LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING(Autonomous)
DEPARTMENT OF MECHANICAL ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

A.Y:2018-19

LESSON PLAN

Faculty Name : Dr.P.Vijaya Kumar Date : 20-08-2018

Semester : M.Tech(TE)- I Semester

Subject: ADVANCED HEAT AND MASS TRANSFER(17TE02)

S.No	Tentative Date	Topics to be covered	Actual Date	Required Classes	Content Delivery Methods
UNIT-I					
1	23/08/2018	Introduction to the subject- Basic modes of heat transfer		1	DM1
2	24/08/2018	Governing equations		1	DM1
3	29/08/2018	1-D steady state heat conduction equation for plane wall		1	DM1
4	30/08/2018	1-D Heat transfer with internal heat generation for a plane wall		1	DM1
5	31/08/2018	1-D Heat transfer with internal heat generation for a cylinder and sphere		1	DM1, DM6
6	05/09/2018	Heat transfer through finned surfaces		1	DM, DM61
7	06/09/2018	Fin with insulated tip and convection off the end		1	DM1,DM6
8	07/09/2018	Numerical problems		1	DM1
9	08/09/2018	Numerical problems		1	DM1
UNIT-II					
10	12/09/2018	Lumped system analysis		1	DM1
11	14/09/2018	Heisler charts		1	DM1
12	19/09/2018	Semi infinite solid – Product solution		1	DM1
13	20/09/2018	2D steady state heat conduction			
14	21/09/2018	Use of conduction shape factors		1	DM1
15	26/09/2018	Transient heat conduction – Analytical solution		1	DM1
16	27/09/2018	Numerical problems		1	DM1
17	28/09/2018	Numerical problems		1	DM1
18	03/10/2018	Finite Difference methods for Heat Conduction Problems		1	DM1, DM6
19	04/10/2018	1 D & 2 D steady state and heat conduction Problems-FDM method		1	DM1
20	05/10/2018	1 D & 2 D unsteady state and heat conduction Problems- FDM method		1	DM1
UNIT-III					
21	24/10/2018	**Forced Convection**-Concept of boundary layer		1	DM1
22	25/10/2018	Hydrodynamic and Thermal boundary layer concepts		1	DM2, DM6

23	26/10/2018	Equations of Motion and Energy		1	DM1
24	31/10/2018	Methods to determine heat transfer coefficient		1	DM1
25	01/11/2018	Dimensional Analysis- Analogies between Heat and Momentum Transfer		1	DM1
26	02/11/2018	External flows and empirical relations to various geometrics		1	DM1,DM6
27	07/11/2018	**Free convection**- Dimensionless parameters of Free convection		1	DM1
28	08/11/2018	An Approximate Analysis of Laminar Free Convection on a Vertical Plate- -		1	DM1
29	09/11/2018	Free convection on a Horizontal Plate, Cylinder and Sphere		1	DM1, DM6
UNIT-IV					
30	14/11/2018	Boiling curve — Correlations		1	DM1, DM6
31	15/11/2018	Nusselt's theory of film condensation on a vertical plate		1	DM1
32	16/11/2018	Assumptions & correlations of film condensation for different geometrics		1	DM1
33	21/11/2018	**Radiation** – Concept of View factor-		1	DM1
34	22/11/2018	Methods of Determining View factors		1	DM1
35	23/11/2018	Radiant heat exchange in Grey, Non-Grey bodies with Transmitting		1	DM1,DM6
36	28/11/2018	Numerical problems		1	DM1
37	29/11/2018	Numerical problems		1	DM1
UNIT-V					
38	30/11/2018	**Mass Transfer**- Introduction-		1	DM1
39	05/12/2018	Analogy between heat and mass transfer-		1	DM1
40	06/12/2018	Mass diffusion		1	DM1,DM6
41	07/12/2018	Fick's law of diffusion-Boundary conditions-		1	DM1
42	12/12/2018	Steady mass diffusion through a wall-		1	DM1
43	13/12/2018	Convenction Mass Transfer – Concentration bounder layer thickness, Mass transfer coefficient		1	DM1
44	14/12/2018	Numerical problems		1	DM2

