

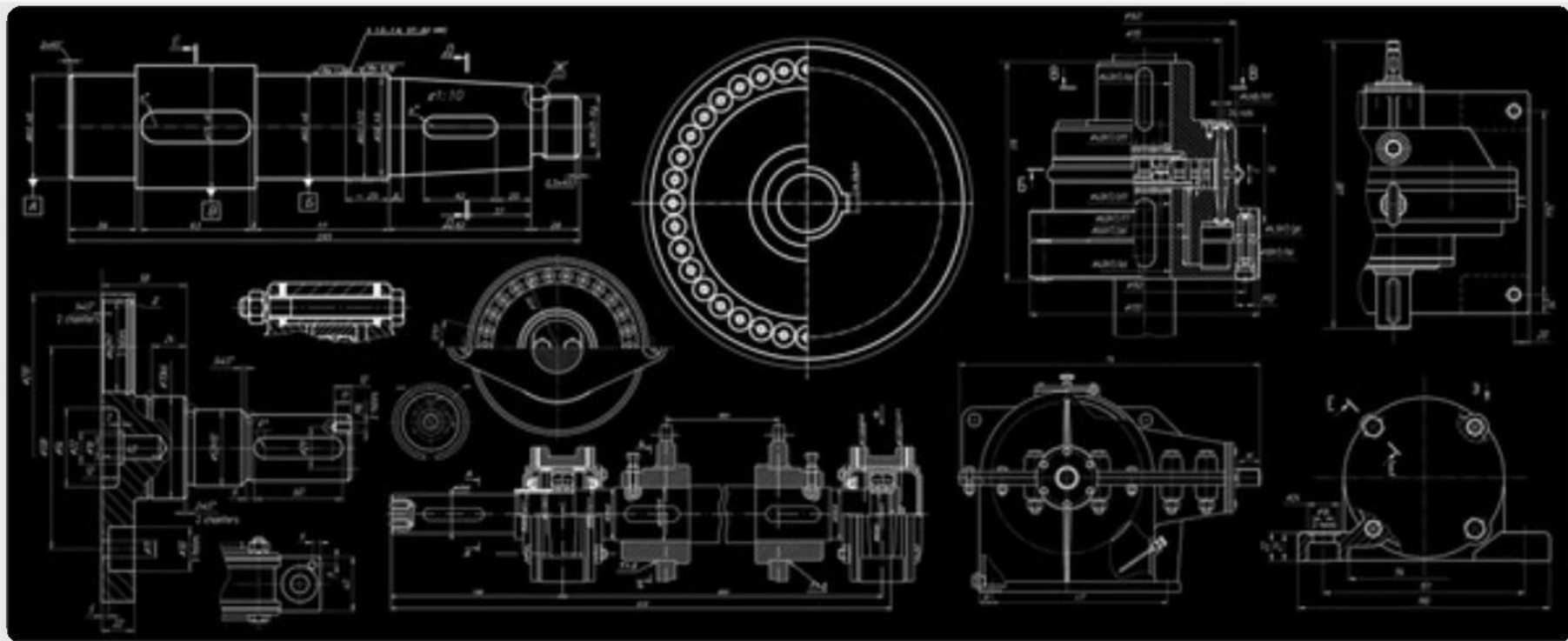
The background of the slide is a blue-tinted image of a technical engineering drawing, specifically a precision mechanical part blueprint. Overlaid on this drawing are several 3D rendered mechanical components, including a large cylindrical part with a flange and a smaller threaded component, both shown in a perspective view. The overall aesthetic is professional and technical.

Engineering Drawing & CAD Track Program

Comprehensive Understanding of Engineering Drawing Principles & CAD
Proficiency

your name

Program Overview & Core Learning Areas



Program Goal: Culminating in Mechanical Component Assembly Design

Comprehensive Understanding

Practical Application

Industry-Relevant Skills

Core Learning Areas



Orthographic & Isometric Projections

Represent 3D geometry in 2D, including multiviews and isometric drawings. [Source](#)



Sectional Views & Tolerancing

Master sectional views for internal details and apply dimension callouts with tolerances. [Source](#)

Week 1: Engineering Drawing & Orthographic Projections

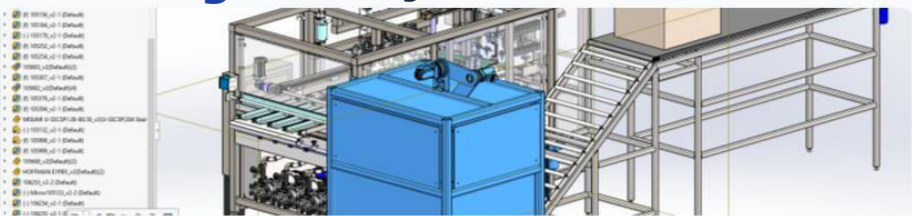
manual sketching .

