

Minnesota PIPELINE Project

Private Investment, Public Education, Labor and Industry Experience

Progress Report to Legislature

January 2015

Appendices

- A. PIPELINE Legislation
- B. Summary and history of Apprenticeship in Minnesota
- C. Advanced Manufacturing Industry Council meetings
- D. PIPELINE Project Occupations and Competency Standard Models for Advanced Manufacturing
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- H. Health Care Services Industry Council meetings
- I. PIPELINE Project Occupations and Competency Standard Models for Health Care Services
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Appendix A

PIPELINE Legislation

Laws 2014, Chapter 312, Article 3, Sec. 21

Minnesota PIPELINE Project



Sec. 21. **COMPETENCY STANDARDS: ADVANCED MANUFACTURING, HEALTH CARE SERVICES, INFORMATION TECHNOLOGY, AND AGRICULTURE.**

(a) The commissioner of labor and industry, in collaboration with the commissioner of employment and economic development, shall establish competency standards for programs in advanced manufacturing, health care services, information technology, and agriculture. This initiative shall be administered by the Department of Labor and Industry. In establishing the competency standards, the commissioner shall convene recognized industry experts, representative employers, higher education institutions, and representatives of labor to assist in defining credible competency standards acceptable to the advanced manufacturing, health care services, information technology, and agriculture industries.

(b) The outcomes expected from the initiatives in this section include:

- (1) establishment of competency standards for entry level and at least two additional higher skill levels in each industry;
- (2) verification of competency standards and skill levels and their transferability by representatives of each respective industry;
- (3) models of ways for Minnesota educational institutions to engage in providing education and training to meet the competency standards established; and
- (4) participation from the identified industry sectors.

(c) By January 15, 2015, the commissioner of labor and industry shall report to the legislative committees with jurisdiction over jobs on the progress and success, including outcomes, of the initiatives in this section and recommendations on occupations in which similar competency standards should be developed and implemented.

A link to the final law is here: <https://www.revisor.mn.gov/laws/?id=312&year=2014&type=O>

Appendix B

Summary and History of Apprenticeship in Minnesota



Page 5:
Apprentices fare
well in competition



Page 6:
Technical,
character skills

apprenticeship WORKS

Message from new director of DLI Apprenticeship Issue No. 10

By John Aiken

The new year is bringing some new faces to our agency's Apprenticeship unit. I was recently named Director of Labor Standards and Apprenticeship Division and wanted to extend my greetings. I am looking forward to working with you to ensure registered apprenticeship continues to promote and establish work-based careers for Minnesotans while helping employers develop a highly skilled workforce.

My career in public service began in the Consumer Services Division of the Minnesota Attorney General's Office back in 1999. I started as a phone analyst registering and responding to inquiries related to a wide range of consumer issues. During the course of my eight-year tenure in the Attorney General's office, I learned first-hand the positive impact state government can have on people's lives. I also quickly learned that while I could not solve all problems, I could be responsive to those I served.



John Aiken

I have carried out my philosophy of responsive government throughout my state government career, which now has spanned nearly 15 years and four state government agencies in two states. After leaving the Attorney General's office in 2007, I joined the Minnesota Secretary of State's office as the Communications Director. While there, I led the communications surrounding the Norm Coleman and Senator Al Franken recount. I then had an opportunity to move to Massachusetts where I joined the Commonwealth's Attorney General's office to serve as liaison between businesses and consumers and to directly assist homeowners facing foreclosure. When I returned to Minnesota, I eagerly accepted a

position with the Department of Labor and Industry to promote continuous improvement efforts to streamline state services to provide a better experience for the public we serve.

In each role, I emphasized a commitment to citizen assistance and engagement as well as to making government more responsive to the needs of those it serves. I am excited about the opportunity to continue that commitment to responsive government here at DLI.

*John Aiken can be contacted at
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Related story

Rick Martagon, longtime figure in trades and education, named state program administrator for apprenticeship. **Page 2**

Want more news from DLI? Multiple resources available

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- Sign up for other DLI newsletters focusing on workers' compensation, OSHA and more at www.dli.mn.gov/publications.asp
- Sign up for Labor and Industry News to receive monthly updates about agency projects at www.dli.mn.gov/email.asp.
- View DLI's YouTube channel at www.youtube.com/user/mndli1



DLI names Apprenticeship Unit administrator

Rick Martagon is longtime trades, apprenticeship advocate

Rick Martagon is switching hats. Again.

In January 2015, the longtime construction trades and education advocate was named administrator of DLI's Apprenticeship Unit.

"The building and construction trades system has been a great model for training workforce. What I see now is that it's time to educate the rest of the world and show how the apprenticeship model and investment in workers continues to deliver and pay off," Martagon said.

Beginning in 2007, Martagon served as the training director for Bricklayers and Allied Craft Workers, Local No. 1. In 2010, he was named president of the Apprenticeship Coordinators Association of Minnesota (ACAM).

Martagon is passionate about



Rick Martagon

apprenticeship and education and is excited about his new role. A Navy veteran, Martagon said he hopes to improve communication between the

Veteran's Administration and Minnesota's registered training programs to better share the career prospects for veterans offered by the trades and apprenticeship programs.

The ACAM has not yet named a new president, yet Martagon said he feels like he's leaving the group in good hands and is proud of the accomplishments that occurred under his leadership.

One of his first steps as ACAM president was to increase

communication between the local and community-based organizations and the apprenticeship programs.

