

GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

IV - SEMESTER

Course Title: CNC Technology

(Course Code: 1343402)

Diploma Programme in which this course is offered	Semester in which offered
Mechanical (Manufacturing Technology)	Fourth Semester

Module.	Topics	Hours
Module 1	Introduction 1.1 NC / CNC / DNC 1.1.1 Introduction 1.1.2 Application 1.1.3 Advantages and disadvantages	2 h
Module 2	CNC Hardware Basics 2.1 Types of Spindle Drive 2.1.1 AC & DC Servo Motor 2.1.2 Hydraulic 2.2 Types of Axis Drive 2.2.1 Stepper Motor 2.2.2 Servo Motor 2.3 Friction Reducing Elements 2.3.1 Reciprocating ball bushes 2.3.2 Metallic and Nonmetallic guide ways 2.3.3 Spindle bearings 2.3.4 Ball lead screw 2.4 Feedback devices 2.4.1 Velocity feedback 2.4.2 Taco Generator 2.4.3 Position feedback Transducer 2.4.4 Encoders Servo Controls 2.5 Automatic Tool Changer 2.6 Automatic Pallet Changer 2.7 Automatic swarf removal mechanism	5 h
Module 3	Safety 3.1 Causes of Accident in CNC Machines 3.2 General Safety Precautions to be taken in CNC Machines	2 h
Module 4	Basics of Part Programming in CNC Lathe 4.1 Part programming Fundamentals 4.2 Process Planning 4.3 Cut Planning 4.4 Axis Nomenclature – Different Axis 4.5 Different Coordinate system 4.6 Basic Preparatory Functions 4.7 Basic Miscellaneous Functions 4.8 Tool Function 4.9 Speed Functions 4.10 Exercise on Facing, Turning, Step Turning by using G90 and G91 codes	5 h

Module 5	Basics of Part Programming in CNC Milling 5.1 Part programming Fundamentals 5.2 Process Planning 5.3 Cut Planning 5.4 Axis Nomenclature – Different Axis 5.5 Different Coordinate system 5.6 Basic Preparatory Functions 5.7 Basic Miscellaneous Functions 5.8 Tool Function 5.9 Speed Functions 5.10 Exercise on combination of Straight, Angular, Circular Contours by using G90 and G91 codes	8 h
Module 6	Tools for CNC - Referring Catalogues	2 h