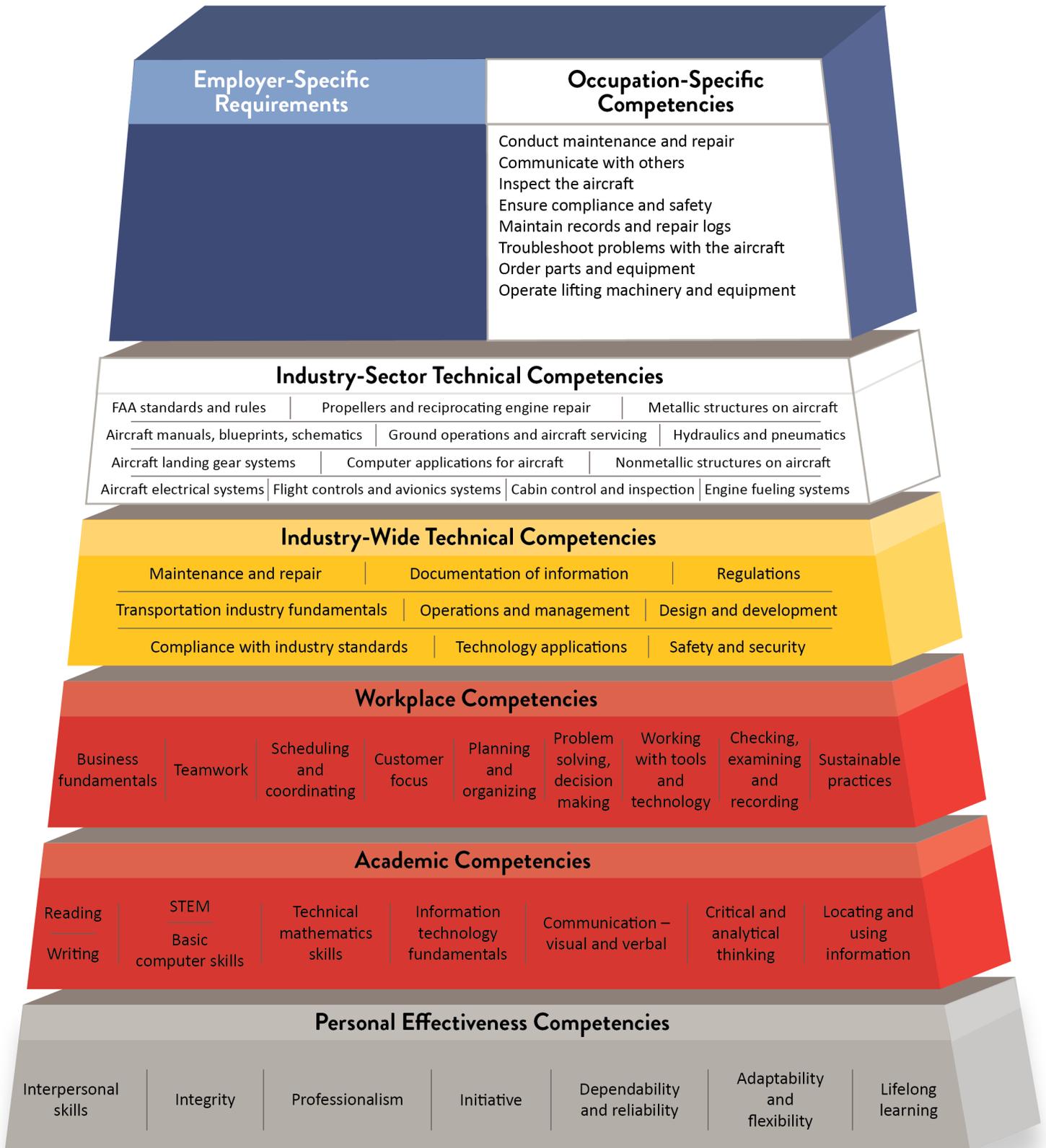


Minnesota Dual-Training Pipeline

Competency Model for Transportation

Occupation: Aircraft Maintenance Technician



Based on: Transportation, Distribution and Logistics Competency Model, Employment and Training Administration, United States Department of Labor, February 2025. For more detailed information about competency model creation and sources, visit dli.mn.gov/business/workforce/transportation.