Other accomplishments include the production of an educational movie titled "Apprenticeship: Building Your Career", and launching "Construct Tomorrow" which, in its first year, shared hands-on trades career experiences with more than 2,200 high school students.

"The trades are back in the schools. We are finally being invited to offer information and training opportunities to students who are bright and motivated but might not be interested in college."

It is Martagon's goal to continue to spread this message about current registered apprenticeship opportunities and educate the emerging workforce.

DLI experts available for speaking engagements

DLI staff members regularly speak to community, industry and school groups about issues that affect employees, employers and other DLI stakeholders.

As part of its outreach efforts to stakeholders, DLI's speakers bureau can provide interested parties with a knowledgeable speaker in an array of topics.

- Apprenticeship programs and opportunities
- Construction codes and licensing
- Occupational safety and health topics or free consultation assistance
- Wage and hour requirements
- Workers' compensation coverage, reporting and claims issues
- Workers' compensation dispute resolution
- Workers' compensation ombudsman services



Experts from DLI are available to speak to community, industry and school groups about issues that affect employees, employers and other DLI stakeholders.

For more details or to place a request for a speaker, visit www.dli.mn.gov/Speakers.asp.

Grants strive to bring women to apprenticeship

As part of the Women's Economic Security Act (WESA), the legislature made \$250,000 available to qualifying nonprofits to help promote, assist and support women entering apprenticeship programs in non-traditional occupations.

These grants are one part of a larger effort to close the gender pay gap and increase income for working women.

In October 2014, DLI released a request for proposal seeking nonprofit groups to provide innovative projects for outreach, education, training, placement and mentoring services to women. The intent of the



proposals was to help women secure sponsorships in a registered apprenticeship program and succeed as an apprentice.

After the proposal review process, four groups were chosen to provide programming including:

- The Construction Careers Foundation
- The Association of Women Contractors
- Wisconsin Regional Training Partnership/Big Step (through the Minnesota AFL-CIO)
- Summit Academy, OIC

Historically, many of the registered apprenticeship programs found it difficult to attract and retain women apprentices. Currently, women make up less than 7 percent of registered apprentices in Minnesota.

Apprentices continue holiday display tradition

Project lets Local 633 Cement Finishers practice all of their skills

Each year, the cement finisher apprentices at the Local 633 Training Center in New Brighton, Minn., practice their skills to design, construct and demolish an expansive holiday display.

Their work begins each November as the apprentices start to design the display. Once the plans are in place, forms are built, concrete is poured and then finished.

The apprentices use many of the cement finishing skills on the large project including staining, stamping and texturing the concrete. Some of the more labor-intensive portions of the project include a working fountain, large chair for Santa, a Christmas tree, a gingerbread cement finisher, ice fishing display and candy cane sidewalks.

The display was completed in late November and featured at the Cement Finishers Union meeting Christmas party. After one week, the display was demolished to make room at the center for more training projects.

The project was overseen by instructors Dave Schutta, Pete Dubay and coordinator Tom Reger.

Learn more about the center and its apprenticeship program at www.local633.org/apprenticeship.html.



Above, pictured is a portion of the large holiday display created by Local 633 cement finisher apprentices. After a week, the display was demolished so the apprentices could continue working at the training center.

At right, a chair made for Santa, out of cement, is included in the display.



Online slideshow

View more images of the holiday display at <http://go.usa.gov/ekAd>

**Apprenticeship
performance measurements
October, November and December 2014**

	Oct.	Nov.	Dec.
Sponsor information			
Active sponsors	310	310	310
New sponsors	0	0	0
New occupations	0	0	0
Apprentice information			
Total apprentices	9,017	9,221	9,176
Females	602	613	615
Minorities	1,634	1,701	1,702
Veterans	333	350	345
New apprentices	356	336	209
Graduations	99	48	52
Services to sponsors and apprentices			
Service calls	294	171	83
Information calls	141	105	72
Compliance reviews	3	2	3
Supervisory visits	11	2	2
VA visits	0	0	0
New standards	0	0	1
Revised standards	1	1	3
Community outreach visits	33	14	30
Technical assistance visits to sponsors	8	2	4
Prospective sponsor visits	1	1	0

Mentoring important for successful apprenticeship

Ratio of journeyworkers to apprentices helps ensure enough face-to-face time



Mentoring has been, and continues to be, an important part of the apprenticeship model. The mentor process continues to change and now courses are offered to journeyworkers about how to mentor, model and teach apprentices.

Mentoring is a key factor for apprentices to learn their trades.

A well-trained, responsible journeyworker who mentors an apprentice models the skills required to perform a portion of a larger job and gradually engages the apprentice in more demanding and technical tasks. Direct supervision of apprentices on the job site also helps keep everyone safe.

Journeyworker ratios

Each registered apprenticeship program identifies a ratio of the number of journeyworkers needed to oversee apprentices. A ratio exists to ensure continuous supervision and allows apprentices to learn skills from many journeyworkers. Apprentices who have the opportunity to observe and assist multiple journeyworkers obtain a well-rounded experience from which to launch their career in the skilled crafts.

Mentorship continues to evolve and many programs now offer courses to journeyworkers about how to mentor, model and teach apprentices. Hands-on learning like that used in the apprenticeship model continues to be one of the best values and most effective learning techniques in education.

Learn more about apprenticeship and journeyworker ratios at www.dli.mn.gov/APPR/Ratios.asp.

Program helps dislocated workers thrive

Marcia Tyner worked as a certified nursing assistant for a medical provider for more than seven years before the company abruptly closed.

