

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

Department of Mechanical Engineering

Lesson Plan

Name of the Faculty:		Dr. Sonam Sandhu		
Discipline:		B.Tech. Mechanical Engineering		
Semester:		7 th		
Subject:		Computer Aided Design		
Subject Code:		MEP-401A		
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, Traditional product cycle, CAD/CAM product cycle	Chalk and Board/PPT	
2.	L2	Rapid prototypic, design for everything, computer aided design	Chalk and Board	
3.	L3	Computer aided engineering, customer relationship management	Chalk and Board	
4.	L4	Product lifecycle management	Chalk and Board	
5.	L5	CAD hardware: Introduction, basic structure of computer	Chalk and Board	
6.	L6	Input, storage, processing, output, control	Chalk and Board/PPT	
7.	L7	Microcomputer minicomputer, mainframes, supercomputer	Chalk and Board/PPT	
8.	L8	Input out device, LAN, MAN, WAN	Chalk and Board/PPT	
9.	L9	CAD Software: Introduction, system software, application software, General CAD process, selection of CAD system	Chalk and Board/PPT	
10.	L10	Database management system, data structure, database types	Chalk and Board/PPT	
11.	L11	Function of databasemanagement system, advantages of DBMS, database coordinate system	Chalk and Board	
12.	L12	Geometric transformations: Introduction, 2D transformation, translation, rotation, scaling, homogeneouscoordinate relationship	Chalk and Board	
13.	L13	Reflection transformation, shear transformation, inverse transformation fortranslation, rotation, scaling, reflection, shear	Chalk and Board	
14.	L14	Composite transformation, examples of composite transformation, geometric transformations in	Chalk and Board	

		engineering design, solved examples	
15.	L15	Geometric modeling: Need of geometric modeling, requirements of geometric modeling	Chalk and Board
16.	L16	Wire framemodeling, surface modeling, solid modeling	Chalk and Board
17.	L17	Difference between wireframe, surface and solid modeling,introduction to solid modeling	PPT/ Chalk and Board
18.	L18	Set theory, representation schemes for solid models	Chalk and Board
19.	L19	Boundaryrepresentation, cellular decomposition	Chalk and Board
20.	L20	Feature based modeling, Euler theory, mass property calculation	PPT/ Chalk and Board
21.	L21	Introduction, parametric representation of analytic curves	Chalk and Board
22.	L22	Parametric representation of lines, circle, conic selection	Chalk and Board
23.	L23	Parametric representation of ellipse, parabola, hyperbola	Chalk and Board
24.	L24	Parametric representation of synthetic curve, Hermite cubic spline curve	Chalk and Board
25.	L25	Bezier curves, B- spline curve, non-uniform rational	Chalk and Board
26.	L26	B- spline curve, non-uniform rational, B splines, manipulation of curves	Chalk and Board
27.	L27	Mathematical representation of surface entity: Introduction, surface entities, analytic surface	Chalk and Board
28.	L28	Planesurface, tabulated surface	Chalk and Board
29.	L29	Ruled surface, surface of revolution	Chalk and Board
30.	L30	Sweep surface, synthetic surface	Chalk and Board
31.	L31	Hermite Bicubic surface, Bzier surface	Chalk and Board
32.	L32	Bilinear surface, coons surface	Chalk and Board
33.	L33	Introduction, CAD/CAM data exchange	Chalk and Board
34.	L34	Neutral file formats, data exchangeformat, initial graphics exchange specification	Chalk and Board
35.	L35	Standard triangular language, standard for exchange of product data	Chalk and Board

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Department of Mechanical Engineering

Lesson Plan

Name of the Faculty:		KiranBala		
Discipline:		B.Tech. Mechanical Engg.		
Semester:		7 th		
Subject:		Industrial Robotics		
Subject Code:		MEP-409A		
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	Automation and robotics, robotics in science fiction		Chalk and Board/PPT
2.	L2	A brief history of robotics		Chalk and Board
3.	L3	The roboticsmarket and the future prospectus		Chalk and Board
4.	L4	Robot anatomy, work volume		Chalk and Board/PPT
5.	L5	Robot drives systems		Chalk and Board
6.	L6	Control systems		Chalk and Board
7.	L7	Precession of movement		Chalk and Board
8.	L8	End effectors		Chalk and Board
9.	L9	Robot application		Chalk and Board
10.	L10	Type of sensors in robotics		Chalk and Board
11.	L11	Exteroceptors or external sensors		PPT/ Chalk and Board
12.	L12	Force and torquesensors		Chalk and Board
13.	L13	Proximity sensors (position sensors), range sensors		Chalk and Board
14.	L14	Machine vision sensors, velocity sensors		PPT/ Chalk and Board
15.	L15	Tactile sensor, proximately and range sensors		Chalk and Board
16.	L16	Use of sensor in robotics		Chalk and Board
17.	L17	Types of end effectors		Chalk and Board
18.	L18	Characteristics of end-of-arm tooling		Chalk and Board
19.	L19	Elements of end-of-armtooling		Chalk and Board

