT & Notes
3	Design of IC Engine components: Piston, Cylinder, Connecting Rod and Crank Shaft.	Design of helical compression, tension, torsional springs, springs under variable stresses.	Design of belt, rope and pulley drive system,	SPL & PPT
4	Design and force analysis of spur, helical, bevel and worm gears, Bearing reactions due to gear tooth forces.	Design of gear teeth: Lewis and Buckingham equations, wear and dynamic load considerations.		PPT
5	Design of Sliding and Journal Bearing: Methods of lubrication, hydrodynamic, hydrostatic, boundary etc. Minimum film thickness and thermal equilibrium.	Selection of anti-friction bearings for different loads and load cycles, Mounting of the bearings, Method of lubrication.		SPL & PPT

14.4 Blown-up Format

POORNIMA COLLEGE OF ENGINEERING

BLOWN UP SYLLABUS

Campus: PCE Course: B.Tech.	Class/Section: VIth sem./A	Date:06/01/2022
Name of Faculty: XYZ	Name of Subject: DME-II	Code: 6ME4-04

Sr. No.	Topic as per Syllabus	BLOWN UP TOPICS (Upto 10 Times Syllabus)
1	**PART-1** **FATIGUE CONSIDERATION IN DESIGN**	
	1.1 Review of Fatigue (Loading pattern)	1.1.1 Types of load 1.1.2 What is fatigue? 1.1.3 Fatigue curve 1.1.4 Endurance limit
	1.2 Factor affecting endurance limit	1.2.1 Surface finish factor 1.2.2 Size factor 1.2.3 Reliability factor 1.2.4 Temperature factor
	1.3 Notch sensitivity & Stress concentration	1.3.1 factor of safety 1.3.2 stress concentration 1.3.3 stress concentration curve 1.3.4 notch sensitivity 1.3.5 theoretical stress concentration factor
	DESIGN OF MACHINE MEMBER	
	1.4 Goodman, Goderberg line, Design of machine member under steady, Variable and alternating stress Design for variable stresses	1.4.1 Good men line, Soderberg line, Gerber parabola method 1.4.2 Design under axial, bending and torsional stress 1.4.3 Mean and variable stress 1.4.4 Design for combined stress 1.4.4 Numerical approach for the design of member
	1.5 Design for finite life	1.5.1 Requirement of finite life design 1.5.2 Goodman approach toward finite life 1.5.3 Numerical approach for finite life design
	PART-2 **DESIGN OF I.C ENGINE PARTS**	
2	2.1 Design of I .C Engine Piston	2.1.1 What is Piston and its importance? 2.1.2 Different materials used for the piston. 2.1.3 Effect of materials on the Piston design 2.1.4 Calculation of various pressure and inertia forces

14.5 Deployment Format

POORNIMA COLLEGE OF ENGINEERING

SYLLABUS DEPLOYMENT

Campus: PCE	Course: B.Tech.	Class/Section: VIth sem./A	Date: 05/01/2022
Name of Faculty: XYZ		Name of Subject: DME-II	Code: 6ME4-04