After losing her job, she found it difficult securing full-time work and eventually lost her apartment and moved in with her grandmother. She knew she needed more training to obtain a better job, so she attended an information session at Goodwill-Easter Seals to learn more about its Medical Office Training Program.

What happened next changed Tyner's career path.

"I looked at the information about a construction career — the wages and types of jobs and I was hooked. I knew I liked physical labor and I was in good shape, so it seemed like fate," she said.

Goodwill-Easter Seals is a DLI Labor Education Advancement Program (LEAP) grant recipient. Their 12-week construction preparation program provides an



Marcia Tyner, a longtime certified nursing assistant, changed careers and is now working in construction. A Goodwill-Easter Seals program helped her with the transition.

introduction to construction concepts and fundamentals, construction math, measuring, blueprint reading, fabrication, framing, sheathing and finishing skills. Participants also receive OSHA 10 and lead abatement worker certifications and employment readiness instruction. The goal of the program is to help people get the skills they need to

enter apprenticeship training. Tyner is now an apprentice in the Construction Craft Laborer apprenticeship program.

Goodwill-Easter Seals recently expanded their program through a partnership with St. Paul and Urban Homeworks to build Section 3 homes. In addition, St. Paul College awards 33 continuing education credits to all of their construction graduates.

"It was an amazing experience," Tyner said about the program and staff.

Tyner, hoping to inspire other women to follow her path, said she approaches all the women she meets and asks them, "Hey, what do you do for a living? Let me tell you about my career."

More information about the training program from Goodwill-Easter Seals is at www.goodwilleasterseals.org/site/PageServer?pagename=serv_emp_st_construction.

Apprentices earn accolades at Chicago competition

Apprentices from Roofers, Local No. 96, participated in the annual Midwest Roofing Competition on Oct. 4, 2014, in Chicago.

Second-year apprentices competed in the categories of insulation application, proper tape exposure and a game of "Roofer's Jeopardy." Third- and fourth-year apprentices demonstrated skill in roofing math, crane signaling, setting rolls for a four-ply roof and application of inside and outside corners.

Winners were awarded plaques and tools. Mark Conroy, apprenticeship coordinator for Local No. 96, said it was a very tough competition through all phases and the apprentices showed dedication in learning their craft as well as strong work ethic. "The quality of work executed by these competitions reflects well on the quality of training received from our apprenticeship program," Conroy said.



Front, left to right: Matt Oehrlein, roof tech, second place, phase 3 and 4; Mitch Clark, Palmer West Construction, first place, phase 2. **Back row:** Mark Conroy, apprenticeship coordinator; Guy Bahnemann, Berwald Roofing; Jamie Metcalf, range-cornice, tied for fourth place, phase 2; and Vance Anderson, business agent.

Apprentices find careers, new futures in Bemidji

Wells Academy instructors teach technical, character skills

At Wells Academy, they are emphasizing that simply learning technical skills isn't enough to create a well-rounded employee. They are also teaching apprentices about developing themselves.

Andy Wells, owner of Wells Technology in Bemidji, Minn., says that he created and integrated Wells Academy into his business to develop skilled employees for the area workforce and help a young Native American population struggling to find better jobs with minimal skills or experience in the manufacturing industry.

“We look upon apprentice training as an investment in both a future workforce and in social enterprise by helping those most in need,” Wells said.

The academy was approved by the Minnesota Department of Labor and Industry as a registered apprentice program in 2006 and has since trained 25 apprentices.

Apprentices receive theory and practical hands-on training in CNC operating, programming and Swiss-type machining. They also spend time developing character traits like honesty, respect and other personal qualities during the 12-month program. Wells says that technical skills needed for modern production machines are significant but emphasized that personal skills are also important for developing trusted and productive employees.

Wells shared the success story of an academy graduate who was released from prison, joined the apprenticeship program, completed



Apprentices at Wells Academy in Bemidji, Minn., are taught both technical and character skills. Apprentices receive theory and practical hands-on training in CNC operating, programming and Swiss-type machining. In addition, they spend time developing personal skills.

both basic and advanced training and then a two-year business-college program. He then began working as an instructor at Wells Academy and is now in office management doing bidding and estimating. Wells says that with the right training and support, you can help develop self-supporting skilled workers while instilling in them the value of work.

The training offered at Wells Academy will prepare apprentices for careers in many areas including:

- machine operators
- technicians

- programmers
- inspection staff
- quality managers
- foremen and supervisors
- managers of production
- bidders
- marketing staff
- entrepreneurs

More information

Read more about Wells Academy at www.wellstech.com/html/academy/wells-academy-info.html.

Building Minnesota's Workforce through Dual-Training and Registered Apprenticeship



The Department of Labor and Industry (DLI) Apprenticeship Division promotes, develops, certifies and monitors quality registered apprenticeship training programs in Minnesota workplaces.



EMPLOYER BENEFITS

- Workers with all the skills, knowledge and abilities for their occupation
- Worker retention
- Nationally recognized transferable credential
- Mentorship, knowledge transfer and succession planning strategy
- Helps identifying gaps in incumbent worker training
- Addresses generational and cultural differences
- Increases safety awareness reducing insurance costs
- Creates a culture of learning
- Prepares employees for new technology and new innovations

REGISTERED APPRENTICE BENEFITS

- Hands-on learning
- Income as you learn
- Training and skill development directly related to occupation
- Transferable and nationally recognized credential

FUNDING SOURCES

- G.I. Bill for veterans
- Dislocated Worker Fund
- Workforce Investment Act -
- Trade adjustment insurance
- Grant programs

MORE INFORMATION

Registered Apprenticeship:
www.dli.mn.gov/Appr.asp

Skilled Manufacturing
Customized Training Pilot
Project:
www.dli.mn.gov/APPR/customized_training.asp

Minnesota PIPELINE Project:
www.dli.mn.gov/pipeline.asp



Why apprenticeship?

