NIRF-2023
Engineering Rank Band (151-200)
Pharmacy Rank - 88
Innovation Rank Band (51-100)

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Department of Mechanical Engineering

Course Outcomes

&

CO-PO Mapping

Odd Sem

(2023-24)

KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** II **Semester:** III
Course Name: Mini Project or Internship Assessment **Course Code:** BCC351 **Course Coordinator Name:** Mr. Sonendra

CO-PO/PSO/APOMatrix

CO No.	ProgrammeOutcome(PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO2	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO3	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO4	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO5	-	-	-	-	-	-	-	1	1	2	2	3	-	-
POTarget						-	-	1	1	2	2	3		

Faculty Members Teaching the Course	Signature
Mr. Sonendra	Sonendra

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: III**

Course Name: Mini Project or Internship Assessment **Course Code: BCC 351** **Course Coordinator Name: Mr. Sonendra**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply technical knowledge to the students to cope with industrial environment, which can not be simulated in the classroom hence creating competent professionals in the Industry.	PO8, PO9, PO10, PO11 & PO12	3	F, C
CO2	Understand possible opportunities to learn, understand, and sharpen the real-time technical /managerial skills required on the job	PO8 , PO9, PO10, PO11 & PO12	2	F, C
CO3	Apply the current technological developments relevant to the subjectarea of training	PO8, PO9, PO10, PO11 & PO12	3	F, C
CO4	Apply the experience gained from the industrial internship in the discussion held in the classrooms	PO8 , PO9, PO10, PO11 & PO12	3	F, C
CO5	Create conditions conducive to the quest for knowledge and its applicability on the job	PO8 , PO9, PO10, PO11 & PO12	6	F, C

Faculty Members Teaching the Course	Signature
1. Mr. Sonendra	Sonendra

Sonendra

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B-Tech **Academic Session: 2023-24** **Year: 2** **Semester: 3**

Course Name: CAMD LAB **Course Code: BME-353** **Course Coordinator Name: ASHISH SHARMA**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3			1					1		1		
CO2	3	3			1					1		1		
CO3	3	3			1					1		1		
CO4	3	3			1					1		1		
CO5	3	3			1					1		1		
PO Target	3	3			1					1		1		

Faculty Members Teaching the Course	Signature
1.ASHISH SHARMA	
2. SANDEEP CHHABRA	
3. ANKUR SACHDEVA	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B-Tech **Academic Session: 2023-24** **Year: II** **Semester: 3**

Course Name: CAMD Lab **Course Code: BME-353** **Course Coordinator Name: ASHISH SHARMA**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Apply the basics to Understand Indian Standards on drawing practices	PO1,PO2,PO5,PO10,PO12	3	C
CO2	Apply and acquire the knowledge of CAD software and its features.	PO1,PO2,PO5,PO10,PO12	3	C
CO3	Apply and interpret drawings of machine components leading to preparation of Assembly drawings manually and using CAD packages	PO1,PO2,PO5,PO10,PO12	3	P
CO4	Apply and acquire knowledge of thread forms, fasteners, keys, joints and couplings	PO1,PO2,PO5,PO10,PO12	3	P
CO5	Apply and acquire the knowledge of limits, tolerance and fits and indicate them on machine drawings	PO1,PO2,PO5,PO10,PO12	3	C

Faculty Members Teaching the Course	Signature
1. ASHISH SHARMA	
2. SANDEEP CHHABRA	
3. ANKUR SACHDEVA	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: III**

Course Name: Material testing Lab **Course Code: BME-352** **Course Coordinator Name: Dr. Anurag Gupta**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3				2		2						2
CO2	3	3						2						2
CO3	3	3				2		2						2
CO4	3	3						2						2
CO5	3	3				2		2						2
PO Target	3	3				2		2						2

Faculty Members Teaching the Course	Signature
Dr. Anurag Gupta	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: III**

Course Name: Material testing Lab **Course Code: BME-352** **Course Coordinator Name: Dr. Anurag Gupta**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Test the mechanical properties of material on Universal testing machine and also able to analyze test results	1, 2, 6, 8, PSO2	4	C
CO2	Evaluate materials' hardness and also able to analyze effect of different processes on hardness.	1, 2, 8, PSO2	4	C
CO3	Evaluate the toughness of materials by izod and charpy test.	1, 2, 6, 8, PSO2	4	P
CO4	Analyze the effect of heat treatment on the same.	1, 2, 8, PSO2	4	C
CO5	Evaluate the modulus rigidity through torsion test and able to analyze fatigue failure of the material using Fatigue test.	1, 2, 6, 8, PSO2	4	P

Faculty Members Teaching the Course	Signature
1. Dr. Anurag Gupta	

Signature of Course Coordinator **Assoc. Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 2** **Semester: 3**

Course Name: Fluid Mechanics Lab **Course Code: BME 351** **Course Coordinator Name: Prashant Vashishtha**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3							3	1	2	3		1
CO2	3	3							3	1	2	3		1
CO3	3	3							3	1	2	3		1
CO4	3	3							3	1	2	3		1
PO Target	3	3							3	1	2	3		1

Faculty Members Teaching the Course	Signature
1.Prashant Vashishtha	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 2** **Semester: 3**

Course Name: Fluid Mechanics Lab Course Code: BME 351 **Course Coordinator Name: Prashant Vashishtha**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply the concept of the Impact of jet, Bernoulli's theorem and Reynold's experiment.	PO1,PO2, PO9,P10,P11,P12,PSO2	3	P
CO2	Analyze minor and major losses in pipes	PO1,PO2, PO9,P10,P11,P12,PSO2	4	P
CO3	Apply the concept of venturi meter, orificemeter and different types of notches.	PO1,PO2, PO9,P10,P11,P12,PSO2	3	P
CO4	Analyze the concept of equilibrium of floating bodies .	PO1,PO2, PO9,P10,P11,P12,PSO2	4	P
CO5	Apply the concept of the Impact of jet.	PO1,PO2, PO9,P10,P11,P12,PSO2	3	P

Faculty Members Teaching the Course	Signature
1.Prashant Vashishtha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: III**

CourseName: Python Programming **CourseCode: BCC-302** **Course Coordinator Name: Mr. Piyush Pant**

CO-PO/PSO/APOMatrix

CO No.	ProgrammeOutcome(PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1				3									
CO2	1				3									
CO3	1				3									
CO4	1				3									
CO5	1				3									
POTarget	1				3									

Faculty Members Teaching the Course	Signature
1. Mr. Piyush Pant	

Signature of CourseCoordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: III**

CourseName: Python Programming **CourseCode: BCC-302** **Course Coordinator Name: Mr. Piyush Pant**

CourseOutcomes

After completion of the course, the student will be able to		RelevantPOs/PSOs/ APOs	Revised Bloom'sLevel(BL)	KnowledgeCategory(KC)
CONo.	**StatementofCourseOutcome**			
CO1	Understand simple Python programs.	PO1, PO5	2	C
CO2	Apply conditionals and loops in Python programs.	PO1, PO5	3	C
CO3	Apply python data structures and Python functions in programs.	PO1, PO5	3	P
CO4	Apply input/output with files in Python.	PO1, PO5	3	P
CO5	Apply searching, sorting and merging in Python	PO1, PO5	3	P

