Seth Jai Parkash Mukand Lal Institute of Engineering & Technology (JMIT), Radaur

Department of Mechanical Engineering

Lesson Plan

Name of the Faculty:	**Er; Dimple Kumar**		
Discipline:	B.Tech. Mechanical& Mechatronics Engg. (Additive Manufacturing)		
Semester:	**3rd**		
Subject:	**Engineering Thermodynamics**		
Subject Code:	**B24-ESC-201**		
Work Load (Lecture/Practical) per week (Inhours):	**L: 3**	**T: 1**	**P: 0**

S. No	Lecture No.	Topic (Including assignment/Test/Quiz)	Pedagogy (PPT/Chalk and Board/Video Recording/Activity/Case Study)
1.	**L1**	**Basic Concepts:** Thermodynamics:	PPT/Chalk and Board/Video
2.	**L2**	Macroscopic and Microscopic Approach,	PPT/Chalk and Board/Video
3.	**L3**	Thermodynamic Systems, Surrounding and Boundary,	PPT/Chalk and Board/Video
4.	**L4**	Thermodynamic Property – Intensive and Extensive, Thermodynamic Equilibrium	PPT/Chalk and Board/Video
5.	**L5**	State, Path, Process and Cycle, Quasi-static,	PPT/Chalk and Board/Video
6.	**L6**	Reversible and Irreversible Processes,Working Substance.	PPT/Chalk and Board/Video
7.	**L7**	Concept of Thermodynamic Work and Heat	PPT/Chalk and Board/Video
8.	**L8**	Numerical on Thermodynamic Workand Heat,Zeroth Law of Thermodynamic and its utility	PPT/Chalk and Board/Video
9.	**L9**	**Unit-II: First Law of Thermodynamics:** Energy and its FormsEnergy	PPT/Chalk and Board/Video
10.	**L10**	1st law of Thermodynamics, Internal Energy and Enthalpy	PPT/Chalk and Board/Video
11.	**L11**	1st Law Applied to Non-Flow Process	PPT/Chalk and Board/Video
12.	**L12**	Numerical on InternalEnergy& Enthalpy	PPT/Chalk and Board/Video
13.	**L13**	Steady Flow Process	PPT/Chalk and Board/Video
14.	**L14**	Numerical on Steady Flow Process, Free Expansion Process	PPT/Chalk and Board/Video
15.	**L15**	**Second Law of Thermodynamics:** Limitations of	PPT/Chalk and

		First Law, Thermal Reservoir Heat Source and Heat Sink	Board/Video
16.	**L16**	Heat Engine, Refrigerator and Heat Pump& Numarical	PPT/Chalk and Board/Video
17.	**L17**	Kelvin- Planck and Clausius Statements and Their Equivalence	PPT/Chalk and Board/Video
18.	**L18**	Perpetual Motion Machine of Second Kind. Carnot Cycle	PPT/Chalk and Board/Video
19.	**L19**	Carnot Heat Engine and Carnot Heat Pump.	PPT/Chalk and Board/Video
20.	**L20**	Numerical on Carnot Heat Engine &Heat Pump	PPT/Chalk and Board/Video
21.	**L21**	**Unit -III: Availability, Irreversibility and Equilibrium:** High and Low Grade Energy, Available Energy and Unavailable Energy,	PPT/Chalk and Board/Video
22.	**L22**	Availability of a Non-Flow or Closed System	PPT/Chalk and Board/Video
23.	**L23**	Availability of a Steady Flow System	PPT/Chalk and Board/Video
24.	**L24**	Helmholtz and Gibb's Functions, Effectiveness and Irreversibility	PPT/Chalk and Board/Video
25.	**L25**	**Entropy:** Clausius Inequality and Entropy, Principle of Entropy Increase	PPT/Chalk and Board/Video
26.	**L26**	Temperature-Entropy Plot, Entropy Change in Different Processes	PPT/Chalk and Board/Video
27.	**L27**	Entropy Change in Different Processes, Introduction to Third Law of thermodynamics	PPT/Chalk and Board/Video
28.	**L28**	**Unit-IV: Pure Substance:** Pure Substance and its Properties	PPT/Chalk and Board/Video
29.	**L29**	Phase and Phase Transformation, Vaporization, Evaporation and Boiling	PPT/Chalk and Board/Video
30.	**L30**	Saturated and Superheated Steam, Solid – Liquid – Vapour Equilibrium, T-V, P-V and P-T Plots During Steam Formation	PPT/Chalk and Board/Video
31.	**L31**	Properties of Dry, Wet and Superheated Steam, Property Changes During Steam Processes, Temperature – Entropy (T-S) and Enthalpy – Entropy (H-S) Diagrams	PPT/Chalk and Board/Video
32.	**L32**	Throttling and Measurement of Dryness Fraction of Steam.	PPT/Chalk and Board/Video
33.	**L33**	**Thermodynamic Relations:** TDS Relations, Enthalpy and Internal Energy as a Function of Independent Variables	PPT/Chalk and Board/Video
34.	**L34**	Specific Heat Capacity Relations, Clapeyron Equation	PPT/Chalk and Board/Video
35.	**L35**	Maxwell Relations	PPT/Chalk and Board/Video