What Employers are saying about why they have a
Registered Apprenticeship Program:

*“To expand our training base and
to ensure that we as a company are training our employees correctly.”*

*“We have a high level of confidence in registered apprenticeship because it is a successful
way to get the most qualified individuals. We believe this is due in part to the structure and
demands of apprenticeship.”*

*“We feel more comfortable in knowing that the journeyworker
is fully trained and competent in their occupation.”*

*“We use apprenticeship because we can control the time that the apprentice is in the
program. If they are going well they can finish early
and if they are having some issues we can
hold them in the apprenticeship until they are proficient.”*

*“Apprenticeship gives the plant a structured training system for high-skill jobs. It also
provides employee recognition when completing the program.”*

*“Training employees for their needs and specific
to the equipment at our company.”*

Apprenticeship Information and FAQs

History

In 1937, the National Apprenticeship Act (also known as the Fitzgerald Act) was passed by Congress. This act read, in part: "To enable the United States Department of Labor to formulate and promote the furtherance of labor standards necessary to safeguard the welfare of apprentices and to cooperate with the States in the promotion of such standards." Registered Apprenticeship programs in Minnesota represent more than 315 different occupations.

This law was a major step forward in protecting apprentices from workplace injuries. The act established a national advisory committee to draft regulations and establish minimum safety standards for apprenticeship programs. It was eventually amended to permit the United States Department of Labor to issue regulations protecting health, safety and general welfare of apprentices. This emphasis on safety continues in today's apprenticeship programs and industry-specific safety training standards now exist for all apprenticeship programs in Minnesota.

Frequently asked questions about apprenticeship and on-the-job training (OJT) programs

What is apprenticeship?

Apprenticeship is a formal system of employee training that combines on-the-job training with related technical instruction. It is designed to produce craft-workers who are fully competent in all aspects of an occupation, including: knowledge, skill and proficiency on the job. With apprenticeship training, there is a written contract between the apprentice and the sponsor, approved by and registered with the state of Minnesota, that specifies the length of the training, school hours, an outline of the skills of the trade to be learned and the wages the apprentice will receive.

Minnesota's apprenticeship program allows employers to design their own apprenticeship program that provides apprentices with specific skills, training and job-related instruction tailored to the company's needs.

When did Minnesota's apprenticeship program begin? How many apprentices have participated in a registered program?

The federal government recognized the need for states to have trained and skilled workers and subsequently approved the Minnesota Apprenticeship Program submitted in 1939. Upon approval by the Federal Bureau of Apprenticeship, the state of Minnesota conducted its first Apprenticeship Advisory Council (now Apprenticeship Board) meeting Sept. 18, 1939, chaired by Dr. C.A. Prosser of the Dunwoody Institute.

Since that time, more than 110,000 apprentices have been registered in Minnesota and thousands of large and small businesses have trained them to meet the needs of the company as well as to provide highly skilled, high-wage jobs for the apprentices.

Is there a shortage of skilled workers in Minnesota?

In all skilled occupations, employers are becoming greatly concerned about the shortage of job candidates with the necessary skills and abilities.

-more-

How many occupations have apprentice training programs?

There are roughly 105 occupations training in excess of 10,500 apprentices. See the Apprenticeship Training Program Memo for a list of Minnesota occupations.

What types of companies have apprenticeship programs?

A variety of types and sizes of companies have apprenticeship programs. Construction, manufacturing, transportation and the printing trades benefit greatly from apprenticeship programs. In fact, without a continuous flow of apprentices becoming skilled journey workers, quality industrial standards would be severely affected. Recently, apprenticeship programs have been developed for child care development specialist, administrative support services, accounting clerk, hazardous waste technician, low-voltage system installer, experimental machinist and refuse derived fuel processor positions, to name a few.

With few exceptions, any business that requires highly skilled employees -- from a small two-person business to the largest corporations -- can benefit from apprenticeship.

What are the requirements for entry into the apprenticeship program?

A high school diploma or G.E.D. is required for apprentice applicants. Math, science and industrial technical courses are especially helpful in being considered for an apprenticeship.

More information

Contact the Department of Labor and Industry's Apprenticeship unit through any of the following methods:

- fax a letter on your company letterhead to (651) 284-5740 requesting information to assist you in preparing for a visit from an apprenticeship training field representative;
- call (651) 284-5090 or 1-800-DIAL-DLI (1-800-342-5354) and request more information;
- write to the Apprenticeship unit, Minnesota Department of Labor and Industry, 443 Lafayette Road N., St. Paul, MN 55155;
- send an email message to dli.apprenticeship@state.mn.us; or
- visit these related websites at www.constructioncareers.org or www.iseek.org

Appendix C

Advanced Manufacturing Industry Council Meetings

Minnesota PIPELINE Project

Advanced Manufacturing Industry Council

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Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Advanced Manufacturing Industry Council