NOTE: DELIVERY METHODS: **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

Signature			
	Name of the Faculty	**Programme Co-ordinator**	**HOD**
	Dr.P.Vijaya Kumar	Dr.P.Vijaya Kumar	Dr.S.Pichi Reddy

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L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

A.Y:2018-19

LESSON PLAN

Faculty Name : Dr.K.Dilip Kumar Date : 20-08-2018

Semester : M.Tech(TE)- I Semester

Subject: ADVANCED HEAT AND MASS TRANSFER(17TE02)

S.No	Tentative Date	Topics to be covered	Actual Date	Required Classes	Content Delivery Methods
UNIT-I					
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4	30/08/2018	1-D Heat transfer with internal heat generation for a plane wall		1	DM1
5	31/08/2018	1-D Heat transfer with internal heat generation for a cylinder and sphere		1	DM1, DM6
6	05/09/2018	Heat transfer through finned surfaces		1	DM, DM61
7	06/09/2018	Fin with insulated tip and convection off the end		1	DM1,DM6
8	07/09/2018	Numerical problems		1	DM1
9	08/09/2018	Numerical problems		1	DM1
UNIT-II					
10	12/09/2018	Lumped system analysis		1	DM1
11	14/09/2018	Heisler charts		1	DM1
12	19/09/2018	Semi infinite solid – Product solution		1	DM1
13	20/09/2018	2D steady state heat conduction			
14	21/09/2018	Use of conduction shape factors		1	DM1
15	26/09/2018	Transient heat conduction – Analytical solution		1	DM1
16	27/09/2018	Numerical problems		1	DM1
17	28/09/2018	Numerical problems		1	DM1
18	03/10/2018	Finite Difference methods for Heat Conduction Problems		1	DM1, DM6
19	04/10/2018	1 D & 2 D steady state and heat conduction Problems-FDM method		1	DM1
20	05/10/2018	1 D & 2 D unsteady state and heat conduction Problems- FDM method		1	DM1
UNIT-III					
21	24/10/2018	**Forced Convection**-Concept of boundary layer		1	DM1
22	25/10/2018	Hydrodynamic and Thermal boundary layer concepts		1	DM2, DM6

23	26/10/2018	Equations of Motion and Energy		1	DM1
24	31/10/2018	Methods to determine heat transfer coefficient		1	DM1
25	01/11/2018	Dimensional Analysis- Analogies between Heat and Momentum Transfer		1	DM1
26	02/11/2018	External flows and empirical relations to various geometrics		1	DM1,DM6
27	07/11/2018	**Free convection**- Dimensionless parameters of Free convection		1	DM1
28	08/11/2018	An Approximate Analysis of Laminar Free Convection on a Vertical Plate- -		1	DM1
29	09/11/2018	Free convection on a Horizontal Plate, Cylinder and Sphere		1	DM1, DM6
UNIT-IV					
30	14/11/2018	Boiling curve — Correlations		1	DM1, DM6
31	15/11/2018	Nusselt's theory of film condensation on a vertical plate		1	DM1
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33	21/11/2018	**Radiation** – Concept of View factor-		1	DM1
34	22/11/2018	Methods of Determining View factors		1	DM1
35	23/11/2018	Radiant heat exchange in Grey, Non-Grey bodies with Transmitting		1	DM1,DM6
36	28/11/2018	Numerical problems		1	DM1
37	29/11/2018	Numerical problems		1	DM1
UNIT-V					
38	30/11/2018	**Mass Transfer**- Introduction-		1	DM1
39	05/12/2018	Analogy between heat and mass transfer-		1	DM1
40	06/12/2018	Mass diffusion		1	DM1,DM6
41	07/12/2018	Fick's law of diffusion-Boundary conditions-		1	DM1
42	12/12/2018	Steady mass diffusion through a wall-		1	DM1
43	13/12/2018	Convenction Mass Transfer – Concentration bounder layer thickness, Mass transfer coefficient		1	DM1
44	14/12/2018	Numerical problems		1	DM2