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Lesson Plan

Name of the Faculty:	Er Virender		
Discipline:	B.Tech. Mechanical& Mechatronics Engg. (Additive Manufacturing)		
Semester:	3rd		
Subject:	Theory of Machines		
Subject Code:	B24-MMAC-201		
Work Load (Lecture/Practical) per week (Inhours):	**L:** 3	**T:** 1	**P:**0

S. No	Lecture No.	Topic (Including assignment/Test/Quiz)	Pedagogy (PPT/Chalk and Board/Video Recording/Activity/ CaseStudy)
1.	**L1**	Introduction to Theory of Machines, Kinematic Link (Element), Types of Links	PPT
2.	**L2**	Structure, Machine vs. Structure, Kinematic Pair	PPT
3.	**L3**	Types of Constrained Motion, Classification of Kinematic Pairs	PPT
4.	**L4**	Kinematic Chain, Types of Joints, Mechanism	PPT/Chalk and Board
5.	**L5**	Degrees of Freedom (DOF), Kutzbach Criterion	PPT/Chalk and Board
6.	**L6**	Gruebler's Criterion, Numerical Problems	Chalk and Board
7.	**L7**	Inversion of Mechanism, Four-Bar Chain	Chalk and Board
8.	**L8**	Inversions of Four-Bar Chain	Chalk and Board
9.	**L9**	Single Slider-Crank Chain and Inversions	Chalk and Board
10.	**L10**	Double Slider-Crank Chain and Inversions, Numerical (Assignment)	PPT
11.	**L11**	Introduction to Cams and Followers, Classification of Followers	PPT/Chalk and Board
12.	**L12**	Classification of Cams, Terms Used in Radial Cams	PPT/Chalk and Board
13.	**L13**	Cam Profile for Knife Edge Follower (Uniform Velocity)	PPT/Chalk and Board
14.	**L14**	Cam Profile for Roller Follower (Uniform Velocity)	PPT/Chalk and Board
15.	**L15**	Cam Profile using Simple Harmonic Motion (SHM)	PPT/Chalk and Board
16.	**L16**	Cam Profile using Uniform Acceleration and Retardation	PPT/Video
17.	**L17**	Cam Profile using Cycloidal Motion (Assignment)	PPT/Chalk and Board

18.	**L18**	Turning Moment Diagram for Four-Stroke I.C. Engine	Chalk and Board
19.	**L19**	Turning Moment Diagram for Multi-Cylinder Engine	Chalk and Board
20.	**L20**	Fluctuation of Energy and Flywheel	Chalk and Board
21.	**L21**	Energy Stored in Flywheel, Numerical Problems	Chalk and Board
22.	**L22**	Fundamental Equation for Correct Steering	Chalk and Board
23.	**L23**	Davis and Ackermann Steering Gear Mechanisms	PPT/Chalk and Board
24.	**L24**	Hooke's Joint, Double Hooke's Joint	PPT/Chalk and Board
25.	**L25**	Introduction to Belt Drives, Types of Flat Belt Drives	PPT/Chalk and Board
26.	**L26**	Velocity Ratio, Slip and Creep of Belt	Chalk and Board
27.	**L27**	Length of Open and Crossed Belt Drives	Chalk and Board
28.	**L28**	Power Transmission, Driving Tensions, Angle of Contact	Chalk and Board
29.	**L29**	Centrifugal Tension, Maximum Power, Initial Tension	PPT/Video
30.	**L30**	Chain Drives: Introduction, Terminology and Classification	PPT/Video
31.	**L31**	Chain Length, Pitch Circle Diameter, Numerical Problems	Chalk and Board
32.	**L32**	Gears: Classification, Terminology, Contact Ratio and Interference	Chalk and Board
33.	**L33**	Minimum Number of Teeth, Simple, Compound and Reverted Gear Trains	PPT/Chalk and Board
34.	**L34**	Comprehensive Revision, Numerical Practice and Model Test (Assignment)	Chalk and Board