Faculty Members Teaching the Course	Signature
1. Mr. Piyush Pant	

Signature of CourseCoordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 14 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** 2nd **Semester:** 3rd

CourseName: Material Engineering **CourseCode:** BME-303 **Course Coordinator Name:** Dr. Anurag Gupta

CO-PO/PSO/APOMatrix

CO No.	ProgrammeOutcome(PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3	1	3	2					3	2	
CO2	3	3	3	3		3	3					3		
CO3	3	3	2	3		3						3		
CO4	3	3		3		3	2					3		
CO5	3	3	3	3		3	2					3		
POTarget	3	3	2.2	3	0.2	3	1.8					3	0.4	

Faculty Members Teaching the Course	Signature
Dr. Anurag Gupta	

Signature of CourseCoordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** 2nd **Semester:** 3rd
CourseName: Material Engineering **CourseCode:** BME-303 **Course Coordinator Name:** Dr. Anurag Gupta

After completion of the course, the student will be able to		RelevantPOs/PSOs/ APOs	Revised Bloom'sLevel(BL)	KnowledgeCategory(KC)
CO No.	Statement of Course Outcome			
CO1	Analyse the properties of ferrous and non-ferrous materials.	PO1, PO2, PO3, PO4, PO5, PO6 , PO7, PO12, PSO1	4	F
CO2	Analyse the mechanism of material failure under different loading.	PO1, PO2, PO3, PO4, PO6 , PO7, PO12	4	F
CO3	Analyse the microstructure properties and phase diagram of engineering materials.	PO1, PO2, PO3, PO6 , PO12,	4	F
CO4	Apply heat treatment method to modify the material properties.	PO1, PO2, PO4, PO6 , PO7, PO12	3	P
CO5	Analyse effect of different alloying elements on the properties of ferrous and nonferrous alloys.	PO1, PO2, PO3, PO4, PO6 , PO7, PO12	4	F

Faculty Members Teaching the Course	Signature
Dr. Anurag Gupta	

Signature of CourseCoordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 2** **Semester: 3**

Course Name: Fluid Mechanics and Fluid Machines **Course Code: BME 302** **Course Coordinator Name: Prashant Vashishtha**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply the basics of fluid mechanics and Bernoulli's equation.	PO1,PO2,PO9,PO10,PO 11,PO12,PSO2	3	C
CO2	Analyse different types of flow and continuity equation.	PO1,PO2,PO9,PO10,PO 11,PO12,PSO2	4	F
CO3	Analyse laminar and turbulent flow, losses in pipes and boundary layer theory.	PO1,PO2,PO9,PO10,PO 11,PO12,PSO2	4	C
CO4	Analyse the principle of impact of jet and working of different types of turbines	PO1,PO2,PO9,PO10,PO 11,PO12,PSO2	4	C
CO5	Analyse the principle and working of centrifugal and reciprocating pumps.	PO1,PO2,PO9,PO10,PO 11,PO12,PSO2	4	C

Faculty Members Teaching the Course	Signature
1. Prashant Vashishtha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 2** **Semester: 3**

Course Name: Fluid Mechanics and Fluid Machines **Course Code: BME 302** **Course Coordinator Name: Prashant Vashishtha**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2							1	2	2	3		2
CO2	3	2							1	2	2	3		2
CO3	3	2							1	2	2	3		2
CO4	3	2							1	2	2	3		2
CO5	3	2							1	2	2	3		2
PO Target	3	2							1	2	2	3		2

Faculty Members Teaching the Course	Signature
1.Prashant Vashishtha	

Signature of Course Coordinator Assoc./ Asst. Head DOC Signature of Addl. HoD Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: III**

Course Name: Thermodynamics **Course Code: BME301** **Course Coordinator Name: Dr. Ashish Karnwal**

CO-PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	2											2
CO2	3	3	3											2
CO3	3	3	3											2
CO4	2	2	2											
CO5	3	3	3											
PO Target	2.6	2.6	2.6											2

Faculty Members Teaching the Course	Signature
Dr. Ashish Karnwal	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

Department of Mechanical Engineering

Program Name: **Academic Session:** **2023-24** **Year:** **Semester: iii**

CourseName: **B.Tech 2nd year** **CourseCode: BAS 303** **Course Coordinator Name: Swati Maheswari**

CO-PO/PSO/APOMatrix

CO No.	ProgrammeOutcome(PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2										2	1	2
CO2	2	2	2									2	1	2
CO3	2	2	2	2	2							2	2	2
CO4	2	2	1	1	1							1	1	1
CO5	2	2	2	2	2	2	2					2	2	3
POTarget	2	2	1.7	1.6	1.6	2	2					1.8	1.4	2

Faculty Members Teaching the Course	Signature
Swati Maheswari	SWATI

SWATI

Signature of CourseCoordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name:
CourseName:B.Tech II year
CourseOutcomes:

Academic Session: 2022-23 **Year: II** **Semester: IV**
CourseCode: BAS 303 **Course Coordinator Name:** Dr Swati Maheshwari

After completion of the course, the student will be able to		RelevantPOs/PSOs/ APOs	Revised Bloom'sLevel(BL)	KnowledgeCategory(KC)
CONo.	StatementofCourseOutcome			
CO1	Solve partial differential equations by Lagrange, Charpit and other particular methods..	$PO_1, PO_2, PO_{12}, PSO_1, PSO_2$	3	C&P
CO2	Apply the method of separation of variables to solve Wave , Heat and Laplace equation. Application of Fourier transform	$PO_1, PO_2, PO_3, PO_{12}, PSO_1, PSO_2$	3	C&P
CO3	Determine moments, correlation, linear regression lines and obtain best fitting curves to the given data.	$PO_1, PO_2, PO_3, PO_4, PO_5, PO_{12}, PSO_1, PSO_2$	3	C&P
CO4	Apply the concept of probability to solve discrete and continuous probability problems.	$PO_1, PO_2, PO_3, PO_4, PO_5, PO_{12}, PSO_1, PSO_2$	3	C&P
CO5	Apply the theory of sampling to solve t-test, z-test and Chi-square test problems.	$PO_1, PO_2, PO_3, PO_4, PO_5, PO_6, PO_7, PO_{12}, PSO_1, PSO_2$	3	C&P

Faculty Members Teaching the Course	Signature
1. Dr Swati Maheshwari	

Signature of CourseCoordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**

Course Name: Technical communication **Course Code: BAS-301** **Course Coordinator Name: Dr. Babita Tyagi**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1							1		2	3		2		
CO2							1		2	3		2		
CO3							1		2	3		2		
CO4							1		2	3		2		
CO5							1		2	3		2		
PO Target							1		2	3		2		

Faculty Members Teaching the Course	Signature
1. Dr Babita Tyagi	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**