NOTE: DELIVERY METHODS: **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

Signature			
	Name of the Faculty	**Programme Co-ordinator**	**HOD**
	Dr.K.Dilip Kumar	Dr.P.Vijaya Kumar	Dr.S.Pichi Reddy

TEACHING LESSON PLAN
17TE01-ADVANCED THERMODYNAMICS
Programme: M .Tech- I-SEM
Department of Mechanical Engineering

Staff Name: Dr.P.Ravindra Kumar **A.Y:2018-19**

Pre-requisites: Thermodynamics

Course Educational Objective: To provide the insights on the laws of thermodynamics, exergy and irreversibility of thermal systems, non-reactive and reactive mixtures and exergy based power cycles

Course Outcomes: After the completion of the course, students should be able to

CO1 Understand the laws of thermodynamics applied to mixture of gases and thermodynamic potentials
CO2 Analyze the thermodynamics laws for various thermal systems
CO3 Apply the thermodynamics laws to solve various numerical problems
CO4 Evaluate the thermodynamic properties of various thermal systems
CO5 Synthesize I law and II law efficiency of various thermal systems.

PO1	An ability to independently carry out research / investigation and development work to solve practical problems.
PO2	An ability to write and present a substantial technical report/document.
PO3	Students should be able to demonstrate a degree of mastery over the area as per the specialization of the programme. The mastery should be at a level higher than the requirements in the appropriate Bachelor Programme.
PO4	Model and design thermal systems using computational and optimization techniques.
PO5	Adopt methods of energy conservation for sustainable development.

17TE01	**Advanced Thermodynamics**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**
CO1	Understand the laws of thermodynamics applied to mixture of gases and thermodynamic potentials	**3**	**2**	**3**		**2**
CO2	Analyze the thermodynamics laws for various thermal systems	**3**	**2**	**3**	**3**	**2**
CO3	Apply the thermodynamics laws to solve various numerical problems	**3**	**2**	**3**	**3**	**2**
CO4	Evaluate the thermodynamic properties of various thermal systems	**3**	**2**	**3**	**2**	**2**
CO5	Synthesize I law and II law efficiency of various thermal systems.	**2**	**2**	**3**	**2**	**2**

REFERENCES

1. Sonntag, Borgnakke, Van Wyllan, Fundamentals of Thermodynamics: 5th Edition John Wiley and Sons, 2010.
2. YunusA.Cengel & Michael Boles, Thermodynamics (An Engineering Approach) 7th Edition 2011, TMH
3. E.Rathakrishnan, Fundamentals of Engineering Thermodynamics 2nd Edition, EEE, PHI Publishers, 2010.
4. P.K.Nag, Engineering Thermodynamics: 4th Edition 2008, TMH
5. J.P.Holman, Thermodynamics, 9th Edition, 2012, TMH
6. Kenneth WarkJt.m, Advanced Thermodynamics for Engineers, McGraw – Hill Inc., 1995.