S.No.	TOPIC AS PER BLOWNUP SYLLABUS	LECT. NO.	CO/LO	Target Date of Coverage	Actual Date of Coverage	Teaching method	Ref. Book/Journal with Page No.
1	**ZERO LECTURE**	L-1	CO1	11/01/2022	11/01/2022	PPT	Machine design by V.B Bhandari & R. S Khurmi
2	***Introduction to Unit :1*** **Introduction of the lecture** 1.1.1 Types of load 1.1.2 What is fatigue 1.1.3 Fatigue curve 1.1.4 Endurance limit ***Conclusion of the lecture*** ***Brief of next lecture***	L-2	CO1	12/01/2022	12/01/2022	*Chalk/ Board*	Machine design by V.B Bhandari & R. S Khurmi Page No 34-38
3	**Introduction of the lecture** 1.2.1 Surface finish factor 1.2.2 Size factor 1.2.3 Reliability factor 1.2.4 Temperature factor ***Conclusion of the lecture*** ***Brief of next lecture***	L-3	CO1	14/01/2022	14/01/2022	*Chalk/ Board*	Machine design by V.B Bhandari & R. S Khurmi Page No 44-52
4	**Introduction of the lecture** 1.3.1 Factor of safety 1.3.2 Stress concentration 1.3.3 Stress concentration curve ***Conclusion of the lecture*** ***Brief of next lecture***	L-4	CO1,2	16/01/2022	16/01/2022	*Chalk/ Board*	Machine design by V.B Bhandari & R. S Khurmi Page No 58-62
5	**Introduction of the lecture** 1.3.4 Notch sensitivity 1.3.5 Theoretical stress concentration factor ***Conclusion of the lecture*** ***Brief of next lecture***	L-5	CO1	17/01/2022	17/01/2022	*Chalk/ Board*	Machine design by V.B Bhandari & R. S Khurmi Page No 73-82
6	**Introduction of the lecture** 1.4.1 Goodman line, Soderberg line, Gerber parabola method the design of member	L-6	CO1,2	18/01/2022	18/01/2022	*Chalk/ Board*	Machine design by V.B Bhandari & R. S Khurmi Page No 82-88

14.6 Zero Lecture Format

POORNIMA
COLLEGE OF ENGINEERING

ZERO LECTURE

Session: 20 - (Sem.)

Campus: ……..…… Course: ……..…. Class/Section: ……..……

Name of Faculty: …….....

Zero Lecture

1). Name of Subject: …….. Code: ……

2). Self-Introduction:

a). Name:
b). Qualification:
c). Designation:
d). Research Area:
e). E-mail Id: ……@poornima.org
f). Other details: Information about areas of proficiency/ expertise such as subject taught, laboratory taken, Member of Professional body, Academic Proficiency, Book Authored, Paper published in National and International Conference/Journals etc.

3). Introduction of Students:

a*). Records of students in 12th*

Sr. No.	Average result of 12th	Name of student scored highest marks	Marks 60% above (No. of students)	Marks between 40%-60% (No. of students)	English Medium Students (No.)	Hindi Medium Students (No.)	No. of Hostellers	No. of Day Scholar

b*). Name of 05 best students based on previous results: ……, ……, ……, ……, ……*

4). Instructional Language: - ……%English; ……..% Hindi (English not less than 60%)

5). Introduction to subject: - (Pl. separate out subject specific matter and general matter valid for all subjects and group/place them appropriately)

a). Relevance to Branch:
b). Relevance to Society:
c). Relevance to Self:
d). Relation with laboratory:
e). Connection with previous year and next year:

6). Syllabus of Poornima Group of Colleges, Jaipur

a). Unit Name:
b). ABC analysis (RGB method) of unit & topics

7). Books/ Website/Journals & Handbooks/ Association & Institution:

a). Recommended Text & Reference Books and Websites:

S. No.	Title of Book	Authors	Publisher	Cost (Rs.)	No. of books in Library
Text Books					
T1					
T2					
T3					
Reference Books					
R1					
R2					
R3					
Websites related to subject					
1					
2					

b). Journals & Handbooks: - To give information about different Journals & Handbooks available in library related to the subject and branch.

c). Associations and Institutions: - To give information about different Associations and Institutions related to the subject and branch.

8). Syllabus Deployment: -

a). Total weeks available for academics (excluding holidays) as per Poornima Foundation calendar-

Semester	
No. of Working days available(Approx.)	
No. of Weeks (Approx.)	

- Total weeks available for special activities (as mentioned below)- 02 weeks (Approx.)

Note: Individual faculty must calculate the exact no. of lectures available according to time table etc. after consultation with HOD.

b). Special Activities (To be approved by HOD & Dean & must be mentioned in deployment):

- Open Book Test- Once in a semester
- Quiz - Once in a semester
- Special Lectures (SPL)- Minimum 10% of total no. of lectures including following
  - i. Smart Class by the faculty, who is teaching the subject
  - ii. SPL by expert faculty at PGC level
  - iii. SPL by expert from industry/academia (other institution)
- Revision classes (Solving Important Question Bank):- 1 class before Mid Term and 2 classes before End Term Exam

c). Lecture schedule per week

i). University scheme (L+T+P) = ...+....+.....