20.	L20	General consideration in robot material handling, material transfer applications	Chalk and Board
21.	L21	Machine loading and unloading	Chalk and Board
22.	L22	Tool selection of gripper, gripping mechanism	Chalk and Board
23.	L23	Types of gripper, Mechanical gripper	Chalk and Board
24.	L24	Vacuum and magnetic grippers	Chalk and Board
25.	L25	Robot cell layouts	Chalk and Board
26.	L26	Multiple robots and machine interface, other considerations in work cell design	Chalk and Board
27.	L27	Work cell control, interlock	Chalk and Board
28.	L28	The work cell controller	PPT/ Chalk and Board
29.	L29	Robot motion analysis and control	PPT/Chalk and Board
30.	L30	Introduction to manipulator kinematics	PPT/Chalk and Board
31.	L31	Manipulator path control	Chalk and Board
32.	L32	Robot dynamics	Chalk and Board
33.	L33	Configuration of robot control.	Chalk and Board

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Lesson Plan

Name of the Faculty:		Er Virender		
Discipline:		B.Tech. Mechanical Engineering		
Semester:		7 th		
Subject:		Non-Destructive Testing		
Subject Code:		MEO-405A		
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/ CaseStudy)
1.	L1	Introduction to Non-Destructive Testing (NDT), Need and Scope		PPT
2.	L2	NDT vs. Destructive Testing		PPT
3.	L3	Overview of NDT Methods		PPT
4.	L4	Manufacturing Defects and Material Characterization		PPT/Chalk and Board
5.	L5	Relative Merits and Limitations of NDT Methods		PPT/Chalk and Board
6.	L6	Physical Characteristics of Materials Used in NDT		Chalk and Board
7.	L7	Visual Inspection: Unaided Method		Chalk and Board
8.	L8	Visual Inspection: Aided Methods (Assignment)		Chalk and Board
9.	L9	Introduction to Liquid Penetrant Testing (LPT): Principle and Types		Chalk and Board
10.	L10	Penetrants, Developers, and Inspection Procedure		PPT
11.	L11	Interpretation of Results, Advantages and Limitations of LPT		PPT/Chalk and Board
12.	L12	Introduction to Magnetic Particle Testing (MPT): Theory of Magnetism		PPT/Chalk and Board
13.	L13	Magnetization Methods and Inspection Materials		PPT/Chalk and Board
14.	L14	Interpretation of Indications and Evaluation		PPT/Chalk and Board
15.	L15	Demagnetization and Residual Magnetism (Assignment)		PPT/Chalk and Board

16.	L16	Introduction to Thermography: Principles and Heat Transfer	PPT/Chalk and Board
17.	L17	Contact and Non-contact Thermography, Infrared Instrumentation	PPT/Chalk and Board
18.	L18	Applications, Advantages and Limitations of Thermography	Chalk and Board
19.	L19	Introduction to Eddy Current Testing (ECT): Principle and Eddy Currents	Chalk and Board
20.	L20	Probes, Instrumentation and Testing Arrangements	Chalk and Board
21.	L21	Applications, Interpretation, Advantages and Limitations of ECT (Assignment)	Chalk and Board
22.	L22	Introduction to Ultrasonic Testing (UT): Principles and Wave Propagation	Chalk and Board
23.	L23	Transducers, Pulse-Echo and Transmission Methods	PPT/Chalk and Board
24.	L24	Straight Beam, Angle Beam and Data Representation (A-Scan, B-Scan, C-Scan)	PPT/Chalk and Board
25.	L25	Phased Array Ultrasonic Testing (PAUT) and Time of Flight Diffraction (TOFD)	PPT/Chalk and Board
26.	L26	Acoustic Emission (AE): Principle and AE Parameters	Chalk and Board
27.	L27	Applications of AE and Comparison with Other NDT Methods (Assignment)	Chalk and Board