Course Name: Technical communication **Course Code: BAS-301** **Course Coordinator Name: Dr. Babita Tyagi**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	UNDERSTAND the nature and objective of Technical Communication relevant for the work place as Engineers.	PO-7, PO-9, PO-10, PO-12	2	C
CO2	DEVELOP an understanding of key concepts of writing, designing and speaking.	PO-7, PO-9, PO-10, PO-12	3	P
CO3	UTILIZE the technical writing skills for the purposes of Technical Communication and its exposure in various dimensions.	PO-7, PO-9, PO-10, PO-12	3	P
CO4	BUILD UP interpersonal communication traits that will make the transition from institution to workplace smoother and help them to excel in their jobs.	PO-7, PO-9, PO-10, PO-12	3	C
CO5	APPLY technical communication to build their personal brand and handle crisis communication	PO-7, PO-9, PO-10, PO-12	3	C

Faculty Members Teaching the Course	Signature
1. Dr Babita Tyagi	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: III**
Course Name: Thermodynamics **Course Code: BME301** **Course Coordinator Name: Dr. Ashish Karnwal**

Course Outcomes

CO No.	Statement of Course Outcome	Relevant POs/PSOs	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to				
CO1	Understand the basic principles of heat and work, temperature and thermodynamic processes.	PO1, PO2, PO3, PSO2	2	F,C
CO2	Analyze the first law of thermodynamics applicable to thermodynamic systems.	PO1, PO2, PO3, PSO2	4	F,C
CO3	Analyze second law of thermodynamics and concept of entropy on various thermodynamic systems.	PO1, PO2, PO3, PSO2	4	F,C
CO4	Apply the concept of availability, irreversibility, Second Law efficiency and understanding of thermodynamic relations.	PO1, PO2, PO3	3	F,C
CO5	Analyze the properties of pure substance using steam table, mollier diagram and apply it to simple Rankine Cycle.	PO1, PO2, PO3	4	F,C

Faculty Members Teaching the Course	Signature
Dr. Ashish Karnwal	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Heat and mass transfer **Course Code: KME501** **Course Coordinator Name: Mr. Sonendra**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the basic laws and mechanism of different mode of heat transfer and differential governing equations for conduction.	PO1, PO2 & PO3, PO4, PO5	2	F, C
CO2	Analyze rate of heat transfer through Fins and understand the transient heat conduction.	PO1, PO2 & PO3, PO4, PO5,PO6, PO7. PSO1	4	F, C
CO3	Analyse heat transfer through convection for different type of surface and also understand the difference between natural and forced convection.	PO1, PO2 & PO3, PO4, PO5,PO6, PO7. PSO1	4	F, C
CO4	Apply the basic laws and principles to determine rate of heat transfer through radiations.	PO1, PO2 & PO3, PO4, PO5,PO6, PO7. PSO1	3	F, C
CO5	Design heat exchangers (parallel and counter flow) and understand the phenomenon of condensation, boiling, fundamentals of mass transfer.	PO1, PO2 & PO3, PO4, PO5,PO6, PO7. PSO1	5	F, C

Faculty Members Teaching the Course	Signature
1. Mr. Sonendra	
2. Dr. Gaurav Sharma	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** III **Semester:** V

Course Name: HMT **Course Code:** KME501 **Course Coordinator Name:** Mr. Sonendra

CO-PO/PSO/APOMatrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	2	2	1									
CO2	2	2	1	2	2	1	1						3	
CO3	2	2	2	3	2	1	1						3	
CO4	2	2	2	3	2	1	1						3	
CO5	2	2	2	3	2	1	1						3	
PO Target	2	2	2.2	2.6	1.8	0.8	`0.8						2.4	

Faculty Members Teaching the Course	Signature
1. Mr. Sonendra	
2. Dr Gaurav Sharma	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Strength of materials **Course Code: KME502**

Course Coordinator Name: Mr. Sachin Rathore

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Analyses the effect of applied load on the solid body under various loading conditions.	PO1, PO 2, PO3, PO4, PO10, PO12, PSO1, PSO2	4	F
CO2	Evaluate stresses and deflection by various methods on beams and shafts.	PO1, PO 2, PO3, PO10, PO12, PSO1, PSO2	5	F, P
CO3	Analyze spring and column under various loading conditions.	PO 1, PO 2, PO3, PO10, PO12, PSO1, PSO2	4	F, P
CO4	Analyze the stresses developed in pressure vessels	PO1, PO2, PO3, PO10, PO12, PSO1, PSO2	4	F, P
CO5	Apply the concept of bending stresses on curved and unsymmetrical beams.	PO1, PO 2, PO3, PO10, PO12, PSO1, PSO2	3	F

Faculty Members Teaching the Course	Signature
1. Sachin Rathore	
2. Vineet Vashishtha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 *should* have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year:3rd** **Semester: Vth**
Course Name: Strength of materials **Course Code: KME502**
Course Coordinator Name: Mr. Sachin Rathore

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	2						1		3	1	1
CO2	3	2	3	3						1		3	2	1
CO3	3	2	2	3						1		3	2	1
CO4	3	2	3	3						1		3	2	1
CO5	3	3	3	3						1		3	1	1
PO Target	3	2.2	2.6	2.8						1		3	1.6	1

Faculty Members Teaching the Course	Signature
1.Sachin Rathore	
2. Vineet Vashishta	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in *CO* - PO/APO/PSO Matrix.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: V**

Course Name: Industrial Engineering **Course Code: KME-503** **Course Coordinator Name: Gaurav**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Analyze the concept of production system, productivity, facility and process planning in various industries.	PO11, PO12	4	C
CO2	Apply the various forecasting and project management techniques	PO1,PO2,PO4,PO11,PO12	3	C
CO3	Apply the concept of break-even analysis, inventory control and resource utilization using queuing theory.	PO1,PO2,PO4,PO11,PO12	3	P
CO4	Apply principles of work study and ergonomics for design of work systems.	PO11, PO12	3	P
CO5	Formulate the mathematical models for optimal solution of industrial problems using linear programming approach.	PO1,PO2,PO3,PO4,PO11, PO12	6	P

Faculty Members Teaching the Course	Signature
1. Gaurav	Gaurav

Gaurav

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech
Course Name: Industrial Engineering
Academic Session: 2023-24 **Year: 3rd** **Semester: Vth**
Course Code: KME-503 **Course Coordinator Name: Gaurav**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	-	-	-	-	-	1	3	-	-
CO2	3	3	-	2	-	-	-	-	-	-	3	3	-	-
CO3	3	3	-	2	-	-	-	-	-	-	3	3	-	-
CO4	-	-	-	-	-	-	-	-	-	-	3	3	-	-
CO5	3	3	2	3	-	-	-	-	-	-	3	3	-	-
PO Target	3	3	2	2.33	-	-	-	-	-	-	2.6	3	-	-

Faculty Members Teaching the Course	Signature
1. Gaurav	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B-Tech **Academic Session: 2023-24** **Year: III** **Semester: 5**

Course Name:CIM **Course Code: KME-051** **Course Coordinator Name: ASHISH SHARMA**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Analyse the basic concepts of automation, computer numeric control machining.	PO1,PO2,PO3,PO4,PO12	4	C
CO2	Apply the algorithms of line generation, circle generation, transformation, curve, surface modeling and solid modeling	PO1,PO2,PO3,PO4,PO12	3	C
CO3	Analyse group technology, computer aided process planning, flexible manufacturing, Industry 4.0, robotics	PO12	4	P
CO4	Analyse information system and material handling in CIM environment, rapid prototyping	PO1,PO2,PO3,PO12	4	P
CO5	Illustrate Group Technology, FMS concepts	PO1,PO2,PO3,PO12	3	C

