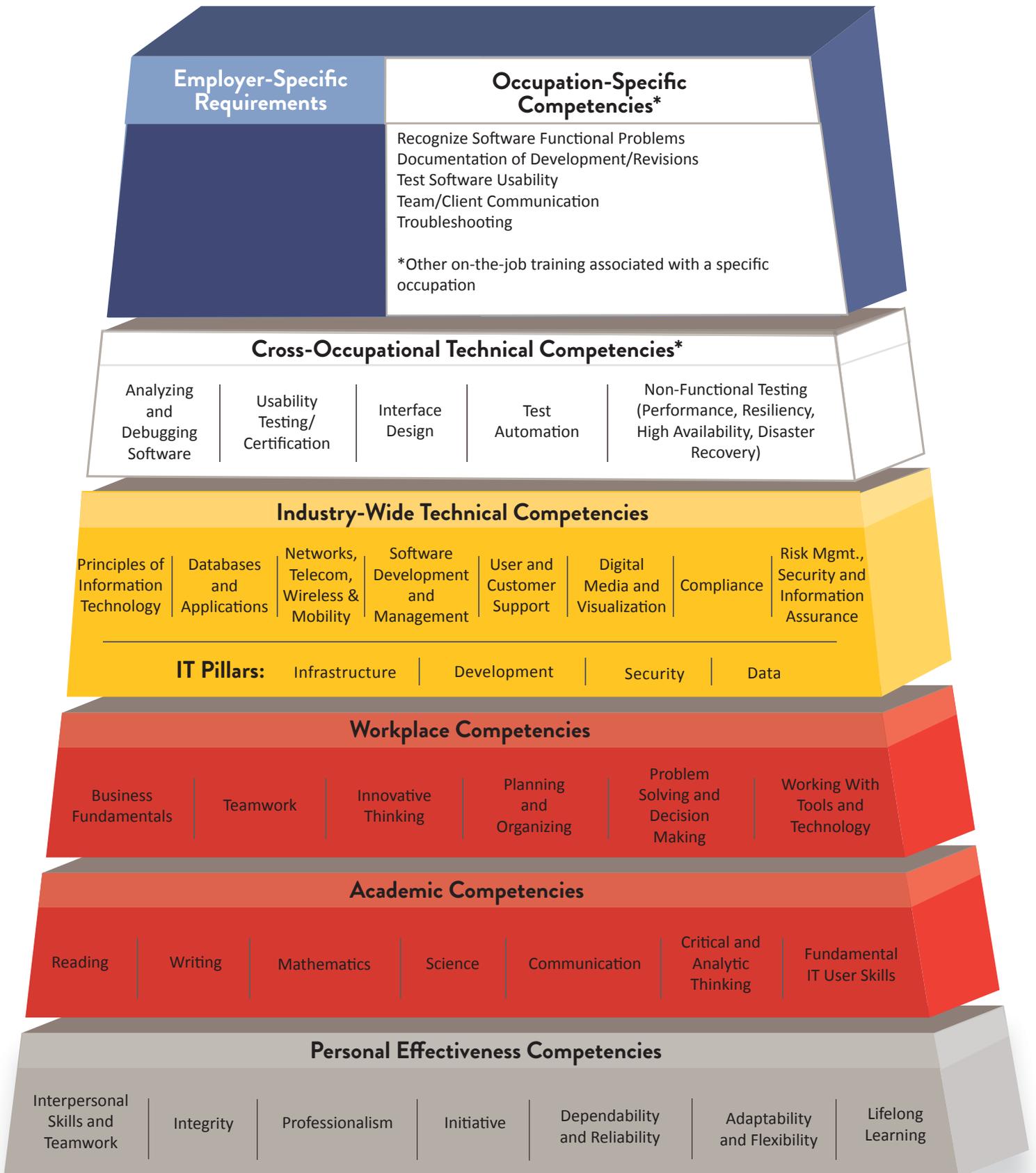


# Minnesota Dual-Training Pipeline

## Competency Model for Information Technology

### Software Testing and Quality Assurance Career Cluster Pathway



Based on: Information Technology Competency Model Employment and Training Administration, U.S Dept. of Labor, September 2012.