Sr. No.	Name of Unit	No. of lectures	Broad Area	Degree of difficulty (High/Medium/Low)	Text/ Reference books
1.					
2.					
3.					
4.					
5.					

d). Introduction & Conclusion: Each subject, unit and topic shall start with introduction & close with conclusion. In case of the subject, it is Zero lecture.

e). Time Distribution in lecture class: - Time allotted: 60 min.

i. First 5 min. should be utilized for paying attention towards students who were absent for last lecture or continuously absent for many days + taking attendance by calling the names of the students and also sharing any new/relevant information.

ii. Actual lecture delivery should be of 50 min.
iii. Last 5 min. should be utilized by recapping/ conclusion of the topic. Providing brief introduction of the coming up lecture and suggesting portion to read.
iv. After completion of any Unit/Chapter a short quiz should be organized.
v. During lecture student should be encouraged to ask questions.

Note: Pl. ensure that each student is having Lecture Note Book. Also, write on the black board day and date, name of the teacher, name of subject with code, unit and lecture no. and topics to be covered at the beginning of each lecture and ensure that students write in lecture note book. Ask students to leave 4/5 pages blank for copying the note from fellow students in case of their absenteeism.

9). Tutorial: - An essential component of Teaching- Learning process in Professional Education.

Objective: - To enhance the recall mechanism.
To promote logical reasoning and thinking of the students.
To interact personally to the students for improve numerical solving ability.

a). *Tutorial processing:* - Tutorial sheet shall be provided to each students

Ist Phase: - It is consisting of questions to be solved in the class assignment session in test mode on perforated sheet given in tutorial notebook and to be collected & kept by respective faculty for review & analysis (20 minutes).

IInd Phase: - Indicating/Initializing the weak issues/ drawback and Evaluating and providing the grade. Making a group with good student for assisting the weak students to explain/solve questions by every student on plain papers given in tutorial note book (20 minutes).

IIIrd Phase: - Solving/ explaining difficulties of lecture class and providing the new home assignment (20 minutes). To be done in tutorial note book.

b). *Home assignment shall comprise of two parts:*

Part (i) Minimum essential questions, which are to be solved and submitted by all with in specified due date.

Part (ii) Other important questions, which may also be solved and submitted for examining and guidance by teacher.

10). Examination Systems:

A. FOR ALL THEORY COURSES:-

a. Continuous Internal Evaluation (CIE)	**20%**
-Assignment / Project / Papers / Essays / Class Participation	10%
-Quiz / Class Test (Announced / Unannounced)	5%
- Attendance and Discipline	5%
b. Mid Semester Exams (MSE) – Two	**20%**
c. End Semester Exam (ESE) - One	**60%**
TOTAL	**100 %**

B. FOR ALL PRACTICAL (LABORATORY) COURSES:-

a. Continuous Internal Evaluation (CIE)	**40%**
-Performance (Lab Record, Viva,)	30%
-Attendance and Participation in laboratory work	10%
b. Mid Semester Exam (MSE)– Two	**20 %**
c. End Semester Exam (ESE) - One	**40%**
TOTAL	**100 %**

11). Any other important point:

Place & Date: Name of Faculty with Designation

14.7 Lecture Note Front page Format

POORNIMA
COLLEGE OF ENGINEERING

LECTURE NOTES

Campus: ……..…. Course: ……..…….. Class/Section: ……..…. Date: ……..……..

Name of Faculty: ……..…….. Name of Subject: ……..…… Code: ……..…..

Date (Prep.): ……..…….. Date (Del.): ……..……..Unit No.:……..…..…..Lect. No: ……..……..

OBJECTIVE: To be written before taking the lecture (Pl. write in bullet points the main topics/concepts etc., which will be taught in this lecture)

IMPORTANT & RELEVANT QUESTIONS:

FEED BACK QUESTIONS (AFTER 20 MINUTES):

OUTCOME OF THE DELIVERED LECTURE: To be written after taking the lecture (Pl. write in bullet points about students' feedback on this lecture, level of understanding of this lecture by students etc.)