Faculty Members Teaching the Course	Signature
1. ASHISH SHARMA	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B-Tech **Academic Session: 2023-24** **Year: 3** **Semester: 5**

Course Name: CIM **Course Code: KME-051** **Course Coordinator Name: ASHISH SHARMA**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3								1		
CO2	3	3	3	3								1		
CO3												1		
CO4	3	3										1		
CO5	3	3	3									1		
PO Target	3	3	3									1		

Faculty Members Teaching the Course	Signature
1.ASHISH SHARMA	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name:B.Tech **Academic Session: 2023-24** **Year: 3rd yr.** **Semester: Vth**

CourseName:Mechatronics Systems **CourseCode: KME 052** **Course Coordinator Name: Rajesh Kumar Patel**

CourseOutcomes

After completion of the course, the student will be able to				
CONo.	**StatementofCourseOutcome**	**RelevantPOs/PSOs/ APOs**	**Revised Bloom'sLevel(BL)**	**KnowledgeCategory(KC)**
CO1	Understand the key elements of mechatronics and its representation by block diagram.	PO1,PO2,PO3,PO4,PO9, PO12	2	F, C
CO2	Apply the basic concept of sensors and use of interfacing systems.	PO1,PO2,PO3,PO4,PO9, PO12	3	F, C
CO3	Applythe basic concept to understand different actuators	PO1,PO2,PO3,PO4,PO9, PO12	3	F,C
CO4	Develop PLC ladder programming and implementation in real life problem.	PO1,PO2,PO3,PO4,PO9, PO12	5	F, C, P
CO5	Apply the various applications of mechatronic systems.	PO1,PO2,PO3,PO4,PO9, PO12	3	F, C

Faculty Members Teaching the Course	Signature
Rajesh Kumar Patel	

Signature of CourseCoordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech
CourseName:Mechatronics Systems

Academic Session: 2023-24
CourseCode: KME 052

Year: 3rd yr. **Semester: Vth**
Course Coordinator Name: Rajesh Kumar Patel

CO-PO/PSO/APOMatrix

CO No.	ProgrammeOutcome(PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	1	1	1	-	-	-	-	1	-	-	2	-	-
CO2	3	3	3	3	-	-	-	-	1	-	-	2	-	-
CO3	3	3	3	3	-	-	-	-	1	-	-	2	-	-
CO4	3	3	3	3	-	-	-	-	1	-	-	2	-	-
CO5	3	3	3	3	-	-	-	-	1	-	-	2	-	-
POTarget	**2.60**	**2.60**	**2.60**	**2.60**	-	-	-	-	**1**	-	-	**2**	-	-

Faculty Members Teaching the Course	Signature
1. Rajesh Kumar Patel	

Signature of CourseCoordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** 3 Year **Semester:** V

Course Name: Automobile Engines & Combustion **Course Code:** KAU051 **Course Coordinator Name:** Vineet Kr. Vashishtha

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply the concepts of thermodynamics to air standard cycle in IC Engines & knowledge about performance parameters and testing of IC engine.	PO-1, PO-2, PO-6,PO-7, PO-8,PO-10, PO-12,PSO-2	3	F,C
CO2	Understand the phenomena of Flames Propagation & Stoichiometry relations.	PO-1, PO-2, PO-6,PO-7, PO-8,PO-10, PO-12,PSO-2	2	F,C
CO3	Understand the phenomena of combustion and its application in SI and CI engines & Understand the essential system of IC engine.	PO-1, PO-2, PO-6,PO-7, PO-8,PO-10, PO-12,PSO-2	2	F,C
CO4	Understand the concept of carburetion, fuel injection for SI Engine and knowledge about latest trends & developments in IC Engines.	PO-1, PO-2, PO-6,PO-10, PO-12,PSO-2	2	F,C
CO5	Understand the effect of engine emission on the environment and human health and methods of reducing it.	PO-1, PO-2, PO-6,PO-9, PO-10,PO-11, PO-12,PSO-2	2	F,C

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Vineet Kumar Vashishtha	Vineet		

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year:3 Year** **Semester: V**
Course Name: Automobile Engines & Combustion **Course Code: KAU051** **Course Coordinator Name: Vineet Kr. Vashishtha**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2				2	2	2		2		3		3
CO2	3	1				1	2	2		2		3		3
CO3	3	2				1	2	2		2		3		3
CO4	3	1				2				2		3		3
CO5	3	1				2			2	2	2	3		3
PO Target	3	1.40				1.60			2	2	2	3		3

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Vineet Kumar Vashishtha	Vineet		

Vineet
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Automotive Chassis and suspension **Course Code: KAU 052** **Course Coordinator Name: Ashish Kumar Singh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand different types of Automotive Chassis and Frame used in automobiles	PO-1, PO-2,PO-9, PSO-2	2	C
CO2	Classify transmission and driveline components used in automobile	PO-1, PO-2, , PO-7, PSO-2	2	C
CO3	Illustrate the constructional features of braking and suspension systems	PO-1, PO-2, PO-4, PSO-2	3	F,C
CO4	Asses and compare axles, steering system , wheels and tyres in automotive applications	PO-1, PO-2, PO-9, PSO-2	4	F,C
CO5	Analyze the recent advancements in chassis components of automobile and concepts of advanced braking and steering system and to design the same for automotive application	PO-1, PO-2, PO-4, PSO-2	4	F,C

Faculty Members Teaching the Course	Signature
1.ASHISH KUMAR SINGH	Ashish K Singh

Ashish K Singh
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Asis Dang
Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Automotive Chassis and Suspension **Course Code: KAU 052** **Course Coordinator Name: Ashish Kumar Singh**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2							2					3
CO2	3	2					1							3
CO3	3	2		2										3
CO4	3	2							2					3
CO5	3	2		1										3
PO Target	3	2		1.5			1		2					3

Faculty Members Teaching the Course	Signature
1.ASHISH KUMAR SINGH	Ashish K Singh

Ashish K Singh
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 3** **Semester: 5**

Course Name: Advance Welding **Course Code: KME 055** **Course Coordinator Name: Prashant Vashishtha**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Analyze the physics of arc welding process and various operating characteristics of welding power source.	PO1,PO2,PO3,PO6,PO7, PO12,PSO2	4	C
CO2	Analyze various welding processes and their applications.	PO1,PO2,PO3,PO6,PO7, PO12,PSO2	4	F
CO3	Apply heat flow in welding and physical metallurgy of weldments.	PO1,PO2,PO3,PO6,PO7, PO12,PSO2	3	C
CO4	Analyze the welding for repair & maintenance, along with the weldability of different materials.	PO1,PO2,PO3,PO6,PO7, PO12,PSO2	4	C
CO5	Analyze the concept of weld design and testing of weldments in industrial environment.	PO1,PO2,PO3,PO6,PO7, PO12,PSO2	4	F

Faculty Members Teaching the Course	Signature
1.Prashant Vashishtha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 3** **Semester: 5**