Meeting I

August 12, 2014

9:30 – 12:30

AGENDA

Welcome & Introductions
PIPELINE Project Overview

Jessica Looman
Assistant Commissioner
Department of Labor and Industry

PIPELINE Project Vision

Senator Terri Bonoff

**Business Case for the PIPELINE
Project**

Kim Arrigoni
Board Officer
Haberman Machine

**Educational Impact of the PIPELINE
Project**

Richard Wagner
President
Dunwoody College of Technology

BREAK at approximately 10:20

Competency Standards Framework

Jessica Looman
Assistant Commissioner
Department of Labor and Industry

**Abilities, Knowledge and Skills
Activity**

Cristine Leavitt
Continuous Improvement Consultant
Department of Administration

LUNCH at approximately 11:50

Next Steps & Closing

Cristine Leavitt
Continuous Improvement Consultant
Department of Administration



Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Advanced Manufacturing Industry Council

Meeting 2

October 13, 2014

9:30 – 11:30 (optional lunch at 11:30)

AGENDA

Welcome & Introductions

Jessica Looman

Department of Labor and Industry

Senator Terri Bonoff

Minnesota State Senate

Representative Kim Norton

Minnesota House of Representatives

Marsha Danielson

Dean of Global Outreach & Strategic Partnerships

South Central College

MN PIPELINE Project Status

Heather McGannon

MN PIPELINE Project Manager

Department of Labor and Industry

Overview of Dual-Training System in Minnesota and United States

Bob Defries

Dean, Customized Training

Alexandria Technical & Community College

Alexandria Technical and Community College Registered Apprenticeship Program

Advanced Manufacturing Dual-Training Model in the U.S.

Dr. Annette Parker

President

South Central College

Selection of Advanced Manufacturing Occupations

Discuss and Identify Advanced Manufacturing Workforce Efforts

Next Steps & Closing



Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Advanced Manufacturing Industry Council

Meeting 3

November 14, 2014

9:00 – 11:00

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner
Department of Labor and Industry

Senator Terri Bonoff

Minnesota State Senate

Representative Kim Norton

Minnesota House of Representatives

MN PIPELINE Project Status

Heather McGannon

MN PIPELINE Project Manager
Department of Labor and Industry

Recommendations on areas of focus for Advanced Manufacturing

Identify MN PIPELINE next steps
and/or projects to support
Advanced Manufacturing dual-
training in Minnesota.

Next Steps & Closing

Appendix D

PIPELINE Project Occupations and Competency Standard Models for Advanced Manufacturing

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

MN PIPELINE PROJECT

Advanced Manufacturing Industry Council

List of Identified Advanced Manufacturing Occupations:

- 1. CNC Operator/Machinist**
- 2. Welders, Cutters, Solderers & Brazers**
- 3. Maintenance & Repair Workers**
- 4. Mechatronics**

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

PIPELINE PROJECT
Advanced Manufacturing Industry Council

Advanced Manufacturing Industry Council Selected Occupations and Descriptions

Below are the 4 occupations and Descriptions the Advanced Manufacturing Industry Council selected to begin investigating dual-training models and implementation in Minnesota.

CNC Operator - Milling and Turning

Source: www.onetcodeconnector.org

CNC operator machinists oversee the CNC machines that shape parts from metal or plastic. They must interpret blueprints, manuals and other work instructions. They also study sample parts to determine dimensions of finished work pieces and CNC equipment setup requirements. They then set the machine and load it with the correct cutting tools. CNC operator machinists inspect work pieces throughout a production run. In addition, machinists measure and mark dimensions and reference points on material or work pieces as a guide for subsequent machining.

CNC operator machinists additionally clean and perform basic preventative maintenance functions on machines, tooling and parts. They must work safely to prevent on-the-job injuries, which includes wearing personal protective equipment such as safety glasses. They also inspect cutting tools for sharpness and usability. These professionals additionally detect malfunctions using precision measuring instruments such as micrometers, dial calipers, depth gages, indicators and scales. They have to communicate with supervisors, engineers, production control employees and other personnel for assignments, and to resolve machining or quality issues as well.

Other Duties include:

- Calculate dimensions or tolerances, using instruments such as micrometers or vernier calipers.
- Machine parts to specifications, using machine tools, such as lathes, milling machines, shapers, or grinders.
- Set up, adjust, or operate basic or specialized machine tools used to perform precision machining operations.
- Align and secure holding fixtures, cutting tools, attachments, accessories, or materials onto machines.
- Measure, examine, or test completed units to check for defects and ensure conformance to specifications, using precision instruments, such as micrometers.
- Monitor the feed and speed of machines during the machining process.
- Maintain machine tools in proper operational condition.

- Study sample parts, blueprints, drawings, or engineering information to determine methods or sequences of operations needed to fabricate products.
- Operate equipment to verify operational efficiency.
- Check work pieces to ensure that they are properly lubricated or cooled.

Welders, Cutters, Solderers, and Brazers

Source: www.onetcodeconnector.org

Use hand-welding or flame-cutting equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products. Welders, Cutters, Solderers, and Brazers cut or join metal parts by applying intense heat to metal. Welding is one of the most dependable means of joining metal parts and is used in the building of bridges, buildings, ships, automobiles, pipelines, storage tanks, electronic equipment, and many more.