REFERENCES: Text/Ref. Book with Page No. and relevant Internet Websites:

14.7.1 Detailed Lecture Note Format-1

POORNIMA
COLLEGE OF ENGINEERING

DETAILED LECTURE NOTES

Campus: …….	**Course: ……..**	**Class/Section: ……**	**Date: ……**
Name of Faculty: ……		**Name of Subject: ……**	**Code: ……**

14.7.2 Detailed Lecture Note Format-2

POORNIMA
COLLEGE OF ENGINEERING

DETAILED LECTURE NOTES

PAGE NO. .....

14.8 Assignment Format

POORNIMA
COLLEGE OF ENGINEERING

Assignment Sheet-1

Campus: PCE **Course:** B.Tech. **Class/Section:** III **Date:** .....

Name of Faculty: SKT **Name of Subject:** Design Machine of Machine Element-II **Code:** 6ME4-04

Date of Preparation: ..... **Scheduled Date of Submission:** .....

Q. No.	Questions	COs	POs	PSOs
1	Discuss influence of size, surface, reliability and modifying factor on endurance limit of material.	CO1	PO2	PSO1
2	Discuss various methods of mitigation of stress concentration.	CO1	PO2	PSO1
3	Define the following terms used in design of machine elements (i) Size Factor (ii) Notch Sensitivity (iii) Surface Finish Factor	CO1	PO2	PSO1
4	What do you mean by stress concentration? How do you take it into consideration in case of components subjected to dynamic loads?	CO1	PO2	PSO1
5	Explain difference between Soderberg, Goodman and Gerber criteria in detail.	CO1	PO2	PSO1
6	What is physical significance of notch sensitivity factor being one of zero.	CO1	PO2	PSO1
7	What is fluctuating stresses? Draw stress-time curves for different fluctuating stresses.	CO1	PO2	PSO1
8	What is endurance strength? Draw S-N diagram and list various factors affecting it.	CO1	PO2	PSO1
9	Draw and describe Goodman and Soderberg diagram.	CO1	PO2	PSO1
10	Explain modified Goodman diagram for bending stresses.	CO1	PO2	PSO1

14.9 Tutorial Format

POORNIMA
COLLEGE OF ENGINEERING

TUTORIAL SHEET

TUTORIAL SHEET SHEET No.....

Campus: ..... Course: ..... Class/Section: ..... Date: .....

Name of Faculty: ..... Name of Subject: ..... Code: .....

Date of Tut. Sheet Preparation:..... Scheduled Date of Tut.:.....Actual Date of Tut. :.....

Name of Student:.....Scheduled & Actual Date of H.A. Submission:.....&.....

	Questions	CO	PO
FIRST 20 MT. CLASS QUESTIONS			
2 HRS. SOLVABLE HOME ASSIGNMENT (H.A.) QUESTIONS			
OTHER IMPORTANT QUESTIONS			

14.10 Mid Term/ End Term Practical Question Paper Format

POORNIMA COLLEGE OF ENGINEERING, JAIPUR

III B.TECH. (VI Sem.) **SET- A**

FIRST MID TERM PRACTICAL EXAMINATION 2021-22
Code: 6ME4-23 Category: PCC Subject Name: MACHINE DESIGN PRACTICE-II
(BRANCH – MECHANICAL ENGINEERING)

Max. Time: 60 Minutes **Max. Marks: 22 + 8 (Viva) = 30**

NOTE: - **All questions are compulsory. Use of Design Data Book is allowed.**

Q. No.	Question	Marks	LO	PO
Q.1				
Q.2				
Q.3				

POORNIMA COLLEGE OF ENGINEERING, JAIPUR

III B.TECH. (VI Sem.) **SET- B**

FIRST MID TERM PRACTICAL EXAMINATION 2021-22
Code: 6ME4-23 Category: PCC Subject Name: MACHINE DESIGN PRACTICE-II
(BRANCH – MECHANICAL ENGINEERING)