Course Name: Advance Welding **Course Code: KME 055** **Course Coordinator Name: Prashant Vashishtha**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	1	2			2	1					3		3
CO2	3	1	1			2	1					3		3
CO3	3	1	1			2	1					3		3
CO4	3	1	1			2	1					3		3
CO5	3	1	1			2	1					3		3
PO Target	3	1	1.2			2	1					3		3

Faculty Members Teaching the Course	Signature
1.Prashant Vashishtha	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Programming, Data Structures and Algorithms Using Python Course Code: KME-056 **Course Coordinator Name: Mr. Piyush Pant**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand numbers, strings and data structures in python.	PO1, PO 5	2	C
CO2	Apply conditional statement and functions in Python.	PO1, PO5	3	P
CO3	Apply file handling technique in python.	PO1, PO5	3	P
CO4	Apply graphical demonstration in Python.	PO1, PO5	3	P
CO5	Apply techniques of Classes and Object Concept in Python	PO1, PO5	3	C

Faculty Members Teaching the Course	Signature
1. Mr. Piyush Pant	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Programming, Data Structures and Algorithms Using Python **Course Code: KME-056** **Course Coordinator Name: Mr. Piyush Pant**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1				3									
CO2	1				3									
CO3	1				3									
CO4	1				3									
CO5	3				3									
PO Target	1				3									

Faculty Members Teaching the Course	Signature
1. Mr. Piyush Pant	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 3** **Semester: 5**

Course Name: CONSTITUTION OF INDIA, LAW AND ENGINEERING **Course Code: KNC 501** **Course Coordinator Name: Prashant Vashishtha**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Identify and explore the basic features and modalities about the Indian constitution.	PO6, PO7	4	F /C
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level	PO6, PO7,	4	F/ P
CO3	Differentiate different aspects of the Indian Legal System and its related bodies.	PO6, PO7, PO8	2	F /C
CO4	Discover and apply different laws and regulations related to engineering practices.	PO6, PO7, PO8, PO10	3	F /C
CO5	Correlate role of engineers with different organizations and governance models	PO6, PO7, PO8, PO9, PO10, PO11, PO12	4	F /C

Faculty Members Teaching the Course	Signature
1.Prashant Vashishtha	
2. Mr. Ashish Sharma	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** 3 **Semester:** 5

Course Name: CONSTITUTION OF INDIA, LAW AND ENGINEERING **Course Code:** KNC501 **Course Coordinator Name:** Prashant Vashishtha

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1						3	2							
CO2						3	2							
CO3						3	2	1						
CO4						3	2	2		2				
CO5						2	2	2	2	2	2	2		
PO Target						2.80	2	1.67	2	2	2	2		

Faculty Members Teaching the Course	Signature
1.Prashant Vashishtha	
2. Mr. Ashish Sharma	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Heat and mass transfer lab **Course Code: KME551** **Course Coordinator Name: Mr. Sonendra**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Analyze heat transfer by conduction, thermal conductivity of material experimentally.	PO2 & PO3, PO7	4	F, C
CO2	Analyze heat transfer by convection, heat transfer coefficient for fin , pool boiling, natural convection and forced convection experimentally	PO2, PO3, PO4 ,PO5, PO7 & PSO1, PSO2	4	F, C
CO3	Analyze heat transfer by radiation and emissivity of a surface.	PO2, PO3, PO4 ,PO5, PO7, PSO1, PSO2	4	F, C
CO4	Analyze mass transfer by diffusion.	PO2, PO3, PO4 ,PO5, PO7 & PSO2	4	F, C
CO5	Design heat exchanger and solar collector (parallel flow/ counter flow/shell and tube type)	PO2, PO3, PO4 ,PO5, PO7 & PSO1, PSO2	5	F, C

Faculty Members Teaching the Course	Signature
1. Mr. Sonendra	
2. Dr. Gaurav Sharma	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech
Course Name: HMT Lab
Academic Session: 2023-24 **Year:** III **Semester:** V
Course Code: KME551 **Course Coordinator Name:** Mr. Sonendra

CO-PO/PSO/APOMatrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1		2	2				1	-	-	-	-	-	-	-
CO2		2	2	2	2		1	-	-	-	-	-	3	2
CO3		2	2	2	2		1	-	-	-	-		3	1
CO4		2	2	2	2		1	-	-	-	-	-		1
CO5		2	2	2	2		1	-	-	-	-		3	1
PO Target		2	2	1.6	1.6		1						1.8	1

Faculty Members Teaching the Course	Signature
1. Mr. Sonendra	
2. Dr Gaurav Sharma	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Python Programming Lab **Course Code: KME-552** **Course Coordinator Name: Mr. Piyush Pant**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply conditional statement, loops condition and functions in python program.	PO1, PO2, PO4, PO5, PO12	3	C, P
CO2	Analyze mathematical problems using python program.	PO1, PO2, PO3, PO4, PO5, PO12	4	P
CO3	Apply & Sketch of various type of plots using python program.	PO1, PO2, PO4, PO5, PO12	3	P
CO4	Analyze the mechanical problem using PBL.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PO12, PSO-2	4	P

Faculty Members Teaching the Course	Signature
1. Mr. Piyush Pant	
2. Dr. Sachin Rathore	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Python Programming Lab **Course Code: KME-552** **Course Coordinator Name: Mr. Piyush Pant**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2		2	3							3		
CO2	3	3	2	2	3							3		
CO3	3	2		2	3							3		
CO4	3	3	2	3	3				3		3	3		1
PO Target	3	2.5	2	2.25	3				3		3	3		1

Faculty Members Teaching the Course	Signature
1. Mr. Piyush Pant	
2. Dr. Sachin Rathore	SAI

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 3rd yr.** **Semester: Vth**

Course Name: IOT LAB **Course Code: KME 553** **Course Coordinator Name: Vineet Kumar Vashishtha**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand the concept of Internet of Things and its hardware and software components.	PO1,PO2,PO4, PO9,PO11,PO12	2	F,C
CO2	Implement interfacing of various sensors with Arduino/Raspberry Pi.	PO1,PO2,PO4,PO5, PO9,PO11,PO12	3	F,C,P
CO3	Demonstrate the ability to transmit data wirelessly between different devices.	PO1,PO2,PO4,PO5 ,PO9,PO11,PO12	3	F,C,P
CO4	Analyze prototype of IoT based smart system.	PO1,PO2,PO3,PO4,PO5,PO9 PO11,PO12	4	F,C,P,M
CO5	Apply IoT based projects for real life problem.	PO1,PO2,PO3,PO4,PO5,PO9, PO11,PO12	3	F,C,P,M

Faculty Members Teaching the Course	Signature
1. Rajesh Kumar Patel	
2. Vineet Kumar Vashishtha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech | **Academic Session: 2023-24** | **Year: 3rd yr.** | **Semester: Vth**

Course Name: IOT LAB | **Course Code: KME 553** | **Course Coordinator Name: Vineet Kumar Vashishtha**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	-	2	-	-	-	-	2	-	2	2	-	-
CO2	3	3	-	3	3	-	-	-	3	-	2	2	-	-
CO3	3	3	-	3	3	-	-	-	3	-	2	2	-	-
CO4	3	3	3	3	3	-	-	-	3	-	2	2	-	-
CO5	3	3	3	3	3	-	-	-	3	-	2	2	-	-
PO Target	2.80	2.80	3.00	2.80	3	-	-	-	2.80	-	2	2	-	-