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



## Competency Model for Software Testing and Quality Assurance Career Cluster Pathway Occupations

### Possible Software Testing and Quality Assurance Career Cluster Pathway Occupations

- Applications: Engineer/Tester
- Assurance: Director/Manager/Senior
- Automated Quality Assurance Test Engineer
- Automation: Lead/Quality Assurance/Test Engineer/Test Lead/Tester/Testing
- Breakdown Coordinator
- C# Developer
- Coding Quality Consultant
- Development Tester
- Director of Information Technology
- Functional Test: Analyst/Engineer
- Game Tester
- Hardware Engineer
- Informatica Lead
- Information Technology: Analyst/Consultant/Manager/ QA Lead
- Integration And Test Engineer
- Java: Engineer/Software Developer/Tester
- Lead: Automation Test Engineer/Inspector/QA Tester/ Test Automation Engineer
- Mainframe Tester
- Manual Quality Assurance
- Mechanical Engineer
- Mobile: Applications Tester/Quality Assurance/Tester
- Network Engineer
- Performance Test: Engineer/Lead
- Product Development Engineer
- Quality Analyst
- Quality Assurance: Agent/Analyst/Architect/Associate/ Automation Lead/Clerk/Engineer/Inspector/Lead/ Reviewer/ Specialist/ Supervisor/Team Lead/Technician/ Test Lead/Tester/Manager
- Salesforce Quality Assurance
- SAP Tester
- Software: Developer/Engineer/Manager
- Software Quality Assurance: Lead/Engineer/Tester/Test Analyst/Specialist
- Software Test: Lead/Engineer/Tester/Test Analyst/ Specialist
- Systems: Analyst/Engineer/Integration Manager/Quality Analyst/Tester
- Technical Test Lead Technology Manager
- Test Analyst
- Test Automation: Analyst/Developer/Engineer/Lead/Senior Analyst/Specialist
- Test: Coordinator/Developer/Development Engineer/ Engineer/Lead/Posting/Technician
- UAT Tester
- Validation Engineer
- Web Application Tester
- Wireless Engineer
- *This list is intended to be a guide of potential occupations available within the Information Management & Analytics Pathway. Other position titles may be used based on an employer's organizational structure.*

### Possible Software Testing and Quality Assurance Career Cluster Pathway Certifications

- CAST: Certified Associate in Software Testing
- CASQ: Certified Associate in Software Quality
- ISTQB: Certified Tester Foundation Level
- ISTQB: Certified Tester Advanced Level Test Analyst
- ISTQB: Certified Tester Advanced Level Test Manager
- CSTE: Certified Software Tester
- CSQA: Certified Software Quality Analyst
- CMSQ: Certified Manager in Software Quality
- CMST: Certified Manager in Software Testing

## Industry-Wide and Cross-Occupational Technical Competencies

- Principles of Information Technology – Ability to understand the basics of how computers and telecommunications store, retrieve and send information.
- Databases and Applications – Ability to utilize a computer program whose primary purpose is entering and retrieving information from a larger computerized database.
- Networks, Telecom, Wireless and Mobility – Understanding the differences between localized computer networks that interact exclusively within a given set of parameters in comparison to hard wired telecommunications systems that transfers data through Internet provider companies. Mobile communication indicates voice interaction through phone. Wireless involves data transfer via telecommunications that typically do not include voice communication.
- Software Development and Management – Ability to create software and oversee its production to ensure that it is user friendly and succeeds in efficiently addressing the product’s intended and desired behavior or outcome.
- User and Customer Support – Ability to assist via communication and with technical assistance the end user of the software product as they have questions, concerns or problems with the software product.
- Digital Media and Visualization – Demonstrate how an interface and/or the software accessed through the interface is created in a manner that is easily seen and able to be understood.
- Compliance - Ability to understand and adhere to data practices that follow federal, state and local laws related to online data systems.
- Risk Management, Security and Information Assurance - Ability to identify vulnerabilities and threats to the information resources used and deciding what countermeasures, if any, to take to reduce risk.
- Analyzing and Debugging Software – Ability to find and fix defects or problems with a computer program that stand in the way of allowing the successful use of computer software of systems.
- Usability Testing/ Certification - Ability 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 interface such as graphics, natural and voice interfaces, and to ensure that the given interface is user friendly.
- Test Automation- The ability 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) – Testing on how a software system operates instead of on the specific behaviors of the system.

## Occupation-Specific Competencies, typically addressed in on-the-job training

- Recognize Software Functional Problems– Ability 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.
- Documentation of Development/ Revisions – 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 to ensure accountability.
- Test Software Usability – Ability 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.
- Team/ Client Communication - Ability to work within one’s own team in a manner that regularly and frequently shares data and information in a matter that is fully understood by all team members.

Understanding of how to effectively share information with the client to sufficiently ensure the client’s needs are being addressed and being met.

- Troubleshooting- Ability to approach an issue with problem solving that is often used to find and correct issues in a matter that addresses the concerns of the company and the client.

### IT Software Testing and Quality Assurance Career Cluster Pathway Training Plan

	List Course/Training Name and Title	Description of Courses and/or Training Program	List Responsible Provider: Company, College, Trainer, or other	Anticipated Completion Date
<b>Related Instruction Competencies</b>				
Principles of Information Technology				
Databases and Applications				
Networks, Telecom, Wireless and Mobility				
Software Development and Management				
User and Customer Support				
Digital Media and Visualization				
Compliance				
Risk management, Security and Information Assurance				
Analyzing and Debugging Software				
Usability/ Testing Certification				
Interface Design				
Test Automation				
Non Functional Testing (Performance, Resiliency, High Availability and Disaster Recovery)				
<b>On-The-Job Training Competencies</b>				
Recognize Software Functional Problems				
Documentation of Development/ Revisions				
Test Software Usability				

Team/ Client Communication				
Troubleshooting				