Other Duties include:

- Examine work pieces for defects and measure work pieces with straightedges or templates to ensure conformance with specifications.
- Chip or grind off excess weld, slag, or spatter, using hand scrapers or power chippers, portable grinders, or arc-cutting equipment.
- Remove rough spots from work pieces, using portable grinders, hand files, or scrapers
- Prepare all material surfaces to be welded, ensuring that there is no loose or thick scale, slag, rust, moisture, grease, or other foreign matter.
- Develop templates and models for welding projects, using mathematical calculations based on blueprint information.
- Guide and direct flames or electrodes on or across work pieces to straighten, bend, melt, or build up metal.
- Cut, contour, and bevel metal plates and structural shapes to dimensions as specified by blueprints, layouts, work orders, and templates, using powered saws, hand shears, or chipping knives.
- Repair products by dismantling, straightening, reshaping, and reassembling parts, using cutting torches, straightening presses, and hand tools.
- Fill holes, and increase the size of metal parts.
- Check grooves, angles, or gap allowances, using micrometers, calipers, and precision measuring instruments.
- Operate metal shaping, straightening, and bending machines, such as brakes and shears.
- Hammer out bulges or bends in metal work pieces.
- Dismantle metal assemblies or cut scrap metal, using thermal-cutting equipment such as flame-cutting torches or plasma-arc equipment.
- Estimate materials needed for production and manufacturing and maintain required stocks of materials.
- Join parts such as beams and steel reinforcing rods in buildings, bridges, and highways, bolting and riveting as necessary.
- Gouge metals, using the air-arc gouging process.
- Mix and apply protective coatings to products.
- Operate brazing and soldering equipment.

Maintenance and Repair Worker

Source: www.onetcodeconnector.org

Perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of an establishment in repair. Duties may involve pipe fitting; boiler making; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs.

Other Duties include:

- Inspect, operate, or test machinery or equipment to diagnose machine malfunctions.
- Dismantle machines, equipment, or devices to access and remove defective parts, using hoists, cranes, hand tools, or power tools.
- Perform routine maintenance, such as inspecting drives, motors, or belts, checking fluid levels, replacing filters, or doing other preventive maintenance actions.
- Diagnose mechanical problems and determine how to correct them, checking blueprints, repair manuals, or parts catalogs, as necessary.
- Repair machines, equipment, or structures, using tools such as hammers, hoists, saws, drills, wrenches, or equipment such as precision measuring instruments or electrical or electronic testing devices.
- Maintain or repair specialized equipment or machinery located in cafeterias, laundries, hospitals, stores, offices, or factories.
- Assemble, install, or repair wiring, electrical or electronic components, pipe systems, plumbing, machinery, or equipment.
- Clean or lubricate shafts, bearings, gears, or other parts of machinery.
- Adjust functional parts of devices or control instruments, using hand tools, levels, plumb bobs, or straightedges.
- Order parts, supplies, or equipment from catalogs or suppliers.

Mechatronics

Source: www.onetcodeconnector.org

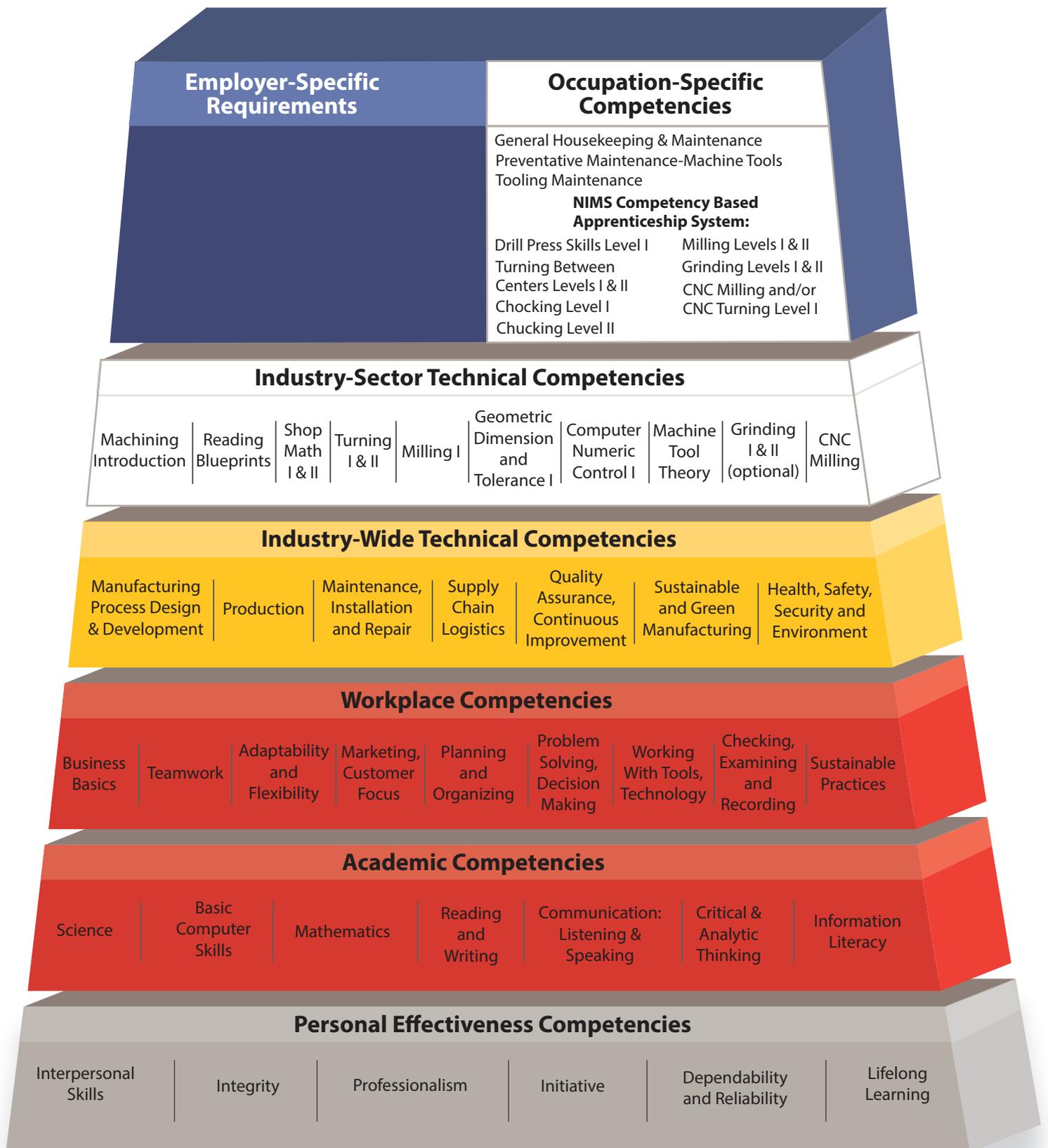
Research, design, develop, or test automation, intelligent systems, smart devices, or industrial systems control. Mechatronic engineers work with the electronic instrumentation and computer control systems which nearly all machinery relies on for efficient and reliable operation. Mechatronic Engineers work with automatic systems monitor process plants for leaks and faults, and keep the plants operating all the year round. Mechatronic engineers build and design these systems and need expertise in computing and electronics, core mechanical engineering knowledge, and the ability to bring these together to make working systems which meet the safety and reliability levels required.