Faculty Members Teaching the Course	Signature
1. Rajesh Kumar Patel	
2. Vineet Kumar Vashishtha	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**

Course Name: Mini Project or Internship Assessment **Course Code: KME 554** **Course Coordinator Name: Mr. Sonendra**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply technical knowledge to the students to cope with industrial environment, which can not be simulated in the classroom hence creating competent professionals in the Industry.	PO8 , PO9, PO10, PO11 & PO12	3	F,C
CO2	Understand possible opportunities to learn, understand, and sharpen the real-time technical /managerial skills required at the job	PO8 , PO9, PO10, PO11 & PO12	2	F,C
CO3	Apply the current technological developments relevant to the subject area of training	PO8 , PO9, PO10, PO11 & PO12	3	F,C
CO4	Apply the experience gained from the industrial internship in the discussion held in the classrooms	PO8 , PO9, PO10, PO11 & PO12	3	F,C
CO5	Create conditions conducive to the quest for knowledge and its applicability on the job	PO8 , PO9, PO10, PO11 & PO12	6	F,C

Faculty Members Teaching the Course	Signature
Mr. Sonendra	Sonendra

Sonendra

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** III **Semester:** V
Course Name: Mini Project or Internship Assessment **Course Code:** KME554 **Course Coordinator Name:** Mr. Sonendra

CO-PO/PSO/APOMatrix

CO No.	Programme Outcome(PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO2	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO3	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO4	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO5	-	-	-	-	-	-	-	1	1	2	2	3	-	-
POTarget						-	-	1	1	2	2	3		

Faculty Members Teaching the Course	Signature
Mr. Sonendra	Sonendra

Sonendra
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: IV** **Semester: VII**

Course Name: Additive Manufacturing **Course Code: KME 071** **Course Coordinator Name: Dr. Gaurav Sharma**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand the basics of additive manufacturing/rapid prototyping.	PO1, PO7, PO 9, PO 12	2	C
CO2	Understand the role of additive manufacturing in the design process and the implications for design	PO1, PO7, PO 9, PO 12	2	C,P
CO3	Understand the processes used in additive manufacturing for a range of materials and applications	PO1, PO 5, PO7, PO 9, PO 12	2	C
CO4	Apply the various software tools, processes and techniques that enable advanced/additive manufacturing and personal fabrication	PO1, PO 5, PO7, PO 9, PO 12, PSO1, PSO 2	3	C,P
CO5	Apply knowledge of additive manufacturing for real-life applications	PO1, PO 5, PO7, PO 9, PO 12, PSO1, PSO 2	3	C

Faculty Members Teaching the Course	Signature
1. Dr. Gaurav Sharma	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech
Course Name: Additive Manufacturing
Academic Session: 2023-24 **Year:** IV **Semester:** VII
Course Code: KME 071 **Course Coordinator Name:** Dr. Gaurav Sharma

CO-PO/PSO/APOMatrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3						2		1			2		
CO2	3						2		2			2		
CO3	3				2		2		2			2		
CO4	3				2		2		2			2	2	2
CO5	3				2		2		2			2	2	2
PO Target	**3**				**1.2**		**2**		**1.8**			**2**	**0.8**	**0.8**

Faculty Members Teaching the Course	Signature
1. Dr Gaurav Sharma	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech **Academic Session:2023-24** **Year: 4th** **Semester: VIIth**

Course Name: Heating, Ventilation and Airconditioning **Course Code: KME-072**

Course Coordinator Name: Mr. Ankur Sachdeva

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the advanced vapour compression refrigeration systems and the use of refrigerants with their respective applications and its future trends.	PO-1, PO-2, PO-3, PO-6, PO-7, PO-12, PSO-1, PSO-2	2	F, C
CO2	Apply the concepts of psychrometry to design HVAC systems for different applications.	PO-1, PO-2, PO-3, PO-7, PO-12, PSO-2	3	F, C
CO3	Apply the basic laws for thermodynamic analysis of different processes involved in HVAC systems.	PO-1, PO-2, PO-7, PO-12, PSO-2	3	F, C
CO4	Apply the basic concepts to calculate the HVAC loads for different applications.	PO-1, PO-2, PO-3, PO-7, PO-12, PSO-2	3	F, C
CO5	Understand the use of different auxiliary systems used in HVAC systems.	PO-1, PO-7, PO-12	2	F, C

Faculty Members Teaching the Course	Signature
1. Ankur Sachdeva	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 4th** **Semester: VIIth**
Course Name: Heating, Ventilation and Airconditioning (HVAC) **Course Code: KME-072**
Course Coordinator Name: Mr. Ankur Sachdeva

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	1	-	-	2	2	-	-	-	-	2	1	1
CO2	2	2	1	-	-	-	2	-	-	-	-	2	-	2
CO3	2	2	-	-	-	-	2	-	-	-	-	2	-	2
CO4	2	2	1	-	-	-	2	-	-	-	-	2	-	1
CO5	1	-	-	-	-	-	1	-	-	-	-	2	-	-
PO Target	**1.80**	**2.00**	**1.00**	**0.00**	**0.00**	**2.00**	**1.80**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**1.00**	**1.50**

Faculty Members Teaching the Course	Signature
1. Ankur Sachdeva	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B-Tech **Academic Session: 2023-24** **Year: IV** **Semester: 7**

Course Name:MMMP **Course Code: KME-073** **Course Coordinator Name: ASHISH SHARMA**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand the fundamentals of manufacturing processes, mathematical models and their solutions	PO1,PO2,PO3,PO4,PO12	2	C
CO2	Understand unconventional and conventional machining, their discrete-time linear, non-linear models and solutions	PO1,PO2,PO3,PO4,PO12	2	C
CO3	Analyze the mechanism of forming and heat transfer in welding	PO1,PO2, PO12	4	P
CO4	Apply the principles of casting, powder metallurgy, coating and additive Manufacturing	PO1,PO2,PO12	3	P
CO5	Understand the fundamental of heat treatment, micro / nano manufacturing and processing of non-metallic materials	PO1,PO2,PO3,PO12	2	C

Faculty Members Teaching the Course	Signature
1. ASHISH SHARMA	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B-Tech **Academic Session: 2023-24** **Year: 4** **Semester: 7**

Course Name:MMMP **Course Code: KME-073** **Course Coordinator Name: ASHISH SHARMA**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	1	1								1		
CO2	2	2	1	1								1		
CO3	3	3										1		
CO4	3	3										1		
CO5	2	2	1									1		
PO Target	2.4	2.4	1	1								1		

Faculty Members Teaching the Course	Signature
1.ASHISH SHARMA	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Machine Learning **Course Code: KME 074**

Course Coordinator Name: Mr. Sachin Rathore

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the need of machine learning concepts	PO1, PO 2,PO 4, PO5, PO11	2	F
CO2	Evaluate models generated from data to understand a wide variety of ML Algorithms.	PO1, PO 2,PO 4, PO5, PO11	5	F, P
CO3	Solve prediction-based problems.	PO1, PO 2,PO 4, PO5, PO11	3	F, P
CO4	Analyse machine learning algorithms.	PO1, PO 2,PO 4, PO5, PO11	4	F, P
CO5	Apply the Algorithms to real-world problems.	PO1, PO 2,PO 4, PO5, PO11	3	F

