



Add – On Syllabus

Semester: III

Year: 2022-23 (Odd/Even)

Course Title	GEOMETRIC DIMENSIONING AND TOLERANCING	Course Code	Add On
Total Teaching Hours	30	Teaching hours/week (L:T:P: S)	3:0:0:0
CIA: 30	SEE: -	Prerequisites	Engineering Drawing
Course Plan prepared by	Prof. Rajat Acharya	Approved by	Dr. Gururaj Hatti

Course Outcomes

- CO1: Visualize the different types of variation that exist on parts, recognize the limitations of numeric tolerances, and understand the need for geometric tolerances.
- CO2: Understand and apply the symbols used with the geometric system
- CO3: Recognize datum feature identifiers applied to features with size and surfaces.
- CO4: Create specifications using appropriate geometric tolerances

<p>Module 1: What is Geometric Dimensioning and Tolerancing (GD&T)? History of GD&T, Benefits of GD&T, Basics of GD&T True Position – Position Tolerance: GD&T Symbol. Definition: Application: Position Tolerance Zone Bonus Round Relation to Other GD&T Symbols</p>	02 Hours
<p>Module 2: Datum Feature Symbol: Definition: Datum Features vs Datums: How Datum Features are Shown on a Drawing Notation is Important on Drawings Profile of a Surface GD&T Symbol: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used: Example: Maximum Material Condition (MMC) Symbol: Definition: Reason for Use: Gauging Max Material Condition: Combination Gauging with GD&T Symbols Flatness Symbol: Description: Tolerance Zone: Gauging / Measurement: When Used: Concentricity GD&T Symbol: Drawing Callout: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used: Perpendicularity GD&T Symbol: Axis Perpendicularity: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used: Surface Perpendicularity Example: Axis Perpendicularity Example with MMC: Features</p>	07 Hours
<p>Module 3 Runout GD&T Symbol Description: GD&T Tolerance Zone: Gaging / Measurement: Relation to Other GD&T Symbols: When Used: Parallelism Surface Parallelism Axis Parallelism GD&T Symbol: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used: Circularity GD&T Symbol: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used: Straightness Surface Straightness, i Axis Straightness GD&T Symbol: Drawing Callout: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used: DML Straightness with MMC Example: Total Runout GD&T Symbol: Drawing Callout: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols:</p>	05 Hours
<p>Module 4 Cylindricity GD&T Symbol: Description: GD&T Tolerance Zone Gauging / Measurement: Gauging / Measurement: Gauging / Measurement: Feature Control Frame Feature Control Frame Example Frames: Parts of the Feature Control Frame Parts of the Feature Control Frame Placement of Feature Control Frame Composite Feature Control Frame Multiple Single Segment Feature Control Frame Symmetry GD&T Symbol: Drawing Callout: Drawing Callout: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used: Example: Angularity GD&T Symbol: Drawing Callout: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used:</p>	06 Hours



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Least Material Condition (LMC) Symbol: Definition: Use in GD&T: Concept of LMC with No-Go Gauges Cannot Combine Gauging with GD&T Symbols		
Module 5 Profile of a Line GD&T Symbol: Drawing Callout: Description: GD&T Tolerance Zone: Gauging / Measurement: Relation to Other GD&T Symbols: When Used: Regardless of Feature Size Definition: Reason for Use: Measurement/Gauging of Regardless of Feature Size: GD&T Rule #1: Envelope Principle Unequally Disposed Profile Symbol: Definition: Independency Symbol: Symbol: Applying the Independency Symbol: Voiding Simultaneous Control of Size and Form: Datum Target Symbol: Definition: Datum Targets on a Drawing Datum Targets in the Real World Datum Targets in the Real World Symbol: Symbol: Continuous Feature with the ASME Y14.5 – 2009 Standard: Continuous Feature with the ASME Y14.5 – 2018 Standard: Projected Tolerance Zone Projected Tolerance Zone Definition Free State Symbol Symbol: Symbol: Applying the Free State Symbol to a Restrained Part: Applying the Free State Symbol to a Non-Rigid Average Diameter:	06 Hours	
Module 6 Tangent Plane Symbol: Definition: Applying the Tangent Plane Symbol: Counterbore Symbol: Symbol: Description Countersink: Symbol: Description Radius Controlled Radius Spherical Radius Spherical Diameter	04 Hours	