Competency Model for Aircraft Maintenance Technician

Aircraft Maintenance Technician – An aircraft maintenance technician performs routine maintenance and repair on aircrafts. Inspections are conducted to comply with federal regulations and individuals in this role regularly review their work to ensure safety standards are met.

*Pipeline recommends the Industry-Sector Technical Competencies as formal training opportunities (provided through related instruction) and the Occupation-Specific Competencies as on-the-job (OJT) training opportunities.

Industry-Sector Technical Competencies

Related Instruction for dual training means the organized and systematic form of education resulting in the enhancement of skills and competencies related to the dual trainee's current or intended occupation.

- **FAA standards and rules** – Knowledge of the rules and regulations required for aircraft by the federal aviation administration and the ability to conduct repairs and maintenance in a manner that is consistent with these rules and regulations.
- **Propellers, reciprocating and turbine engine repair** – Understand how to maintain and repair propellers, reciprocating and turbine engines.
- **Metallic structures on aircraft** – Recognize and install rivets and special fasteners to the aircraft utilizing metal tools and understanding welding procedures.
- **Aircraft manuals, blueprints, schematics** – Understand how to read technical information found in manuals, blueprints, drawings, and schematics relating to the machinery. Must be able to make weight estimations for repairs and modifications.
- **Ground operations and aircraft servicing** – Knowledge of ground operations and taxi procedures, different fuel types, and foreign object damage inspection and prevention.
- **Hydraulics and pneumatics** – Understand the different types of aircraft hydraulic and pneumatic systems and the acceptable ways to maintain and repair these systems.
- **Aircraft landing gear systems** – Inspect, install, service, troubleshoot and repair an aircraft landing gear system and components.

- **Computer applications for aircraft** – Know the basics of the computer systems that operate in aircraft and how to fix and/or adjust those systems to the manufacturer standards of safe aircraft operation.
- **Nonmetallic structures on aircraft** – Understand how to replace and repair wood structures and fabric coverings, inspecting composite material for delamination, voids, dents, or cracks.
- **Aircraft electrical systems** – Understand electrical components, such as, alternators, generators, starters, and voltage regulators to support inspection, troubleshooting, and repair of aircraft wiring.
- **Flight controls and avionics systems** – Review rigging and balance procedures for primary and secondary flight control and utilize rotorcraft principles and theory.
- **Cabin control and inspection** – Know how to repair cabin and atmosphere control systems, ice and rain control systems, and airframe inspection for the aircraft.
- **Engine fueling systems** – Understand reciprocating and turbine engine fuel metering systems, including pressure injection carburetors and fuel injection systems.

Occupation-Specific Competencies

On-the-Job Training is hands-on instruction completed at work to learn the core competencies necessary to succeed in an occupation. Common types of OJT include job shadowing, mentorship, cohort-based training, assignment-based project evaluation and discussion-based training.

- **Conduct maintenance and repair** – Maintain, repair, and rebuild aircraft structures, functional components, and parts, such as wings and fuselage, rigging, hydraulic units, oxygen systems, gaskets, or seals.
- **Communicate with others** – Coordinate with staff about fitting and alignment of heavy parts, and/or to facilitate processing of repair parts.
- **Inspect the aircraft** – Inspect completed work to certify that maintenance adheres to standards and procedures; certifies aircraft ready for operation.
- **Ensure compliance and safety** – Perform all responsibilities in compliance with regulations, standards, and procedures to ensure safety of all.
- **Maintain records and repair logs** – Review service and maintenance checks previously performed to inform repair work and continue documentation of all preventative and corrective aircraft maintenance.

- **Troubleshoot problems with the aircraft** – Know how to think through what might be causing problems with the aircraft and then develop ideas and solutions to address those problems.
- **Order parts and equipment** – Know how to schedule delivery of parts and equipment necessary to perform routine repair and maintenance of the aircraft.
- **Operate lifting machinery and equipment** – Know how to safely operate large machinery and equipment necessary to move things to perform maintenance and repair of the aircraft.

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