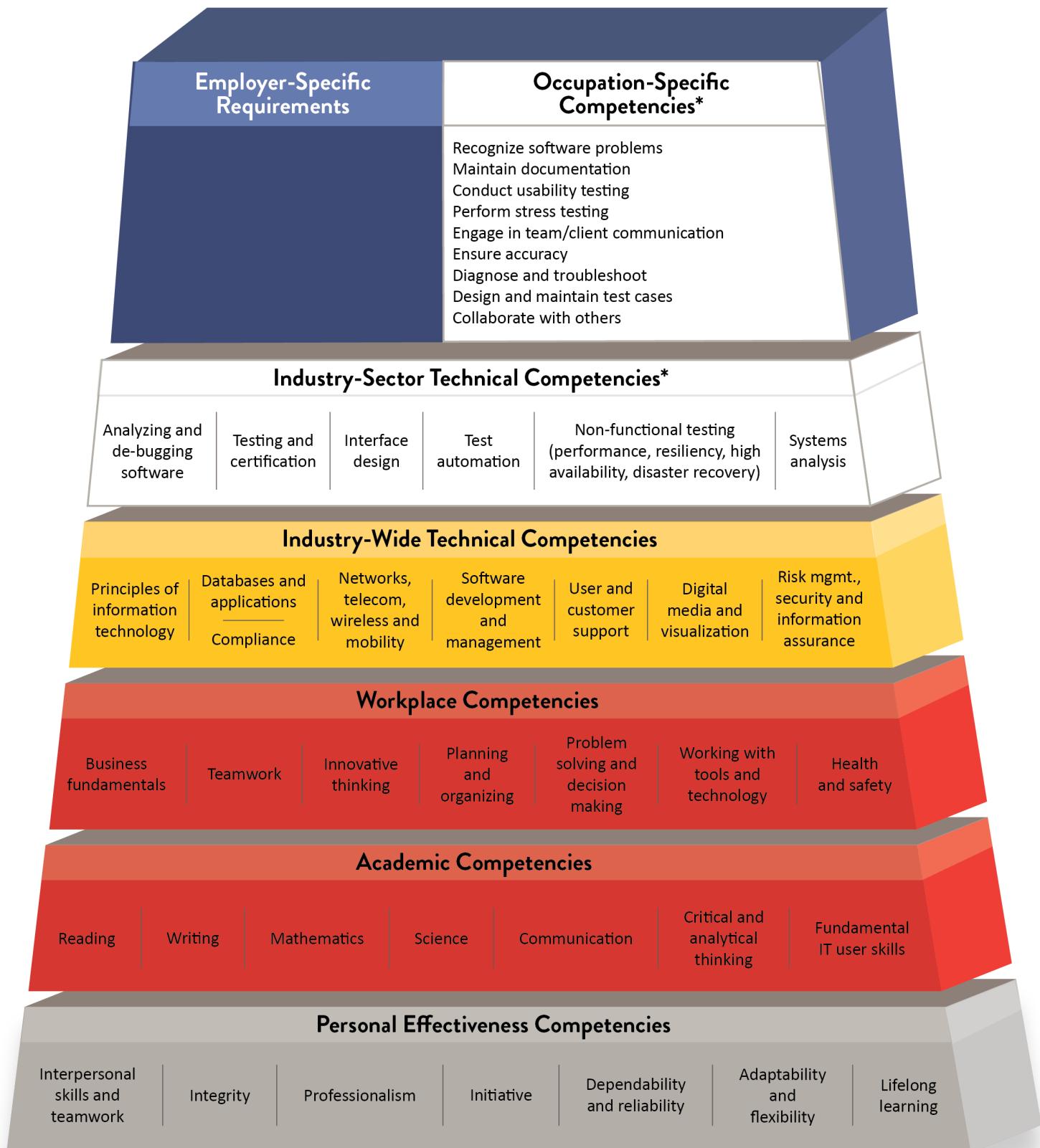


Minnesota Dual-Training Pipeline

Competency Model for Information Technology

Occupation: Testing and Quality Assurance Analyst



Based on: Information Technology 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/information-technology.



Competency Model for Testing and Quality Assurance Analyst

Testing and Quality Assurance Analyst – An individual responsible for the evaluation, testing, and validation of information technology systems, services and/or software. The person in this role will assess service levels and product performance to ensure it meets established quality standards. Testing and quality assurance analysts also participate or lead the work in creating solutions to resolve problems.

*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.

- **Analyzing and de-bugging software** – Understand how to find and fix defects or problems with a computer program that stands in the way of allowing the successful use of computer software systems.
- **Testing and certification** – Able to test a piece of software from the end-user's perspective. This testing is done to determine a piece of software's ability to be user friendly, easy to learn and easy to implement for the end user and then to certify that the software meets a standard of usability.
- **Interface design** – Ability to design how software is accessed through interfaces such as graphics, natural voice interfaces, and to ensure that the given interface is user friendly.
- **Test automation** – Able to use specific software to control how tests are completed and to compare and contrast the actual outcomes with the predicted outcomes.
- **Non-functional testing (performance, resiliency, high availability, disaster recovery)** – Understand how testing on a system operates instead of on the specific behaviors of the system.

- **Systems analysis** – Able to study a procedure or business to identify its goals and purposes and to create systems and procedures that will achieve goals in an efficient way.

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.

- **Recognize software problems** – Able to review each aspect of software to ensure that it is working as it is intended to work and when it is not executing as designed, being able to pinpoint where the software is failing to meet its intended purpose.
- **Maintain documentation** – Demonstrate how to systematically keep notes and data on the process of software testing and development to ensure that data can be easily retrieved and kept for future reference as well as ensure accountability.
- **Conduct usability testing** – Understand how to test a piece of software from the end-user's perspective. This testing is done to determine software's ability to be user friendly, easy to learn and easy to implement for the end user.
- **Perform stress testing** – Evaluate system responsiveness, scalability, and stability under various load conditions to ensure optimal performance.
- **Engage in team/client communication** – Able to articulate thoughts and ideas effectively using oral, written, visual and non-verbal communication skills, as well as listening skills to gain understanding.
- **Ensure accuracy** – Understand how to achieve thoroughness and accuracy when accomplishing a task. Thinking through the details while minimizing distractions and know how to focus on what really matters.
- **Diagnose and troubleshoot** – Understand how to problem solve to repair failed products or processes. A logical, systematic search for the source of a problem to make the product or process operational.
- **Design and maintain test cases** – Know how to build detailed manual and automated test cases to validate software features against functional and technical specifications.
- **Collaborate with others** – Understand how to work with various teams, vendors, clients and others for the implementation and support of networking products and services.