Max. Time: 60 Minutes **Max. Marks: 22 + 8 (Viva) = 30**

NOTE: - **All questions are compulsory. Use of Design Data Book is allowed.**

Q. No.	Question	Marks	LO	PO
Q.1				
Q.2				
Q.3				

14.11 Mid Term Theory Question Paper Format

POORNIMA COLLEGE OF ENGINEERING, JAIPUR

II B.TECH. (III Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2021-22

Code: 3CE2-01 Category: PCC Subject Name–ADVANCE ENGINEERING MATHEMATICS -I

(BRANCH – CIVIL ENGINEERING)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

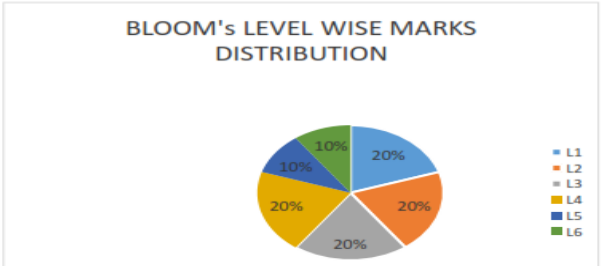
NOTE:- Read the guidelines given with each part carefully.

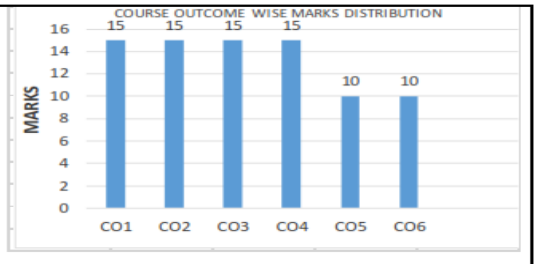
Course Outcomes (CO):

At the end of the course the student should be able to:

CO1:
CO2:
CO3:
CO4:
CO5:
CO6:

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1		**2**			
Q.2		**2**			
Q.3		**2**			
Q.4		**2**			
Q.5		**2**			
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6		**5**			
Q.7		**5**			
Q.8		**5**			
Q.9		**5**			
Q.10		**5**			
Q.11		**5**			
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12		**10**			
Q.13		**10**			
Q.14		**10**			
Q. 15		**10**			





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

13. List of Important Links

List of Important Links		
Sr. No.	**Link**	**Particulars**
1	https://www.rtu.ac.in/index/	Rajasthan Technical University
2	http://www.pce.poornima.org	Institute Website
3	http://www.pce.poornima.org/Downloads.html	Format of Students & Employees
4	https://www.turnitin.com/login_page.asp?lang=en_us	Plagiarism Checker
5	http://pcelibrary.poornima.org/	PCE Digital Library
6	https://ndl.iitkgp.ac.in/	National Digital Library of India (NDLI)
7	https://swayam.gov.in/	SWAYAM MOOCs platform
8	https://www.vlab.co.in/	Virtual Labs
9	https://spoken-tutorial.org/	Spoken Tutorial
10	https://fossee.in/	FOSSEE (Free/Libre and Open Source Software for Education)
11	https://www.sih.gov.in/	Smart India Hackathon
12	https://www.swayamprabha.gov.in/	32 high quality educational channels through DTH on 24X7 basis.
13	https://ieeexplore.ieee.org/Xplore/home.jsp.You	IEEE All Society Periodicals Package
14	https://booksc.org/	Link for Free for book and articles
15	https://jgateplus.com/home/	J-gate Plus (JOURNALS -GATE) subscriptions
16	http://www.delnet.nic.in/	Developing Library Network
17	https://dst.rajasthan.gov.in/content/dst-gov/en/home.html	Department of Science & Technology, Government of Rajasthan
18	https://ipindia.gov.in/index.htm	Official website of Intellectual Property India
19	http://pce.poornima.org/Downloads.html	Academic Formats Word File
Note:- Required Credentials can be taken from Respective Department Heads		