S.No	Tentative Date	Topics to be covered	Actual Date	Required classes	Content Delivery Methods
UNIT-I					
		Basic Concepts			
1	14/8/18	Orientation program on importance of specialization-Thermal Engineering		1	General Discussion
2	16/8/18	Orientation program –Modern software tools usage		1	General Discussion
3	17/8/18	Orientation program –Experimental analysis reports		1	General Discussion
4	20/8/18	Systems classification, properties of TD		1	DM1, DM3
5	23/8/18	Zeroth law of TD, problems on Zeroth law of TD		1	DM1,DM6
6	24/8/18	First law of TD, Steady flow energy systems		1	DM1, DM6
7	27/8/18	Problems on NFEE - I law of TD		1	DM1
8	30/8/18	Limitations of first law , Second law of TD		1	DM1, DM3
9	31/8/18	Problems on Heat engine and Heat pump		1	DM1, DM6
10	04/9/18	Problems on II law of TD		1	DM1
11	06/9/18	Concept of Entropy, Principle of Entropy increase		1	DM1, DM6
12	07/9/18	Problems on Entropy -Third law of TD		1	DM1, DM2
13	10/9/18	Seminars		1	DM1, DM6
14	12/9/18	**Thermodynamic Relations-** Reciprocity and Cyclic relations		1	DM1,DM6
15	14/9/18	Helmholtz Function , Gibbs Free Energy Function, Tds equations -Maxwell's Relations		1	DM1,DM3
16	18/9/18	Clausius-Clapeyron Equation-Problems		1	DM1,DM6
17	20/9/18	Coefficient of Volumetric Expansion, Isothermal Compressibility		1	DM1, DM3
18	24/9/18	Problems on Thermodynamic Relations		1	DM1, DM6
19	26/9/18	Seminars		1	DM1, DM6
		UNIT-II			
20	27/9/18	Equation of state for an ideal gas, Vander Waals equation of state		1	DM1, DM6
21	28/9/18	Collisions with a moving wall, Collision cross section, mean free path		1	DM1, DM3
22	04/10/18	RMS, Molecular flux		1	DM1, DM6
23	05/10/18	Problems, Seminars		1	DM2, DM3
24	09/10/18	**I -Mid Exams**			
25	11/10/18	**I-Mid Exams**			
26	12/10/18	**I-Mid Exams**			
		UNIT-III			
		NON REACTIVE GAS MIXTURES			
27	23/10/18	Properties of Mixtures of ideal gases		1	DM1,DM6
28	25/10/18	Daltons law of mixtures, Amagats law of additive mixtures		1	DM1,DM6
29	26/10/18	Problems on Mixtures of ideal gases		1	DM1,DM6
30	30/10/18	Entropy change of mixture of non-reactive gases		1	DM1, DM2
31	01/11/18	Problems on Entropy change of mixture of non-reactive gases, Seminars		1	DM1, DM2
		REACTIVE GAS MIXTURES			
32	02/11/18	Fuels and combustion		1	DM1, DM6
33	06/11/18	Theoretical and actual combustion process Enthalpy of formation and Enthalpy of reaction		1	DM1, DM3
34	08/11/18	First and second law analysis of reacting systems		1	DM1, DM2
35	09/11/18	Problems on reactive systems, Seminars		1	DM1, DM2
		UNIT-IV			

		Exergy			
36	13/11/18	Available energy(Exergy) , availability function of closed system		1	DM1,DM6
37	15/11/18	Exergy of closed systems and open systems		1	DM1,DM3
38	16/11/18	Availability function of open system, availability of steady flow system		1	DM1,DM6
39	20/11/18	Problems on Exergy , Seminars		1	DM1,DM6
40	22/11/18	**Irreversibility-** Irreversibility for closed system and open system		1	DM1, DM2
41	23/11/18	Irreversibility for steady flow system and Effectiveness		1	DM1, DM2
42	27/11/18	Problems on Irreversibility- closed systems, Seminars		1	DM1,DM6
		UNIT-V			
		Thermodynamic cycles			
43	29/11/18	II law analysis of vapour power cycles		1	DM1,DM6
44	04/12/18	Cogeneration- Problems		1	DM1, DM2
45	06/12/18	Binary vapour power cycles-Problems		1	DM1, DM6
46	07/12/18	Combined gas power cycles-Problems		1	DM1, DM6
47	11/12/18	**Gas Power Cycles** II law analysis of Gas power cycles		1	DM1, DM6
48	13/12/18	Atkinson Cycle, Lenoir Cycle		1	DM1, DM6
49	14/12/18	Problems, Seminars		1	DM1, DM6
			Total	46	
Total number of classes required to complete the syllabus					46
Total number of classes available as per Schedule					50

NOTE: DELIVERY METHODS: **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

Signature				
	Name of the Faculty	**Course Co-ordinator**	**Programme Co-ordinator**	**HOD**

TEACHING LESSON PLAN
17TE01-ADVANCED THERMODYNAMICS
Programme: M .Tech- I-SEM
Department of Mechanical Engineering

Staff Name: Dr.P.Ravindra Kumar **A.Y:2018-19**

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PO3	Students should be able to demonstrate a degree of mastery over the area as per the specialization of the programme. The mastery should be at a level higher than the requirements in the appropriate Bachelor Programme.
PO4	Model and design thermal systems using computational and optimization techniques.
PO5	Adopt methods of energy conservation for sustainable development.

