GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER- VI

Subject Name: Computer Graphics and Computer Aided Manufacturing (CG/CAM)

Subject Code: 2361902

NOTE: - Following are the minimum experiences required, but the college can do more experiences if possible.

LABORATORY EXPERIENCES :			
Experience Type	**Experience Number**	**Description of Laboratory Experience**	**Hrs.**
Preparatory	1	1. Appreciate main objectives of learning this subject: a. Develop the ability to model given assembly using AutoCAD, Pro/E, Solidedge and other similar softwares. b. Develop the ability to prepare CNC programmes for given jobs. 2. Recall and strengthen know-how for engineering drawing fundamentals, constructional features of conventional machine tools and various machining processes.	2
Demonstration and study	2	Study advance constructional features of CNC turning and machining centers.	2
	3	Interfacing of CAD and CAM.	2
CAD performance (Practice in both AutoCAD and Pro/E or Solidedge. Write steps of modeling including stepwise sketch, position of UCS/selection of references, name and options of commands, dimensional values, etc.)	4	Surface modeling of given simple models (2 models. Select such simple components which will cover commonly used surfaces).Take printouts.	6
	5	Solid modeling of given models (5-8 components of one simple assembly. Select such assembly which will cover all commonly used commands/features of software). Take printouts.	12
	6	Assembly of components modeled at experience number 5. Also set orthographic views of components and assembly. Take printouts.	6

CAM performance (Write dimensional mode, zero position, tool selection, cutting parameters selection, G/M code programme and other machine setup).	7	Preparation and execution of simple part programme for turning. (3 jobs- 1 with simple straight and taper turning , 1 including circular interpolation and 1 job which includes threading and subroutine/canned cycle/macro.	10
	8	Preparation and execution of simple part programme for milling. (3 jobs- 1 with simple straight contour , 1 including circular interpolation and 1 job which includes drilling/tapping and subroutine/canned cycle/macro.	8
	9	Simulation-Do and observe the simulation of one each job of turning and milling…	2
Download and Seminar Presentation, (Copy downloaded content and seminar of whole batch In one /one set of CD/DVD)	10	a) Prepare and present seminar individually in your batch. (Seminar topic has to be given by teacher). b) Download individually visual aids, movies, content and other related content for the given case/situation. (Case/situation has to be given by teacher-preferably from emerging/ recent trends).Present and discuss the same in your batch.	4
Industrial / Exhibition visits	11	Visit at least two related industries. Also visit any related exhibition/s.	-
Live Learning and Shop Talk.	12	Each student will discuss with group/batch and write : a) His/Her own experience in performing subject practicals. b) He/She has faced technical problems during performance of experiences and solutions found. c) Extent to which he/she has achieved the main objective and skill level of subject learning mentioned at experience number 1.	2
Assignments (Home Assignment)	13	Solve the given assignments. One assignment must be on preparation of chart / diagram / poster / graph / drawing / etc on half imperial size of drawing sheet.(For subject CAD/CAM).	-
		Total	**56**

Notes:

A. FOR STUDENTS.

a. It is advised that student download this copy of syllabus and plan to achieve the objectives of learning this subject.
b. Attach copy of syllabus as part of term work.

B. FOR STUDENTS AND SUBJECT TEACHER/S.

a. Term work report content of each experience should also include following.
   i. Experience description / data and objectives.
   ii. Skill/s which is / are expected to be developed in student after completion of experience.
   iii. Steps / procedure to execute experience.
b. Term work report of student of regular mode should exclude Distance Learning manual, photocopies, printed content (except visual aids), etc. Focus should be on developing the term work as original efforts of students.
c. Term work content of industrial visit report should also include following.
   i. Brief details of industry visited.
   ii. Type, location, products, rough layout, human resource, etc of industry.
   iii. Details, description and broad specifications of machineries/ processes observed.
   iv. Safety norms and precautions observed.
   v. Student's own observation on Industrial environment, productivity concepts, quality consciousness and quality standards, cost effectiveness ,culture and attitude.
   vi. Any other details / observations asked by accompanying faculty.
d. Term work should also include experience logbook duly certified by subject teachers.
e. Term work is to be defended (along with term work) with practical examination by external and internal examiners .Practical examination will include followings:
   i. Viva
   ii. Writing the modeling steps of any one given 3D object and preparing the same in CAD software.
   iii. Writing the CNC programme of given component and performing operation/simulation of the same programme on machine.

Reference Books:

1. Automation, production system and computer integrated manufacturing	Nikell Groover, PHI Publi.
2. Mastering in Auto cad	George Ommura, (BPB publication)
3. CNC machines	Pabla & M. Adithan.
4. CAD/CAM/CIM	P. Radhakrishnan & S.Subramanayan (New Age International)
5. Computer Aided Manufacturing	Rao, Tiwari and Kundra, TMGH publi.
6. Mechatronics	HMT (Published by TMGH)
7. Computer aided design and manufacturing	Dr.Sadhusingh (KP)

Additional Reference:

1. Computer integrated design & Manufacturing	Bedwoth, Wolfe and Anderson, MGH(1) public
2. Numerical control and computer aided manufacturing	T.K.Kundra & P.A. Rao (TMH Publication)
3. Computer Integrated Manufacturing	S.K.Vajpayee , (PHI Publication)
4. Technology of computer aided design and Manufacturing	S. Kumar and A. K. Jha (Dhanpatrai & Sons)
5. Computer Numerical Control	Hans B. Keif, T. Fredric Waters Glencoe M. Publi