Isometric & Sectional Views: Learn to represent 3D objects

Phase 1: Foundational & Core Concepts (Month 2)

Week 5: SolidWorks Introduction - Sketching & Basic Part Modeling

Interface Basics 2D Sketching Extrusions & Revolutions



This week introduces SolidWorks, an industry-standard CAD software. Participants navigate the interface, master 2D sketching, and learn basic part modeling operations like extrusions and revolutions.

Week 6: Advanced Part Modeling Features

Reference Geometry Feature Creation Patterning

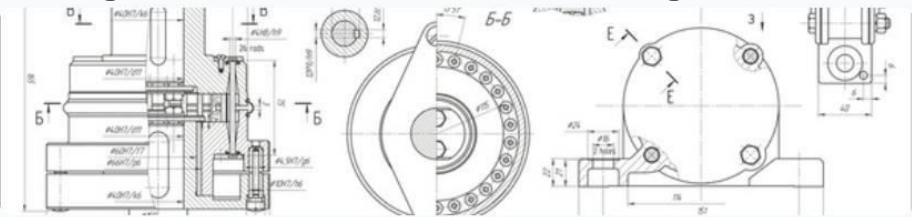


Building on basics, this module delves into advanced SolidWorks features like reference geometry, sweeps, lofts, fillets, and patterns for creating intricate and precise parts.

Source: Mechanical Engineering Design Cad Royalty-Free Images

Week 7: Basic Assembly & Component Drawing Generation

Component Mating Sub-Assemblies 2D Technical Drawings



Learn to integrate parts into assemblies using mates, manage complexity with sub-assemblies, and generate high-quality 2D

Week 8: GD&T (Geometric Dimensioning & Tolerancing) - Theory

Design Intent Feature Control Frame Form & Orientation

Design Intent	Feature Control Frame	Form & Orientation
\varnothing	Diameter	\longleftrightarrow Between
R	Radius	\times Target Point
SR	Spherical Radius	∇ Conical Taper
\varnothing	Spherical Diameter	∇ Slope

This module provides the theoretical groundwork for GD&T, a critical system for communicating design intent and tolerances, covering

Source: GD&T Symbols Reference Guide for Form/Orientation



Phase 2: Industry Immersion & Integrated Project

✓= Core Project Goal: Mechanical Assembly Design

CAD Mastery GD&T Application Assembly Design
Industry Standards

✂ **Integrated Design & Assembly:** Design, assemble, and draft a complete mechanical component assembly,

📐 **Precision Drafting:** Incorporate detailed technical drawings with Dimensioning & Tolerancing (ASME Y14.5) to clearly communicate design intent and tolerances for fit and function.

🔧 **Comprehensive Skill Demonstration:** This capstone project demonstrates a full understanding of CAD principles and industry standards, preparing for real-world engineering challenges.

👥 Project Format: Intensive Practical Application

Offline Application Collaborative Work
Hands-on Experience

Offline Immersion: Conducted entirely offline for focused, intensive practical application and collaborative

Collaborative Project Work: Fosters team-based problem-solving, mirroring real industry dynamics to tackle complex design challenges.



Month 3: Capstone Assembly Project & GD&T

Application (Weeks 9-10)

Week 9: Capstone Assembly

Advanced Techniques & Exploded Views

Advanced Views Assembly Features BOM Generation

Design Strategies Mastering Complex Assemblies: This week dives deep into

advanced assembly drawing techniques, crucial for the Capstone

Project. Focus areas include sophisticated mating techniques, students will learn to manage and optimize large assemblies.

utilization of assembly features (e.g., holes, cuts across multiple parts),

Strategic Approach: Emphasis on effective design and automated Bill of Materials (BOM) generation strategies to

ensure ease of assembly, reinforcing that "engineering drawings...

must make the assembling easy." (fractory.com)



Source: Top 10 Tips & Tricks for Working With Large Assemblies

Week 10: GD&T Application & Drawing Generation

Position Tolerance Profile Tolerance Runout Tolerance SolidWorks Integration

Practical GD&T Application: This week brings theoretical GD&T

knowledge into practical application within the Critical Tolerances: students will apply Position Profile

SYMBOL	GEOMETRIC CHARACTERISTIC	TOLERANCE TYPE	CONTROL SUMMARY
	FLATNESS		
	STRAIGHTNESS	FORM	CONTROLS FORM (SHAPE OF SURFACE, AND CALLED OUT CONTROL, FORM OF AN AXIS OR MEDIAN LINE)
	CIRCULAR RUNOUT		DATE/REVISION IS NOT ALLOWED
	CIRCULAR RUNOUT		
	CIRCULAR RUNOUT		
	CIRCULAR RUNOUT		
	CIRCULAR RUNOUT		
	CIRCULAR RUNOUT		
	CIRCULAR RUNOUT		
	CIRCULAR RUNOUT		
	CIRCULAR RUNOUT		