Faculty Members Teaching the Course	Signature
1. Sachin Rathore	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24**

Course Name: Machine Learning **Year:4th** **Semester: 7th**

Course Coordinator Name: Mr. Sachin Rathore **Course Code: KME074**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	1		1	1						2			
CO2	3	3		2	3						2			
CO3	2	3		2	3						2			
CO4	3	3		2	3						2			
CO5	3	3		2	3						2			
PO Target	2.4	2.6		2.4	2.6						2			

Faculty Members Teaching the Course	Signature
1. Sachin Rathore	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech **Academic Session:2023-24** **Year: 4th** **Semester: VIIth**

Course Name: Power Plant Engineering **Course Code: KME-076**

Course Coordinator Name: **Mr. Ankur Sachdeva**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply thermodynamic concepts to understand and measure the performance of a steam power plant.	PO-1, PO-6, PO-7, PO-12	3	F, C
CO2	Apply the concepts to understand and measure the performance of the Hydro power plants and Gas Turbine power plants.	PO-1, PO-7, PO-12	3	F, C
CO3	Understand the role and working of different components of a Nuclear power plant and Solar power plant.	PO-7, PO-12	2	F, C
CO4	Understand the working of various non-conventional power plants such as Geothermal, Wind, and Tidal power plants	PO-7, PO-12	2	F, C
CO5	Apply the concept of power generation economics and understand the roles of different electrical systems and instruments and the impact of power generation on the environment.	PO-1, PO-6, PO-7, PO-12	3	F, C

Faculty Members Teaching the Course	Signature
1. Ankur Sachdeva	

Signature of Course Coordinator **Assoc./ Asstt Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 4th** **Semester: VIIth**
Course Name: Power Plant Engineering (PPE) **Course Code: KME-076**
Course Coordinator Name: Mr. Ankur Sachdeva

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	-	-	-	-	3	3	-	-	-	-	2	-	-
CO2	2	-	-	-	-	-	2	-	-	-	-	2	-	-
CO3	-	-	-	-	-	-	2	-	-	-	-	2	-	-
CO4	-	-	-	-	-	-	2	-	-	-	-	2	-	-
CO5	2	-	-	-	-	2	3	-	-	-	-	2	-	-
PO Target	2.00	0.00	0.00	0.00	0.00	2.50	2.40	0.00	0.00	0.00	0.00	2.00	0.00	0.00

Faculty Members Teaching the Course	Signature
1. Ankur Sachdeva	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: IV** **Semester: VII**

Course Name: Hybrid Vehicle Propulsion **Course Code: KAU 072** **Course Coordinator Name: Ashish Kumar Singh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand the basics of the hybrid electric vehicles and its types	PO-1, PSO-2	2	C
CO2	Analyze the types of drivetrains in hybrid electric vehicle	PO-1, PO-2, , PO-7, PSO-2	4	C
CO3	Evaluate the propulsion units used in hybrid vehicles and their efficiency	PO-1, PO-2, PO-4, PSO-2	5	F,C
CO4	Examine the requirements and devices of energy storage used in hybrid vehicle and the concept of downsizing the IC engine in case of hybrid vehicles	PO-1, PO-2, PO-9, PSO-2	3	F,C
CO5	Understand the principles of energy management and issues related to these strategies	PO-1, PO-2, PO-12, PSO-2	2	F,C

Faculty Members Teaching the Course	Signature
1.ASHISH KUMAR SINGH	Ashish K Singh

Ashish K Singh
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.tech **Academic Session: 2023-24** **Year; IV** **Semester: VII**

Course Name: Hybrid Vehicle Propulsion **Course Code: KAU 072** **Course Coordinator Name: Ashish Kumar Singh**

CO - PO/PSO/APO Matrix

CO No	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3													3
CO2	3	2					1							3
CO3	3	2		2										3
CO4	3	2							2					3
CO5	3	2										3		3
PO Target	3	2		2			1		2			3		3

Faculty Members Teaching the Course	Signature
1.ASHISH KUMAR SINGH	Ashish K Singh

Ashish K Singh
Signature of Course Coordinator

Assoc. Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 4th** **Semester: VII**
Course Name: Vehicle Body Engineering & Safety **Course Code: KAU-073** **Course Coordinator Name: Gaurav**
Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Classify the vehicles and Select the appropriate body material.	PO1,PO2,PO4,PO5,PO9	2	F
CO2	Calculate various aerodynamic forces and moments acting on the vehicle.	PO2,PO4,PO9	2,3	F,C
CO3	Calculate load distribution in the vehicle body.	PO1, PO2, PO5, PO9	3	F,C
CO4	Explain the ergonomics, stability, and safety of the vehicle.	PO1,PO3	2	F,C
CO5	Identify various sources of noise and methods of noise separation.	PO1,PO3,PO4,PO9	2	F

Faculty Members Teaching the Course	Signature
1. Gaurav	Gaurav

Gaurav

Signature of Course Coordinator **Assoc./ Asstt Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 4th** **Semester: VII**

Course Name: Vehicle Body Engineering & Safety **Course Code: KAU-073** **Course Coordinator Name: Gaurav**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	2	-	2	2	-	-	-	2	-	-	-	-	-
CO2		1	-	3		-	-	-	3	-	-	-	-	-
CO3	1	2			3	-	-	-	3	-	-	-	-	-
CO4	2		2			-	-	-		-	-	-	-	-
CO5	1		2	1		-	-	-	3	-	-	-	-	-
PO Target	1.25	1.67	2	2	2.5	-	-	-	2.75	-	-	-	-	-

Faculty Members Teaching the Course	Signature
1. Gaurav	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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Department of Mechanical Engineering

Program Name: B. Tech. (ME) **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Renewable Energy Resources **Course Code: KOE074** **Course Coordinator Name: Sandeep Chhabra**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand the significance of various non-conventional energy resources, their availability and limitations	PO-1, PO-2, PO-3, PO-7, PO-9, PO-12, PSO-1	2	F
CO2	Apply the knowledge to select suitable solar thermal collectors to meet desired need within realistic constraints such as economic, environmental, and sustainability	PO-1, PO-2, PO-3, PO-7, PO-9, PO-12, PSO-1	3	F/C/P
CO3	Understand the system and working of non conventional energy resources such as Magneto-hydrodynamics (MHD) generator, geothermal and fuel cell	PO-1, PO-2, PO-3, PO-7, PO-9, PO-12, PSO-1	2	C/P
CO4	Analyze the optimum power generation through wind power plant and understand the system and working of thermo-electric and thermo-ionic systems	PO-1, PO-2, PO-3, PO-7, PO-9, PO-12, PSO-1	4	C/P
CO5	Understand the basic system of Ocean thermal energy conversion, wave energy plant, biomass energy system to meet the energy shortage requirement	PO-1, PO-2, PO-3, PO-7, PO-9, PO-12, PSO-1	2	C/P

Faculty Members Teaching the Course	Signature
1. Dr. Sandeep Chhabra	
2. Mr. Vineet Vashishtha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

