TRAINING PROGRAM SYLLABUS

3D CAD Drafter Training and Certification

(Pelatihan dan Sertifikasi Drafter CAD 3D)

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1. General Information

Training Program Name : 3D CAD Drafter Training and Certification

Program Code **:** MK-001

Training Category **:** Micro Credential Training Program

Program Graduate Profile

Junior mechanical CAD drafter able to prepare clear 2D drawings and basic 3D part/assembly models under applicable drawing and workplace-quality procedures.

Short Description

Practical 48-JP introduction to engineering information, 2D technical drafting, and 3D mechanical CAD modelling for junior drafters.

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2. Detailed Description

Duration **:** 48 JP

Full Description

Competency-based practical training over 48 JP aligned with ten competency units in the 3D CAD Drafter certification scheme. The syllabus follows three occupational work groups: Reading Technical Drawings, 3D CAD Drafting, and 2D CAD Detail Drafting. Each topic corresponds to one competency unit and includes defined learning outcomes, learning activities, assessment methods and evidence. Individual competency recognition requires a separate assessment by an authorized Professional Certification Body (LSP).

Participant Requirements

Basic computer operation skills are recommended. Prior CAD experience is not required; basic technical drawing knowledge is beneficial.

Certification

Target BNSP Drafter CAD 3D, subject to a separate assessment by the authorized LSP. Training completion is not automatic proof of certified competence.

Trainer Qualifications

CAD instructor with demonstrable mechanical-drafting expertise, current 2D/3D CAD practice, and experience assessing drawing and model deliverables.

Learning Outcomes

1. Prepare CAD work using safe practices, measurements, calculations, and technical drawing information.
2. Produce and check 2D mechanical engineering drawings using appropriate drafting conventions.
3. Develop 3D part and basic assembly models and derive usable technical drawing outputs.

3. Training Materials

Module 1 : Reading Technical Drawings

Topic 1.1 : Preparing Technical Drawings

Summary : Competency Unit C.28LOG09.003.2 (Preparing Technical Drawings). Covers preparing drawing layouts, projection views, dimensioning, title-block data and basic revision information.

Topic Learning Outcomes

2. Produce and check 2D mechanical engineering drawings using appropriate drafting conventions.

2.1. Prepare a clear engineering drawing sheet from supplied component information.

Topic Duration : 4 JP

Learning Method : Guided drawing preparation, demonstration and feedback.

Assessment Method : Drawing sheet review.

Assessment Indicators : Views, dimensions, annotations and title block are internally consistent.

Assessment Weight :8%

Material : —

Learning Material : —

Topic 1.2 : Reading Technical Drawings

Summary : Competency Unit C.28LOG09.002.2 (Reading Technical Drawings). Develops interpretation of orthographic views, sections, dimensions, basic symbols and part geometry from technical drawings.

Topic Learning Outcomes

1. Prepare CAD work using safe practices, measurements, calculations, and technical drawing information.

1.1. Interpret the features and dimensions of an assigned mechanical component drawing.

Topic Duration : 4 JP
Learning Method : Annotated drawing walkthrough and individual interpretation exercise.
Assessment Method : Drawing interpretation task.
Assessment Indicators : Correctly identifies views, dimensions, features and relevant symbols.
Assessment Weight : 6%
Material : —
Learning Material : —

Topic 1.3 : Measuring Using Measuring Instruments
Summary : Competency Unit C.28LOG12.008.2 (Measuring Using Measuring Instruments). Practices choosing and reading graduated measuring instruments and transcribing accurate dimensions for CAD work.

Topic Learning Outcomes

2. 1. Prepare CAD work using safe practices, measurements, calculations, and technical drawing information.

1.2. 1.2. Measure an assigned component and record its critical dimensions with stated units.

Topic Duration : 3 JP
Learning Method : Guided demonstration and supervised measuring exercise.
Assessment Method : Practical measurement task.
Assessment Indicators : Records measurements consistently and within the assigned instrument resolution.
Assessment Weight : 5%
Material : —
Learning Material : —

Module 2 : 3D CAD Drafting

Topic 2.1 : Applying Occupational Safety and Health Principles in the Workplace

Summary : Competency Unit C.28LOG20.003.2 (Applying Occupational Safety and Health Principles in the Workplace). Introduces workstation ergonomics, electrical/cable safety, safe computer use and basic occupational safety rules in a drafting environment.

Topic Learning Outcomes

1. Prepare CAD work using safe practices, measurements, calculations, and technical drawing information.

1.3. Apply basic OHS controls and safe work practices to a CAD drafting workstation.

Topic Duration : 2 JP

Learning Method : Short briefing, workstation demonstration, guided safety inspection.

Assessment Method : Checklist-based observation.

Assessment Indicators : Identifies key workstation hazards and selects suitable preventive measures.

Assessment Weight : 3%

Material : —

Learning Material : —

Topic 2.2 : Applying Quality Procedures

Summary : Competency Unit C.28LOG15.002.2 (Applying Quality Procedures). Covers file naming, revision control, dimensional accuracy, completeness and checking practices used in mechanical drawings.