17TE01	**Advanced Thermodynamics**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**
CO1	Understand the laws of thermodynamics applied to mixture of gases and thermodynamic potentials	**3**	**2**	**3**		**2**
CO2	Analyze the thermodynamics laws for various thermal systems	**3**	**2**	**3**	**3**	**2**
CO3	Apply the thermodynamics laws to solve various numerical problems	**3**	**2**	**3**	**3**	**2**
CO4	Evaluate the thermodynamic properties of various thermal systems	**3**	**2**	**3**	**2**	**2**
CO5	Synthesize I law and II law efficiency of various thermal systems.	**2**	**2**	**3**	**2**	**2**

REFERENCES

1. Sonntag, Borgnakke, Van Wyllan, Fundamentals of Thermodynamics: 5th Edition John Wiley and Sons, 2010.
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34	08/11/18	First and second law analysis of reacting systems		1	DM1, DM2
35	09/11/18	Problems on reactive systems, Seminars		1	DM1, DM2
		UNIT-IV			

		Exergy			
36	13/11/18	Available energy(Exergy) , availability function of closed system		1	DM1,DM6
37	15/11/18	Exergy of closed systems and open systems		1	DM1,DM3
38	16/11/18	Availability function of open system, availability of steady flow system		1	DM1,DM6
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		UNIT-V			
		Thermodynamic cycles			
43	29/11/18	II law analysis of vapour power cycles		1	DM1,DM6
44	04/12/18	Cogeneration- Problems		1	DM1, DM2
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			Total	46	
Total number of classes required to complete the syllabus					46
Total number of classes available as per Schedule					50

NOTE: DELIVERY METHODS: **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

Signature				
	Name of the Faculty	**Course Co-ordinator**	**Programme Co-ordinator**	**HOD**

	LESSON PLAN
	Department: ME **Program:** M.Tech **Course:** INTERNAL COMBUSTION ENGINES AND POLLUTION **SEM:** I **Academic Year: 2018-19**

1. **Pre-requisites:**

2. **Course Educational Objectives (CEOs): Course Outcomes (COs):** At the end of the course, the student will be able to :

3. COURSE OUTCOMES:

CO1: Demonstrate the basic principles of internal combustion engine systems.

CO2: Comprehend the combustion phenomena in SI and CI engines

CO3: Describe the modern developments in Internal Combustion Engines.

CO4: Evaluate the performance of I.C engines and comprehend the necessity of alternate fuels

CO5: Analyze the engine exhaust emissions and its control measures.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
S 231	CO1	2	3	2	2								2	2		
	CO2	2	3	2	3								1	2		
	CO3	2	2	2	2								2	2		
	CO4	2	2	2	2								1	2		
	CO5	2	3	2	2								2	2		
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

5. Course delivery plan

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
Unit-1					
1	Introduction and Historical perspective – Engine classifications	1		23/8/18	1,2
2	Engine components, Two stroke and four stroke engines, comparison of Two stroke and four stroke engines	1		24/8/18	1,2
3	S.I. Engine operation, C.I. Engine operation	1		29/8/18	1,2
4	Comparison of S.I Engines and C.I Engines ,applications of I.C engines, Engine design and operating parameters	1		30/8/18	1,2