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Lesson Plan

Name of the Faculty:	Kiran Bala		
Discipline:	B.Tech. Mechanical Engineering		
Semester:	3rd		
Subject:	Measurement and Control		
Subject Code:	B24-ESC-203		
Work Load (Lecture/Practical) per week (Inhours):	**L:** 3	**T:** 0	**P:**0

S. No	Lecture No.	Topic (Including assignment/Test/Quiz)	Pedagogy (PPT/Chalk and Board/Video Recording/Activity/ Case Study)
1.	**L1**	Introduction to Measurement & Significance of Measurement	Chalk and Board/PPT
2.	**L2**	Different Methods of Measurement	Chalk and Board
3.	**L3**	Classification of Measuring Instruments	Chalk and Board
4.	**L4**	Measurement Systems & Functional Elements	Chalk and Board
5.	**L5**	Measuring Standards & Types of Errors	Chalk and Board
6.	**L6**	Uncertainties & Propagation of Uncertainties	Chalk and Board/PPT
7.	**L7**	Performance Characteristics (Range, Span, Accuracy, Precision)	Chalk and Board/PPT
8.	**L8**	Sensitivity, Resolution, Hysteresis, Repeatability, Reproducibility	Chalk and Board/PPT
9.	**L9**	Threshold, Zero Error, Noise, Linearity, Loading Effect (Unit-I Revision)	Chalk and Board/PPT
10.	**L10**	Motion Measurement: Introduction & Relative Motion	Chalk and Board/PPT
11.	**L11**	Measuring Devices (Electro-mechanical, Optical, Photoelectric, Pneumatic)	Chalk and Board
12.	**L12**	Absolute Motion Devices & Seismic Devices	Chalk and Board
13.	**L13**	Spring-Mass & Force Balance Type Devices	Chalk and Board
14.	**L14**	Calibration & Load Cells (Hydraulic, Pneumatic, Elastic Force Devices)	Chalk and Board
15.	**L15**	Force Components, Torque Transducer & Torque Meter (Unit-II Revision)	Chalk and Board
16.	**L16**	Pressure Measurement Terminology & Manometers	Chalk and Board
17.	**L17**	Elastic Transducers, Calibration & Testing	PPT/ Chalk and Board

18.	**L18**	Temperature Measurement: Introduction & Non-electrical Methods	Chalk and Board
19.	**L19**	Solid Rod, Bimetallic & Liquid-in-Glass Thermometers	Chalk and Board
20.	**L20**	Electrical Resistance Thermometers (RTD)	PPT/ Chalk and Board
21.	**L21**	Thermistors & Thermocouples	Chalk and Board
22.	**L22**	Radiation Methods (Pyrometry), Total & Selective Radiation Pyrometers (Unit-III Revision)	Chalk and Board
23.	**L23**	Introduction to Control Systems	Chalk and Board
24.	**L24**	Classification of Control Systems	Chalk and Board
25.	**L25**	Control System Terminology	Chalk and Board
26.	**L26**	Servomechanism	Chalk and Board
27.	**L27**	Process Control & Regulators	Chalk and Board
28.	**L28**	Manual & Automatic Control Systems	Chalk and Board
29.	**L29**	Physical system &Mathematical Modelling	Chalk and Board
30.	**L30**	Linear Control Systems,Transfer Function	Chalk and Board
31.	**L31**	Block Diagram and Signal Flow Graphs	Chalk and Board
32.	**L32**	Mechanical Controllers: Basics of Actuators, Pneumatic Controller and Hydraulic Controller	Chalk and Board
33.	**L33**	Comparison of Pneumatic and Hydraulic Controllers, Comparators	Chalk and Board
34.	**L34**	Form and Finish Measurement	Chalk and Board