Prof. Rajat Acharya

Dr. Gururaj Hatti

HoD

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FUNDAMENTALS OF AUTOMOBILE DESIGN		

SYLLABUS

Module1: Styling (06 Hrs)

Typical Product Life Cycle, Product Conceptualization process, Case Study, CAS Surfaces or Digital Clay Models, Class A Surfaces, Role of Class A Surface Engineer, Requirements for a Surface to fulfil "Class A Surface" Standards, Process for Bonnet Class A Surface Creation

Module2: Design and Development (06Hrs)

Function of a bonnet, Inputs for the bonnet, Study of Class A Surfaces, Develop Hood Package Layout, Develop Typical Sections, Block Surfaces in 3D, Dynamic Clearance Surfaces in 3D, CAE (Durability, crash), Panel Detail Design, Body Assembly Process, Design Updating and Detailing Prototypes, Design Updating and Production Release

Module 3: Computer Aided Engineering (06Hrs)

Introduction to CAD, CAM & CAE, What is FEA, Durability, NVH, Crash, Vehicle Crashworthiness, Energy Management, Biomechanics, Head Impact Analysis on Hood
Importance of Failure Criteria, Von- Mises Stress

Module 4: Formability (06Hrs)

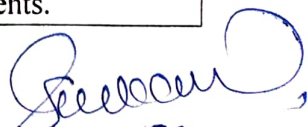
What is Sheet metal design and manufacturing cycle, simultaneous Engineering (SE), Auto body and its parts. Important constituents of an automobile, Sheet metal processes, Types of draw dies, Draw Model development, Considerations, Forming simulations, Material properties, Forming Limit Curve (FLD), Pre-processing, Post Processing.

Module 5: Die Design and Fixture Design (06Hrs)

Sheet metal parts and their operation like Cutting, Non-cutting etc., Presses, Various elements used in die design, Different types of dies, Animations describing the working of dies, Define welding, Spot/Arc welding Body Coordinates, the 3-2-1 principle, need for Fixture, Design Consideration, use product GD&T in the Fixture design, List the Fixture Elements.

(Anand G. Jorhi)

G.M. Jorhi


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Python Fundamentals

Syllabus

Module 1. Introduction, Variables, expressions, and statements (6Hrs)

Understanding programming, writing a program, what is a program, The building blocks of programs, Values and types, Variables, Variable names and keywords, Statements, Operators and operands Expressions, Order of operations, Modulus operator, String operations, Exercises

Module 2 Conditional execution (6Hrs)

Boolean expressions, Logical operators, Conditional execution, Alternative execution, Chained conditionals, Nested conditionals, Catching exceptions using try and except, Short-circuit evaluation of logical expressions, Debugging, Exercises

Module 3. Functions, Iteration, (6Hrs)

Function calls, Built-in functions, Type conversion functions, Math functions, Definitions and uses, Parameters and arguments, Fruitful functions, and void functions, Why functions? , Updating variables, The while statement, Infinite loops, Finishing iterations with continue, Definite loops using for, Loop patterns, Counting and summing loops, Maximum and minimum loops, Exercises,

Module 4, Programming part1 (6Hrs)

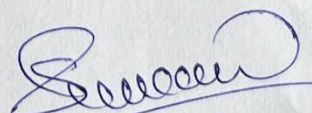
Develop a python program to find the smallest and largest number in a list, Develop a python program to arrange the numbers in ascending and descending order, Develop a binary search program in python, Develop a python program to find the better of two test average marks out of three test's marks accepted from the user.

Module 5. Programming part 2 (6Hrs)

Develop a Python program to check whether a given number is palindrome or not and also count the number of occurrences of each digit in the input number. Develop a bubble sort program in python. Write a Python program that accepts a sentence and find the number of words, digits, Uppercase letters and lowercase letters. Write a Python program for pattern recognition with and without using regular expressions

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