5	First law analysis of engine cycle-energy balance.	1		31/8/18	1,2
6	Supercharging and scavenging of I.C. engines, supercharging limits.	1		5/9/18	1,2
7	Turbo charging – Turbo charging methods	1		6/9/18	
8	TUTORIAL-1	1		7/9/18	3
9	TEST-1	1		8/9/18	4
Number of classes		09			
Unit-II					
10	Introduction – Stages of combustion in SI Engine - Flame front propagation	1		12/9/18	1,2
11	Factors influencing flame speed - Rate of pressure rise	1		14/9/18	1,2
12	TUTORIAL-2	1		19/9/18	3
13	Analysis of cylinder pressure data – Heat release analysis	1		20/9/18	1,2
14	Cyclic variations in combustion, partial burning and misfire	1		21/9/18	1,2
15	Abnormal combustion and knocking – Effects of detonation - Effect of engine variables on detonation	1		26/9/18	1,2
16	SI Engine combustion chamber design principles – Types of combustion chambers	1		27/9/18	1
17	Stages of combustion in CI Engine – Ignition delay	1		28/9/18	1,2
18	Factors effecting ignition delay – Knocking in CI Engine – Factors affecting knocking	1		3/10/18	1,2
19	Types of Diesel Combustion systems	1		4/10/18	1,2
20	Direct injection systems - Indirect injection systems, comparison of combustion Systems -	1		5/10/18	1,2
21	Combustion in direct injection multi spray – Analysis of cylinder pressure data - Heat release analysis and Turtorial-III	1		24/10/18	12
Number of classes		**12**			
UNIT 3					
22	Lean burn engines, ceramic and adiabatic engines, working principle of dual fuel engines	1		25/10/18	1,2
23	factors affecting the combustion in dual fuel engines, MPFI engines – operation	1		26/10/18	1,2
24	Engines characteristics of multifuel engines. Introduction to working of stratified charged engines,	1		31/10/18	1,2

25	Wankel engine, working principle of Wankel engine. Features of rotary engines.	1		1/11/18	1,2
26	Variable compression ratio engines, theoretical analysis, methods of obtaining variable compression ratio	1		2/11/18	1,2
27	Surface ignition engines, free piston engines, EGR, homogeneous charge combustion engines	1		7/11/18	
28	TUTORIAL 4	1		8/11/18	3
29	TEST-3	1		9/11/18	4
	Number of classes	8			
UNIT 4					
30	Introduction - Parameters of performance – Engine performance characteristics	1		14/11/18	1,2
31	variables affecting affecting performance characteristics	1		15/11/18	1,2
32	Pressure- Volume measurement and combustion Analysis performance test – heat balance test problems	1		16/11/18	1,2
33	Necessity of Alternative fuels – Biodiesels-Transesterification process	1		21/11/18	1,2
34	Use of Alcohols – Gaseous fuels - CNG – LPG – Hydrogen and Biogas.	1		22/11/18	1,2
35	TUTORIAL-5	1		23/11/18	3
36	TEST-4	1		28/11/18	4
	Number of classes	**7**			
UNIT 5					
37	Nature and extent of problem-Pollution Norms- Types of pollutants-Nitrogen Oxides	1		29/11/18	1,2
38	Carbon Monoxide – Unburned Hydrocarbons – Particulate Emissions – Measurement of Emissions	1		30/11/18	1,2
39	Oxides of Nitrogen, carbon monoxide, Unburned Hydrocarbons and smoke	1		5/12/18	1,2
40	Exhaust gas treatment – Catalytic converters – Thermal reactors – Particulate traps	1		6/12/18	1,2
41	Tutorial-VI	1		7/12/18	3
42	Test-5	1		12/12/18	4
	Number of classes	**6**			

43	Contents beyond syllabus	1		12/12/18	1
44	Contents beyond syllabus	1		13/12/18	1
45	Over all discussion	1		14/12/18	1
	Number of classes	**3**			
	Total number of classes	**45**			

Delivery Methods (DM):

1.Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	**A.Naresh Kumar**	**A.Naresh Kumar**	**Dr P Vijay kumar**	**Dr S Pichi reddy**

Department of Mechanical Engineering,
Lakireddy Bali Reddy College of Engineering

Subject Name: 17TE06: Statistical and Analysis and Design of Experiments
Programme: M .Tech- I-SEM
Faculty Name: Dr. Pullarao Muvvala **A.Y:2018-19**