Topic Learning Outcomes

2. Produce and check 2D mechanical engineering drawings using appropriate drafting conventions.

2.2. Apply a documented drawing-check and revision-control procedure to a supplied CAD deliverable.

Topic Duration : 2 JP
Learning Method : Instructor demonstration, drawing comparison and peer review.
Assessment Method : Marked drawing review.
Assessment Indicators : Detects deliberate drawing errors and records appropriate corrections.
Assessment Weight : 3%
Material : —
Learning Material : —

Topic 2.3 : Creating 3D Models Using CAD
Summary : Competency Unit C.28LOG09.008.2 (Creating 3D Models Using CAD). Parametric sketches, 3D features, parts and a constrained introductory assembly, drawing views derived from models, basic model validation and change control.

Topic Learning Outcomes

3. Develop 3D part and basic assembly models and derive usable technical drawing outputs.

3.1. Create and validate a 3D CAD part and assembly model with derived drawing outputs.

Topic Duration : 16 JP
Learning Method : Progressive guided modeling and supervised integrated CAD project.
Assessment Method : 3D CAD model and drawing portfolio.
Assessment Indicators : Parts regenerate correctly, assembly relations are consistent and drawing output matches the model.
Assessment Weight : 40%
Material : —
Learning Material : —

Topic 2.4	:	Interacting with Computer Technology
Summary	:	Competency Unit C.28LOG20.007.2 (Interacting with Computer Technology). Builds essential computer file-management and CAD working-environment skills, including project folders, common file types and backup.

Topic Learning Outcomes

1. Prepare CAD work using safe practices, measurements, calculations, and technical drawing information.

1.4. Configure a basic CAD computer workspace and organize digital drawing files correctly.

Topic Duration	:	2 JP
Learning Method	:	Live demonstration and guided file-management task.
Assessment Method	:	File-management practical check.
Assessment Indicators	:	Files are named, saved, located and backed up as instructed.
Assessment Weight	:	2%
Material	:	—
Learning Material	:	—

Module 3 : 2D CAD Detail Drafting

Topic 3.1 : Creating 2D Drawings Using CAD

Summary : Competency Unit C.28LOG09.007.2 (Creating 2D Drawings Using CAD). Practices CAD drafting with coordinates, geometry tools, layers, editing commands, annotations, plotting and file export.

Topic Learning Outcomes

2. Produce and check 2D mechanical engineering drawings using appropriate drafting conventions.

2.3. Create and verify a complete 2D CAD drawing of an assigned mechanical component.

Topic Duration : 8 JP

Learning Method : Demonstration, step-by-step CAD practice and independent drawing task.

Assessment Method : 2D CAD practical assignment.

Assessment Indicators : Geometry, layers, dimensions and final output match the supplied task specification.

Assessment Weight : 20%

Material : —

Learning Material : —

Topic 3.2 : Preparing Basic Detailed Engineering Drawings

Summary : Competency Unit C.28LOG09.004.2 (Preparing Basic Detailed Engineering Drawings). Introduces detail-drawing organization for manufacture, including essential tolerances, notes, feature callouts and drawing completeness.

Topic Learning Outcomes

2. Produce and check 2D mechanical engineering drawings using appropriate drafting conventions.

2.4. Prepare a basic detailed engineering drawing with appropriate dimensions and manufacturing notes.

Topic Duration	: 5 JP
Learning Method	: Demonstration followed by a component drawing assignment.
Assessment Method	: Assessed drawing deliverable.
Assessment Indicators	: Critical geometry, dimensions, tolerances or notes are legible and suitable for the assigned exercise.
Assessment Weight	: 10%
Material	: —
Learning Material	: —

Topic 3.3	: Performing Mathematical Calculations
Summary	: Competency Unit C.28LOG20.006.2 (Performing Mathematical Calculations). Applies unit conversion, ratios, scale and elementary geometry to common mechanical drawing calculations.

Topic Learning Outcomes

1. Prepare CAD work using safe practices, measurements, calculations, and technical drawing information.

1.5. Calculate dimensions and drawing scale for a simple component without unit errors.

Topic Duration	: 2 JP
Learning Method	: Worked examples and short individual calculation exercises.
Assessment Method	: Calculation worksheet.
Assessment Indicators	: Uses correct formulas, units, rounding and scale.
Assessment Weight	: 3%
Material	: —
Learning Material	: —

4. Card Publication

Target Participants	:	Prospective and junior CAD drafters, design and manufacturing technicians, vocational students, and instructors involved in technical drawing or mechanical design.
Learning Media & Facilities	:	Requires CAD-capable computers with licensed/authorized 2D and 3D CAD software, sample drawings, measurement references, projector, and practice files; software and equipment availability must be confirmed before delivery.
Program Advantages	:	Practice-oriented, competency-based training integrating engineering fundamentals, technical drawing, 2D drafting, and 3D modelling into a structured CAD workflow aligned with Drafter CAD 3D competency units.

5. Supporting Documents

Training Agenda	:	—
Training Syllabus	:	—
Training Flyer	:	MK001_3D CAD Drafter Training and Certification (English).pdf

TRAINING PROGRAM SYLLABUS APPROVAL PAGE

3D CAD Drafter Training and Certification

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