Month 3: Capstone Project & Career Readiness

(Weeks 11-12)

Week 11: Capstone Project Work -

Design & Drafting

Project Definition

Part & Assembly Modeling

Detailed Drawing

Mentor Reviews

- ◆ **Intensive Design & Modeling:** This week is dedicated to the core development of the Capstone Project using CAD software like SolidWorks, leveraging its robust 3D modeling and parametric design capabilities.
- ◆ **Precision Drafting:** A critical component involves creating detailed engineering drawings. These technical blueprints precisely communicate 3D geometry, including dimensions and tolerances.
- ↻ **Iterative Refinement:** Ongoing mentor reviews, ensuring manufacturability, provide crucial feedback, allowing for refinement and optimization of the design and drafting work, mirroring real-world design cycles.

Week 12: Project Review, Presentation & Career Launchpad

Project Presentation

Drawing Critique

Career Workshops Networking

- ▣ **Culminating Showcase:** The project culminates in formal presentations, articulating design choices and technical intricacies. This includes a detailed critique.
- 📄 **Professional Documentation:** All project drawings, for clarity and adherence to standards, including drawings and models, are finalized for portfolio inclusion, ensuring professional presentation of the design.
- 👤 **Career Readiness:** Dedicated workshops on interview skills and resume building, plus networking sessions with industry professionals, provide a direct launchpad into a career.



Career Development & Networking Opportunities



Source: Mechanical Design Cad Royalty-Free Images

Resume & Portfolio Building: Tailored for

Mechanical Design Engineers, CAD Designers, and Drafters

Technical
Proficiency

CAD
Proficiency

GD&T
Application

Assembly
Design

Targeted Resume Optimization: Develop resumes that highlight specific skills in

mechanical design, CAD software (SolidWorks, AutoCAD), and Geometric Dimensioning &

Tolerancing (GD&T). Emphasize quantifiable achievements from projects,

Impactful Portfolio Creation: Construct a compelling portfolio showcasing your specific mechanical components and their assemblies.

Include "technical blueprints that detail the design, dimensions, materials, and assembly of

mechanical components." Feature CAD models and detailed engineering drawings to prove

"proficiency in CAD drawing views is paramount for individuals engaged in disciplines such as

engineering, architecture, product design, and manufacturing."



LinkedIn & Professional Growth

Strategies for optimizing your LinkedIn profile to enhance visibility, engage with professional content, and build a robust

online network critical for career advancement



Mock Interviews

Comprehensive preparation for both technical and behavioral interviews. Practice articulating your technical skills

and develop compelling responses to

Technical Behavioral



Networking Session

An exclusive opportunity to connect directly with local industry professionals,

CAD managers, and recruiters. Build

valuable contacts and gain insights into

Industry Career

Program Summary & Next Steps

Your Path to Mechanical Design & Drafting Excellence

Engineering Drawing
Mastery

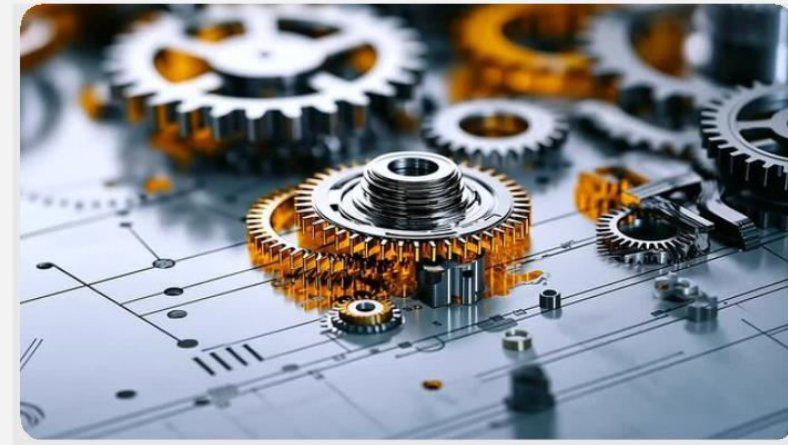
CAD
Proficiency

GD&T
Application

Capstone Experience
Readiness

Career

Comprehensive Skill Equipping: This program meticulously equips participants with a dual foundation: essential engineering drawing knowledge and critical hands-on CAD skills (AutoCAD & SolidWorks). **Precision and Application:** A significant focus is placed on the in-depth application of Geometric Dimensioning & Tolerancing (GD&T), ensuring graduates can precisely communicate design intent. **Real-World Experience:** The curriculum culminates in a challenging Capstone Project, an immersive experience designed to solidify knowledge by applying skills in a realistic design and drafting scenario. **Shaping Successful Careers:** Ultimately, this program prepares individuals for successful careers in mechanical design and drafting, providing the expertise and confidence to excel in the industry.



Ready to Transform Your Career?