Department of Mechanical Engineering

Program Name: B. Tech. (ME) **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**
Course Name: Renewable Energy Resources **Course Code: KOE074** **Course Coordinator: Dr. Sandeep Chhabra**

CO-PO/PSO/APO Matrix

CO No.	Programme Outcomes (POs)												PSOs/ APOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	1	1				2		1			2	2	
CO2	2	1	2				2		1			2	2	
CO3	1	1	1				2		1			2	2	
CO4	3	2	2				2		1			2	2	
CO5	1	1	1				2		1			2	2	
PO Targets	1.6	1.2	1.4				2		1			2	2	

Faculty Members Teaching the Course	Signature
1. Dr. Sandeep Chhabra	
2. Mr. Vineet Vashishtha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech. **Academic Session:** 2023-24 **Year:** 4 **Semester:** 7

Course Name: Project management & Entrepreneurship **Course Code: KHU-702** **Course Coordinator Name:** Dr. Ajay Singh Verma

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Apply the basic concept of Entrepreneurship, & EDP	PO8, PO11, PO12	3	C
CO2	Create Entrepreneurial Idea and Identify Business Opportunities	PO5, PO6, PO8, PO11, PO12	6	C,P
CO3	Apply the principles of the Project management, project life-cycle	PO5, PO6, PO8, PO9, PO11, PO12	3	C,P
CO4	Estimate project cost related to capital budgeting process and projected balance sheet	PO1, PO2, PO4, PO5, PO8, PO10, PO11, PO12	3	C,P
CO5	Understand the perspectives of Social Entrepreneurship, marketing management, & Risk Management	PO5, PO6, PO7, PO8, PO11, PO12	2	C

Faculty Members Teaching the Course	Signature
1. Dr. K L A Khan	
2. Dr. Ajay Singh Verma	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

KIET Group of Institutions, Delhi -- NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech. **Academic Session:** 2023-24 **Year:** 4 **Semester:** 7

Course Name: Project management & Entrepreneurship **Course Code:** KHU-702 **Course Coordinator Name:** Dr. Ajay Singh Verma

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1								2			3	2		
CO2					3	2		2			3	2		
CO3					2	2		2	2		3	2		
CO4	2	2		2	3			2		3	3	2		
CO5					2	3	3	2			3	2		
PO Target	2.00	2.00		2.00	2.50	2.33	3.00	2.00	2.00	3.00	3.00	2.00		

Faculty Members Teaching the Course	Signature
1. Dr. K L A Khan	K Lakhan
2. Dr. Ajay Singh Verma	

Signature of Course Coordinator | Assoc./ Asst. Head DOC | Signature of Addl. HoD | Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ practical [illegible]

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: IV** **Semester: VII**

Course Name: Measurement and metrology lab **Course Code: KME 751** **Course Coordinator Name: Ashish Kumar Singh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Evaluate linear and angular measurements using linear and angular measuring instruments	PO-1	5	Procedural
CO2	Understand the use of limits, fits and tolerance for designing purposes	PO-1, PO-2	2	Conceptual
CO3	Apply and understand the use of various limit gauges	PO-1, PO-2,	3	Procedural
CO4	Evaluate the roundness error using dial indicator	PO-1, PO-2,	5	Procedural

Faculty Members Teaching the Course	Signature
1.ASHISH KUMAR SINGH	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.tech **Academic Session: 2023-24** **Year: IV** **Semester: VII**

Course Name: Measurement and metrology lab **Course Code: KME751** **Course Coordinator Name: Ashish Kumar Singh**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3													
CO2	3	2												
CO3	3	2												
CO4	3	2												
PO Target	3	2												

Faculty Members Teaching the Course	Signature
1.ASHISH KUMAR SINGH	Ashish K Singh

Ashish K Singh
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** 4 Year **Semester:** VII
Course Name: Mini Project Internship Assessment **Course Code:** KME752 **Course Coordinator Name:** Vineet Kr. Vashishtha

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Apply technical knowledge to the students to cope with industrial environment, which can not be simulated in the classroom and hence creating competent professionals in the Industry.	PO8, PO9, PO10, PO11 & PO12	3	F,C
CO2	Understand possible opportunities to learn , understand and sharpen the real time technical /managerial skills required at job	PO8, PO9, PO10, PO11 & PO12	2	F,C
CO3	Apply the current technological developments relevant to subject area of training	PO8, PO9, PO10, PO11 & PO12	3	F,C
CO4	Apply the experience gained from the industrial internship in the discussion held in the classrooms	PO8, PO9, PO10, PO11 & PO12	3	F,C
CO5	Create conditions conducive to quest for knowledge and its applicability on the job	PO8, PO9, PO10, PO11 & PO12	6	F,C

Faculty Member Teaching the Course	Signature		
1. Vineet Kumar Vashishtha	Vineet		

Vineet
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year:4 Year** **Semester: VII**

Course Name: Mini Project Internship Assessment **Course Code: KME752** **Course Coordinator Name: Vineet Kr. Vashishtha**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO2	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO3	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO4	-	-	-	-	-	-	-	1	1	2	2	3	-	-
CO5	-	-	-	-	-	-	-	1	1	2	2	3	-	-
PO Target						-	-	1	1	2	2	3		

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Vineet Kumar Vashishtha	Vineet		

Vineet
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should ha e 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech
Course Name: Project
Course Outcomes

Academic Session: 2023-24
Course Code: KME 753

Year: IV **Semester: VII**
Course Coordinator Name: Dr. Neha Bhadauria

After completion of the course, the student will be able to				
CO No.	**Statement of Course Outcome**	**Relevant POs/ PSOs/ APOs**	**Revised Bloom's Level (BL)**	**Knowledge Category (KC)**
CO1	Understand methods and materials and their selection to carry out experiments.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PSO1, PSO2	2	C
CO2	Apply the procedures with a concern for society, environment and ethics.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PSO1, PSO2	3	P
CO3	Analyze and discuss the results to draw valid conclusions.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PSO1, PSO2	4	P
CO4	Create a report as per recommended format and defend the work.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PSO1, PSO2	6	M
CO5	Evaluate the possibility of publishing papers in peer-reviewed journal/conference proceedings.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PSO1, PSO2	5	P/M

Faculty Members Teaching the Course	Signature
1. Dr. Neha Bhadauria	NBhadauria
2. Mr. Sonendra Sharma	Sonendra

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project l...

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Mechanical Engineering

Program Name: B. Tech
Course Name: Project

Academic Session: 2023-24
Course Code: KME753

Year: IV **Semester: VII**
Course Coordinator Name: Dr. Neha Bhadauria

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3	3				3	2	3		3	2
CO2	3	3	3	3	3				3	2	3		3	2
CO3	3	3	3	3	3				3	2	3		3	2
CO4	2	2	2	2	2				3	3	2		2	1
CO5	1	1	1	2	2				3	3	2		2	1
PO Target	**2.4**	**2.4**	**2.4**	**2.6**	**2.6**				**3**	**2.4**	**2.6**		**2.6**	**1.6**

Faculty Members Teaching the Course	Signature
1. Dr. Neha Bhadauria	NBhadauria
2. Mr. Sonendra Sharma	Sonendra

NBhadauria
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)