TEACHING LESSON PLAN

S.No	Tentative Date	Topics to be covered	Actual Date	Required classes	Content Delivery Methods
		UNIT-1			
1.	13/08/2018	Strategy of experimentation, some typical applications of experimental design		1	DM1, 2
2.	17/08/2018	Basic principles, Guidelines for designing experiments,		1	DM1, 2
3.	20/08/2018	A brief history of statistical design, using statistical design in experimentation		1	DM1, 2
4.	24/08/2018	Basics of probability		1	DM1, 2, 6
5.	27/08/2018	Random experiments		1	DM1, 2, 6
6.	29/08/2018	Sample space, Events		1	DM1, 2, 6
7.	31/08/2018	Interpretation of probability		1	DM1, 2, 6
8.	05/09/2018	Axioms of probability		1	DM1, 2, 6
9.	07/09/2018	Conditional probability		1	DM1, 2, 6
10.	10/09/2018	Probability rules		1	DM1, 2, 6
11.	12/09/2018	Baye's theorem		1	DM1, 2, 6
		UNIT-II			
12.	14/09/2018	Random variables definition, attributes of a random variable		1	DM1, 2, 6
13.	17/09/2018	Types of random variables, examples		1	DM1, 2, 6
14.	19/09/2018	Introduction to discrete random variables, probability distributions and probability mass functions		1	DM1, 2, 6
15.	24/09/2018	cumulative distribution function		1	DM1, 2, 6
16.	26/09/2018	mean and variance of a discrete random variable		1	DM1, 2, 6
17.	28/09/2018	Binomial and Poisson distribution		1	DM1, 2, 6

18.	01/10/2018	Introduction to continuous random variables, probability distributions and probability density functions		1	DM1, 2, 6
19.	03/10/2018	Cumulative distribution function		1	DM1, 2, 6
20.	03/10/2018	mean and variance of a continuous random variable		1	DM1, 2, 6
21.	05/10/2018	normal distribution		1	DM1, 2, 6
22.	05/10/2018	normal distribution…continued		1	DM1, 2, 6
08/10/2018 to 13/10/2018		**MID-1 EXAMS**			
UNIT-III					
23	15/10/2018	Simple comparative experiments: Introduction		1	DM1, 2, 6
24	17/10/2018	Basic statistical concepts		1	
25	19/10/2018	Sampling and Sampling Distribution		1	DM1, 2, 6
26	22/10/2018	Inferences about the Differences in means		1	DM1, 2, 6
27	24/10/2018	Randomized designs		1	DM1, 2, 6
28	26/10/2018	Paired comparison Designs		1	DM1, 2, 6
29	29/10/2018	Inferences about the Variances of Normal Distributions		1	DM1, 2, 6
UNIT-IV					
30	31/10/2018	Design and analysis of experiments with single factor: Basic principles and guidelines of design of experiments		1	DM1, 2, 6
31	02/11/2018	single factor experiments		1	DM1, 2, 6
32	05/11/2018	Analysis of Variance (ANOVA)		1	DM1, 2, 6
33	09/11/2018	Analysis of Variance (ANOVA)..continued		1	DM1, 2, 6
34	12/11/2018	block design		1	DM1, 2, 6
35	14/11/2018	Design and analysis of experiments with multiple factors: Introduction to Factorial design		1	DM1, 2, 6
36	16/11/2018	the two factor factorial design		1	DM1, 2, 6
37	19/11/2018	general factorial design		1	DM1, 2, 6
38	23/11/2018	2^k factorial designs		1	DM1, 2, 6
39	26/11/2018	confounding and blocking in factorial designs		1	DM1, 2, 6

UNIT-V					
40	28/11/2018	Regression analysis: Introduction		1	DM1, 2, 6
41	30/11/2018	simple linear regression analysis		1	DM1, 2, 6
42	03/11/2018	multiple linear regression model		1	DM1, 2, 6
43	05/11/2018	model adequacy checking		1	DM1, 2, 6
44	07/11/2018	Response surface methodology		1	DM1, 2, 6
45	10/11/2018	Optimization		1	DM1, 2, 6
46	12/11/2018	robust parameter design and its application to control of processes with high variability		1	DM1, 2, 6
47	14/11/2018	Beyond Syllabus		1	DM1, 2, 6
48	14/11/2018	Revision		1	DM1, 2, 6

NOTE: DELIVERY METHODS:

DM1: Lecture interspersed with discussions/BB, **DM2:**Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

Dr. M Pullarao	Dr. P.Vijaya Kumar	Dr. S. Pichi Reddy
Name of the Faculty	**Programme Coordinator**	**HOD**

