LESSON

Discipline: MechanicalEngineering	Semester: 6th
Subject: ADVANCED MANUFACTURING PROCESS	No. of days per week class allotted: 4
Week	**Class Day**
1st	
	1st
	2nd
	3rd
	4th
2nd	1st
	2nd
	3rd
	4th
3rd	1st
	2nd
	3rd
	4th
4th	1st
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	4th
5th	1st
	2nd
	3rd
	4th
6th	1st

	2nd
	3rd
7th	1st
	2nd
	3rd
	4th
8th	1st
	2nd
	3rd
	4th
9th	1st
	2nd
	3rd
	4th
10th	1st
	2nd
	3rd
	4th
11th	1st
	2nd
	3rd
	4th
12th	1st
	2nd
	3rd
	4th
13th	1st
	2nd
	3rd
	4th
14th	1st
	2nd
	3rd
	4th
15th	1st
	2nd
	3rd
	4th

SIGNATURE OF FACULTY CON

GOVERNMENT POLYTECHNIC , NABARANGPUR
I PLAN FOR ADVANCED MANUFACTURING PROCESS (Th. 1)

Name of the Teaching Faculty: DEEPAK RANJAN PATTNAIK(PTGF)
Semester From Date : …….. to Date: …….. **No. of Weeks: 14**
Theory
1. NON CONVENTIONAL MACHINING PROCESS
1.1. classification of various non coneventional machining processes
1.1. differences between conventional and advanced manufacturing processes
1.1.1 Electro chemical machining process - construction, working principle (cont.)
1.1.1 advantages and limitations of ECM(electro chemical machining) area of application
1. NON CONVENTIONAL MACHINING PROCESS(Cont.)
1.2 electro disharge machining process - working principle 1.2 advantages and limitations of electro discharge machining , area of applications
1.3 PAM(plasma arc machining process) - working principle advantages and dis advantages of PAM , area of application
1.4 LBM (laser beam machining) process - working prinicple advantages and limitations , area of applications
1.5 AJM(abrassive jet machining) - working principles advantages and limitations , area of application
1 . NON CONVENTIONAL MACHINING (CONT.)
1.6 EBM (electron beam machinig) - working principles advantages and limitation , area of application
2. AUTOMATION
2.1 INTRODUCTION TO AUTOMATION , Definition
2.2 various types of automation
2. AUTOMATION (cont.)
2.3 Need for automation
3. NUMERICAL CONTROL - definition
3.2 NC system with block diagram
3.3 various types of NC coordinates : point - to - point , straight cut , and contouring (cont.)
3.3 various types of NC coordinates : point - to - point , straight cut , and contouring (cont.)
3.4 NC part programming : G code & M code
3.4.1 Reference point (machine zero , work zero , Tool zero & Tool offset)
3.4.2 simple part program for lathe
3. NUMERICAL CONTROL (cont.)
3.5 extension of NC with block diagram

3.5.1 DNC (Direct numerical control) 3.5.2. CNC (computer numerical control) 3.5.3 adaptive control
4 . ROBOT TECHNOLOGY
4.1 DEFINING A ROBOT (ISO) fields of applications of robot
4.2 explanation on robot anatomy
4.3 . robot configuration (Cont.)
4.3. robot configuration
5 . FLEXIBLE MANUFACTURING SYSTEM (FMS)
5 . 1 Need for Flexible manufacturing system (FMS)
5.2 concept of FMS
5 . 3 components of FMS :processing stations
5.3.1 material handling and storage
5..3.2 computer control systems
6 . CAD/CAM and CIM
6 .1 define CAD ,CAM & CIM (cont.)
6 . 2 define CAD,CAM, & CIM
6 .3 benefits of CAD software
6 . 3.1 CAD software and hardware
6 . 3.2 benefits of CAM software
6.4 differnetiate between CAD and CAM (cont.)
6.4 differnetiate between CAD and CAM
6.5 CIM (computer integrated manufacturing)
6.5.1 concept and background of CIM
7 . 3 software and hardware of CIM (cont.)
7 . 3 software and hardware of CIM
PPT class on AUTOMATION (cont.)
PPT class on AUTOMATION
PPT classes containing animations about CNC And DNC (cont .)
PPT classes containing animations about CNC And DNC
Smart class on various non conventional machining process - ABM , LBM (cont.)
smart class on various non conventional machining process - ABM , LBM
smart class on various non conventional machining process - ELECTRO BEAM MACHINING ,ELECTRON DISCHARGE MACHINING
smart class on various non conventional machining process - ELECTRO BEAM MACHINING ,ELECTRON DISCHARGE MACHINING
smart class on various non conventional machining process - plasma arc machining process
PPT classes illustrating CIM , its applications
PPT class on FMS , its area of applocation
PPt classes on NC , CNC , DNC

