Lesson Plan

Name oftheFaculty : **DR. SANJAY GUPTA**
Discipline : **AutomobileEngg.**
Semester : **IVth**
Subject : **CNC Machines and Advanced Manufacturing Processes**
LessonPlan Duration : **45 lectures**
Work Load Lecture per week (in hours): 03 HOURS (theory)

Week	Theory			
	Lecture day	**Topic (including assignment/ test)**		
1st	**1**	UNIT-1:Introduction to Computer Numerical Control		
	2	Introduction - NC, CNC, DNC; Advantages and Application of CNC.		
	3	Working principle of CNC machine, Basic components of CNC machines		
2nd	**4**	Types of CNC machines		
	5	Motion control system - point to point, straight line, Continuous path (Contouring)		
	6	The coordinate system in CNC – cartesian and polar, Coordinate data input – absolute and incremental,Axis identification		
3rd	**7**	REVISION		
	8	**UNIT-2**: Introduction to Part programming,		
	9	Basic concepts of part programming, NC words		
4th	**10**	Part programming formats,		
	11	Linear and circular interpolation,		
	12	Simple programs for drilling and turning,		
5th	**13**	Tool off sets, cutter radius compensation,		
	14	Tool wear compensation.		
	15	REVISION		
6th	**16**	**1st Sessional Test**		
	17	**UNIT-3:**CNC Milling: Working principle of milling machine		
	18	Constructional details of CNC milling machine		
7th	**19**	Milling machine accessories and attachment- Arbors, adaptors, collets, vices, indexing head, rotary table		
	20	Milling methods- up milling and down milling		

	21	Simple Part programs for CNC lathe and milling machine.		
8th	**22**	REVISION		
	23	**UNIT-4:**Advanced Machining Processes		
	24	Ultrasonic machining (USM): Introduction, principle, process, advantages and limitations, applications		
9th	**25**	Electro Chemical Processes - Electro chemical machining (ECM) – Fundamental principle, process, applications		
	26	Fundamental principle, process, applications		
	27	Electrical Discharge Machining (EDM) - Introduction, basic EDM circuit, Principle		
10th	**28**	Metal removing rate, dielectric fluid, applications		
	29	Laser beam machining (LBM) – Introduction, machining		
	30	process and applications of LBM		
11th	**31**	Electron beam machining (EBM)- Introduction, principle,		
	32	process and applications of EBM		
	33	REVISION		
12th	**34**	**2nd Sessional Test**		
	35	Industrial Robotics ,Definition		
	36	Laws of robotics, Robot configurations		
13th	**37**	Basic robot motions		
	38	Robotic sensors		
	39	Industrial applications		
14th	**40**	REVISION		
	41	**3rd Sessional Test**		
	42	REVISION/ extra class		
15th	**43**	REVISION/ extra class		
	44	REVISION/ extra class		
	45	REVISION/extra class		