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

THERMAL ENGINEERING

Faculty Name : V.Dhana Raju Date : 20-08-2018

Sem : M.Tech (I Sem)

Subject : THERMAL AND NUCLEAR POWER PLANT ENGINEERING

S.No.	Date	Planned Topic	Topics Covered	Remarks
1	21/08/2018	**Introduction**-Sources of Energy, Types of Power Plants, Direct Energy Conversion System.	UNIT-I	
2	22/08/2018	Recent developments in Power Generation.		
3	23/08/2018	Combustion of Coal, Volumetric Analysis.		
4	28/08/2018	Gravimetric Analysis, Flue Gas Analysis.		
5	29/08/2018	**Fuels and combustion:** Coal, fuel oil, natural and petroleum gas, emulsion firing.		
6	30/08/2018	Coal – oil and coal – water mixtures, synthetic fuels, bio-mass.		
7	04/09/2018	Combustion reactions, heat of combustion and enthalpy of combustion.		
8	05/09/2018	Problems ,theoretical flame temperature,		
9	06/09/2018	equilibrium constant, effect of dissociation, free energy of formation,		
10	11/09/2018	**Steam Power Plants**: Introduction-General Layout of Steam Power Plant, Modern Coal fired Steam Power Plants.	UNIT- II	
11	12/09/2018	Power Plant Cycles. Fuel Handling.		
12	18/09/2018	Combustion Equipment. Ash handling, Dust Collectors.		
13	19/09/2018	ESP, fabric filters, bag houses.		
14	20/09/2018	Economisers, Superheaters, Reheaters.		
15	25/09/2018	Steam generator control, air preheater, fluidized bed boilers.		
16	26/09/2018	feed water treatment, deaeration, evaporation, internal treatment, boiler blow down, steam purity.		
17	27/09/2018	**Gas Turbine Power Plant**: Types-Working-Cogeneration.	UNIT- III	
18	03/10/2018	Combined Cycle with Gas Producton from coal (IGCC Power Plants).		
19	04/10/2018	combined cycles using PFBC-system.		
20	16/10/2018	Combined cycle with organic fluids, advantages of combined cycles.		
21	23/10/2018	Peformance of Combined cycle, Future of Combined Cycle.		
22	24/10/2018	Waste Heat Recovery Systems- Introduction.		
23	25/10/2018	Heat Sources of Waste Heat and Their Grading.		
24	30/10/2018	Thermodynamic Cycles for Waste Heat Recovery.		
25	31/10/3018	Recovery forms and Methods. Other uses of Waste.		
26	01/11/2018	**Principles of Nuclear Energy**:		
27	06/11/2018	Introductin-Atomic structure – Chemical and Nuclear equations .		

		Energy from Nuclear reactions – Nuclear Fission and Fusion. Energy from fission and fuel burn up .	UNIT- IV	
28	08/11/2018	Radioactivity – Decay rates and Half lifes – Fission reactor types .		
29	13/11/2018	**Nuclear Power Plants**: Nuclear Reactors- Classification.		
30	14/11/2018	Types of Reactors, Site selection.		
31	15/11/2018	Methods of Enriching Uranium- Applications of Nuclear Power Plants .		
32	20/11/2018	Nuclear Power Plant Safety: Bi-Products of Nuclear Power Generation.		
33	22/11/2018	Nuclear Waste Disposal, Future of Nuclear power		
34	27/11/2018	**Economics of Power Generation:** Factors affecting the economics, Load factor, Utilization factor.	UNIT- V	
35	28/11/2018	Performance and operating characteristics of Power plants.		
36	29/11/2018	Economic load sharing, Depreciation-Energy rates.		
37	04/12/2018	Criteria for optimum loading-Specific economic energy problems. **Power Plant Instrumentation**: Classification.		
38	05/12/2018	Pressure measuring Instruments-Temperature measurement.		
39	06/12/2018	Flow measurement Analysis of combustion gases		
40	11/12/2018	Pollution-Types, Methods to control the pollution.		
41	12/12/2018	Beyond Syllabus		
42	13/12/2018	Revision		

Course Instructor **Course Coordinator** **Program Coordinator** **HOD**