NCERNED PRINCIPAL ,GPN H.O.D , MECHANICAL

Discipline: Civil Engineering	**Semester: 3rd**
Subject: FLUID MECHANICS & HYDRAULIC MACHINES (CET 302)	**No. of days/ per week class allotted: 4**
Week	**Class Day**
1st	1st
	2nd
	3rd
	4th
2nd	1st
	2nd
	3rd
	4th
3rd	1st
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12th	1st
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	4th
13th	1st
	2nd
	3rd
	4th
14th	1st
	2nd
	3rd

	4th
15th	1st
	2nd
	3rd
	4th

LESSON PLAN

Name of the Teaching Faculty: GOURANGA CHARAN PRADAHAN

Semester From Date : **to Date:**

No. of Weeks: 15

Theory/ Practical Topics
1.0 HYDROSTATICS:
1.1 Properties of fluid: density, specific gravity
1.1 Properties of fluid: density, specific gravity
1.1 Properties of fluid: density, specific gravity
1.1 Properties of fluid: surface tension, capillarity
1.1 Properties of fluid: surface tension, capillarity
1.1 Properties of fluid: viscosity and their uses
1.1 Properties of fluid: viscosity and their uses
1.2 Pressure and its measurements: intensity of pressure,
1.2 Pressure and its measurements: atmospheric pressure,
1.2 Pressure and its measurements: gauge pressure,
1.2 Pressure and its measurements: absolute pressure and vacuum pressure
1.2 Pressure and its measurements:absolute pressure and vacuum pressure; relationship between atmospheric pressure,
1.2 Pressure and its measurements:absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure and gauge pressure; pressure head; pressure gauges
1.2 Pressure and its measurements:absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure and gauge pressure; pressure head; pressure gauges
1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure
1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure
1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure
1.3 Pressure exerted on an immersed surface: expression for total pressure exerted on horizontal & vertical surface.
1.3 Pressure exerted on an immersed surface: expression for total pressure exerted on horizontal & vertical surface.
1.3 Pressure exerted on an immersed surface: expression for total pressure exerted on horizontal & vertical surface.
Question and Answer Discussion
1.4 Floatation and buoyancy: Archimedes principle.
1.4 Floatation and buoyancy: buoyancy & center of buoyancy.
1.4 Floatation and buoyancy: center of pressure, metacenter, metacentric height, numerical problems.
1.4 Floatation and buoyancy: center of pressure, metacenter, metacentric height, numerical problems.
2.0 KINEMATICS OF FLUID FLOW:
2.1 Basic equation of fluid flow and their application: rate of discharge

2.1 Basic equation of fluid flow and their application: equation of continuity of liquid flow,
2.1 Basic equation of fluid flow and their application: total energy of a liquid in motion- potential, kinetic & pressure
2.1 Basic equation of fluid flow and their application: Bernoulli's theorem and its limitations.
2.1 Basic equation of fluid flow and their application: Practical applications of Bernoulli's equation.
2.2 Flow over Notches: notch
2.2 Flow over Notches: types of notches
2.2 Flow over Notches: discharge through different types of notches and their application.(No Derivation)
2.2 Flow over Notches: discharge through different types of notches and their application.(No Derivation)
2.2 Flow over Notches: discharge through different types of notches and their application.(No Derivation)
2.3 Flow over Weirs: weir and difference with notches,
2.3 Flow over Weirs: weir and difference with notches,
2.3 Flow over Weirs: types of weirs,
2.3 Flow over Weirs: discharge formulae for different types of weirs and their application.(No Derivation)
2.3 Flow over Weirs: discharge formulae for different types of weirs and their application.(No Derivation)
2.4 Types of flow through the pipes: uniform and non uniform.
2.4 Types of flow through the pipes: uniform and non uniform.
2.4 Types of flow through the pipes: laminar and turbulent.
2.4 Types of flow through the pipes: steady and unsteady; Reynold's number and its application
2.4 Types of flow through the pipes: steady and unsteady; Reynold's number and its application
2.5 Losses of head of a liquid flowing through pipes: due to friction(statement of Darcy's equation)
2.5 Losses of head of a liquid flowing through pipes: sudden enlargement.
2.5 Losses of head of a liquid flowing through pipes: sudden contraction.
2.5 Losses of head of a liquid flowing through pipes: change of direction of flow,loss at inlet & exit (No derivation, only statement of formulae & their application),
2.5 Losses of head of a liquid flowing through pipes: total energy lines & hydraulic gradient lines.
2.6 Flow through the Open Channels: Types of channel sections rectangular, trapezoidal and circular.
2.6 Flow through the Open Channels: discharge formulae- Chezy's and Manning's equation.
2.6 Flow through the Open Channels: best economical section.
2.6 Flow through the Open Channels: phenomenon of hydraulic jump(only description and no derivation)
Question and Answer Discussion
3.0 PUMPS:

3.1 Type of pumps
3.2 Centrifugal pump: basic principles, discharge, horse power of pump, efficiency of centrifugal pump, simple numerical problems
3.3 Reciprocating pumps: types, operation, discharge, calculation of horse power, efficiency, simple numerical problems
3.3 Reciprocating pumps: types, operation, discharge, calculation of horse power, efficiency, simple numerical problems
Question and Answer Discussion