SSB REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, CHITRADA, MAYURBHANJ					
LESSON PLAN					
BRANCH: MECHANICAL ENGINEERING				SESSION: SUMMER-2024	SEMESTER: 6TH
NAME OF FACULTY:- ER. SAUBHAGYA MOHANTY				SUBJECT: ADVANCE MANUFACTURING PROCESS	
NO OF CLASSES/WEEK GIVEN AS PER SYLLABUS=				DATE OF SEMESTER STARTING	DATE OF SEMESTER CLOSING
NO OF CLASSES/WEEK GIVEN AS PER TIME TABLE=				TOTAL NOS. OF WORKING DAYS AS PER SCTE&VT:	
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1	1	Modern Machining Processes	20	20	1.1 Introduction – comparison with traditional machining. 1.2 Ultrasonic Machining: principle, Description of equipment, applications. 1.3 Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications. 1.4 Wire cut EDM: Principle, Description of equipment, controlling parameters; applications. 1.5 Abrasive Jet Machining: principle, description of equipment, Material removal rate, application. 1.6 Laser Beam Machining: principle, description of equipment, Material removal rate, application. 1.7 Electro Chemical Machining: principle, description of equipment, Material removal rate, application. 1.8 Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications. 1.9 Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.
2	2	Plastic Processing	10	10	2.1 Processing of plastics. 2.2 Moulding processes: Injection moulding, Compression moulding, Transfer moulding. 2.3 Extruding; Casting; Calendering. 2.4 Fabrication methods-Sheet forming, Blow moulding, Laminating plastics (sheets, rods & tubes), Reinforcing. 2.5 Applications of Plastics.

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3	3	Additive Manufacturing Process	15	15	3.1 Introduction, Need for Additive Manufacturing 3.2 Fundamentals of Additive Manufacturing, AM Process Chain 3.3 Advantages and Limitations of AM, Commonly used Terms 3.4 Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies. 3.5 Application –Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture. RP Medical and Bioengineering Applications. 3.6 Web Based Rapid Prototyping Systems. 3.7 Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.
4	4	Special Purpose Machines (SPM)	7	7	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design
5	5	Maintenance of Machine Tools	8	8	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)

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BRANCH: MECHANICAL ENGINEERING				SESSION: SUMMER-2024	SEMESTER: 6TH
NAME OF FACULTY:- ER. BINDUMADHABA DALEI				SUBJECT: AUTOMOBILE ENGINEERING AND HYBRID VEHICLE	
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1	1	INTRODUCTION & TRANSMISSION SYSTEM	12	12	1.1 Automobiles: Definition, need and classification: Layout of automobile chassis with major components (Line diagram) 1.2 Clutch System: Need, Types (Single & Multiple) and Working principle with sketch 1.3 Gear Box: Purpose of gear box, Construction and working of a 4 speed gear box 1.4 Concept of automatic gear changing mechanisms 1.5 Propeller shaft: Constructional features 1.6 Differential: Need, Types and Working principle
2	2	BRAKING SYSTEM	5	5	2.1 Braking systems in automobiles: Need and types 2.2 Mechanical Brake 2.3 Hydraulic Brake 2.4 Air Brake 2.5 Air assisted Hydraulic Brake 2.6 Vacuum Brake
3	3	IGNITION & SUSPENSION SYSTEM	10	10	3.1 Describe the Battery ignition and Magnet ignition system 3.2 Spark plugs: Purpose, construction and specifications 3.3 State the common ignition troubles and its remedies 3.4 Description of the conventional suspension system for Rear and Front axle 3.5 Description of independent suspension system used in cars (coil spring and tension bars) 3.6 Constructional features and working of a telescopic shock absorber

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4	4	COOLING AND LUBRICATION	8	8	4.1 Engine cooling: Need and classification 4.2 Describe defects of cooling and their remedial measures 4.3 Describe the Function of lubrication 4.4 Describe the lubrication System of I.C. engine
5	5	FUEL SYSTEM	10	10	5.1 Describe Air fuel ratio 5.2 Describe Carburetion process for Petrol Engine 5.3 Describe Multipoint fuel injection system for Petrol Engine 5.4Describe the working principle of fuel injection system for multi cylinder Engine 5.5 Filter for Diesel engine 5.6 Describe the working principle of Fuel feed pump and Fuel Injector for Diesel engine
6	6	ELECTRIC AND HYBRID VEHICLES	15	15	6.1 Introduction, Social and Environmental importance of Hybrid and Electric Vehicles 6.2 Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles 6.3 Battery for Electric Vehicles, Battery types and fuel cells 6.4 Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations; 6.5 Drive train 6.6 Solar powered vehicles

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NAME OF FACULTY:-ER. TAPAS KUMAR GIRI				SUBJECT: INDUSTRIAL ENGINEERING & MANAGEMENT	
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1	1	PLANT ENGINEERING	10	10	1.1 Selection of Site of Industry. 1.2 Define plant layout. 1.3 Describe the objective and principles of plant layout. 1.4 Explain Process Layout, Product Layout and Combination Layout. 1.5 Techniques to improve layout. 1.6 Principles of material handling equipment. 1.7 Plant maintenance. 1.7.1 Importance of plant maintenance. 1.7.2 Break down maintenance. 1.7.3 Preventive maintenance. 1.7.4 Scheduled maintenance.
2	2	OPERATIONS RESEARCH	10	10	2.1 Introduction to Operations Research and its applications. 2.2 Define Linear Programming Problem, 2.3Solution of L.P.P. by graphical method. 2.4 Evaluation of Project completion time by Critical Path Method and PERT (Simple problems) 2.5Explain distinct features of PERT with respect to CPM.
3	3	INVENTORY CONTROL	10	10	3.1 Classification of inventory. 3.2 Objective of inventory control. 3.3 Describe the functions of inventories. 3.4 Benefits of inventory control. 3.5 Costs associated with inventory. 3.6 Terminology in inventory control 3.7 Explain and Derive economic order quantity for Basic model. (Solve numerical) 3.8 Define and Explain ABC analysis.
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4	4	INSPECTION AND QUALITY CONTROL	15	15	4.1Define Inspection and Quality control. 4.2Describe planning of inspection. 4.3 Describe types of inspection. 4.4 Advantages and disadvantages of quality control. 4.5 Study of factors influencing the quality of manufacture. 4.6 Explain the Concept of statistical quality control, Control charts (X, R, P and C - charts). 4.7 Methods of attributes. 4.8 Concept of ISO 9001-2008. 4.9.1 Quality management system, Registration /certification procedure. 4.9.2 Benefits of ISO to the organization. 4.9.3 JIT, Six sigma,7S, Lean manufacturing 4.9.4 Solve related problems.	
5	5	PRODUCTION PLANNING AND CONTROL	15	15	5.1 Introduction 5.2 Major functions of production planning and control 5.3 Methods of forecasting 5.3.1 Routing 5.3.2Scheduling 5.3.3 Dispatching 5.3.4 Controlling 5.4 Types of production 5.4.1 Mass production 5.4.2 Batch production 5.4.3 Job order production 5.5 Principles of product and process planning.	

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