Mechatronic engineers also have roles in project engineering, reliability engineering and power engineering where their cross-disciplinary knowledge gives them an edge on mechanical or electrical engineers. Mechatronic engineers can work with electrical and mechanical systems together and solve problems that cross discipline boundaries. Their strength in IT, computer hardware and networking as well as software also helps them to be very versatile problem solvers. Writing and testing software for specialized computer systems and micro-controllers forms a major part of the work of mechatronics.

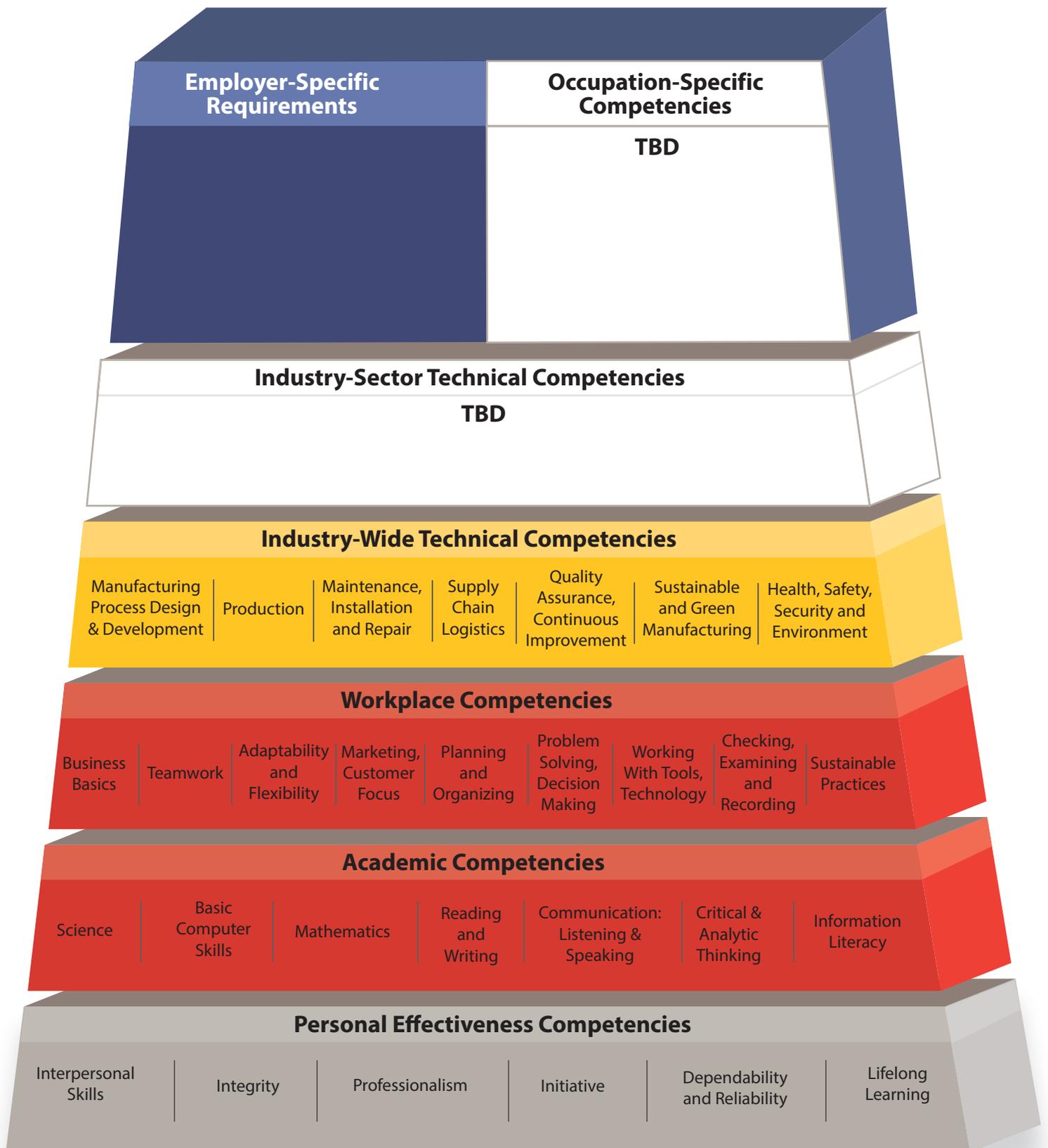
Other Duties include:

- Design engineering systems for the automation of industrial tasks.
- Create mechanical design documents for parts, assemblies, or finished products.
- Maintain technical project files.
- Implement or test design solutions.
- Create mechanical models and tolerance analyses to simulate mechatronic design concepts.
- Conduct studies to determine the feasibility, costs, or performance benefits of new mechatronic equipment.
- Publish engineering reports documenting design details or qualification test results.
- Research, select, or apply sensors, communication technologies, or control devices for motion control, position sensing, pressure sensing, or electronic communication.
- Identify and select materials appropriate for mechatronic system designs.
- Apply mechatronic or automated solutions to the transfer of materials, components, or finished goods.

PIPELINE Project - Competency Model for Advanced Manufacturing - Occupation: Machinist Apprentice -



PIPELINE Project - Competency Model for Advanced Manufacturing Occupation: Welders, Cutters, Solderers, and Brazers -

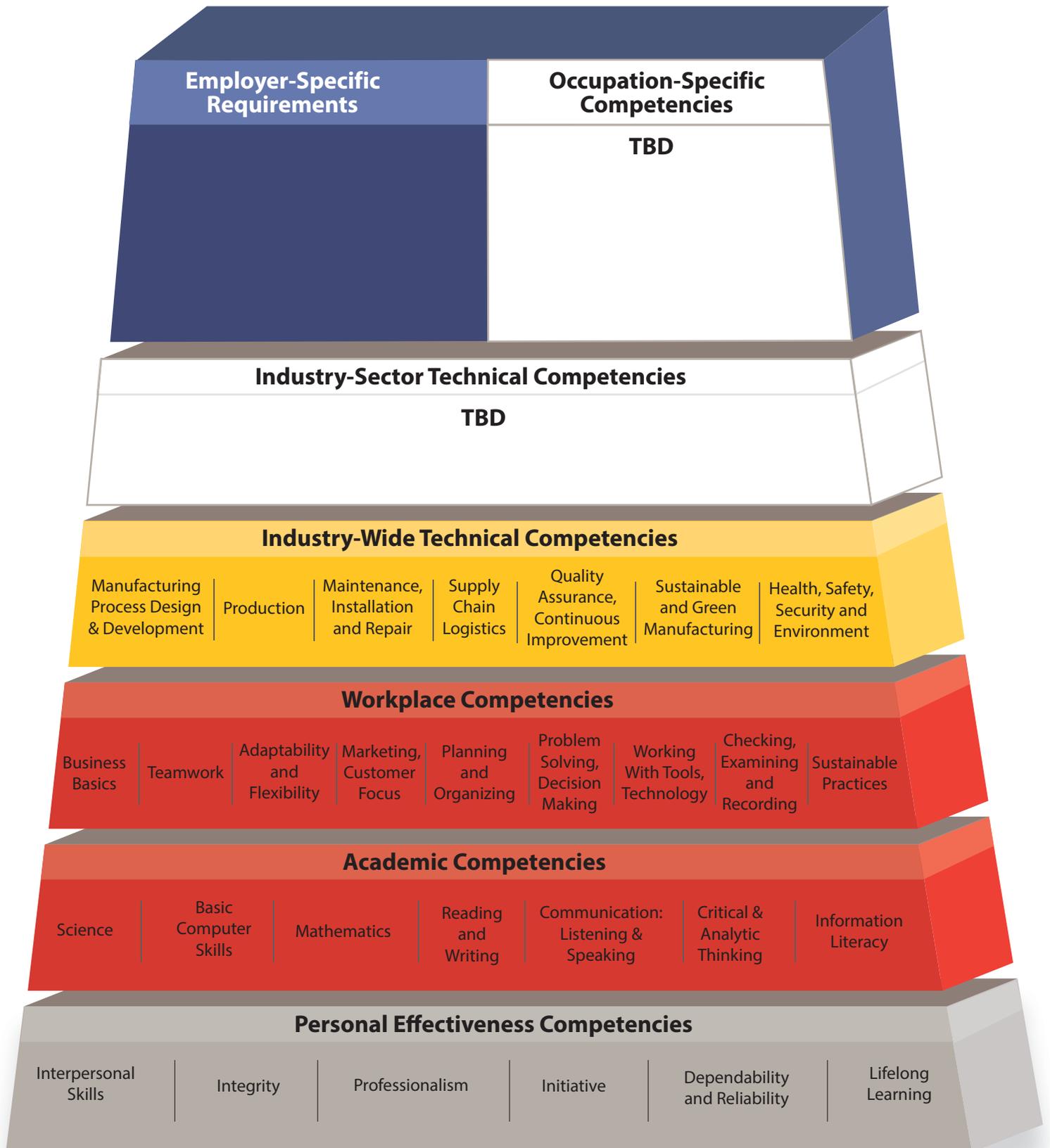


Based on: Advanced Manufacturing Competency Model Employment and Training Administration, United States Department of Labor, April 2010. -

PIPELINE Project

Competency Model for Advanced Manufacturing

Occupation: Maintenance and Repair Worker -

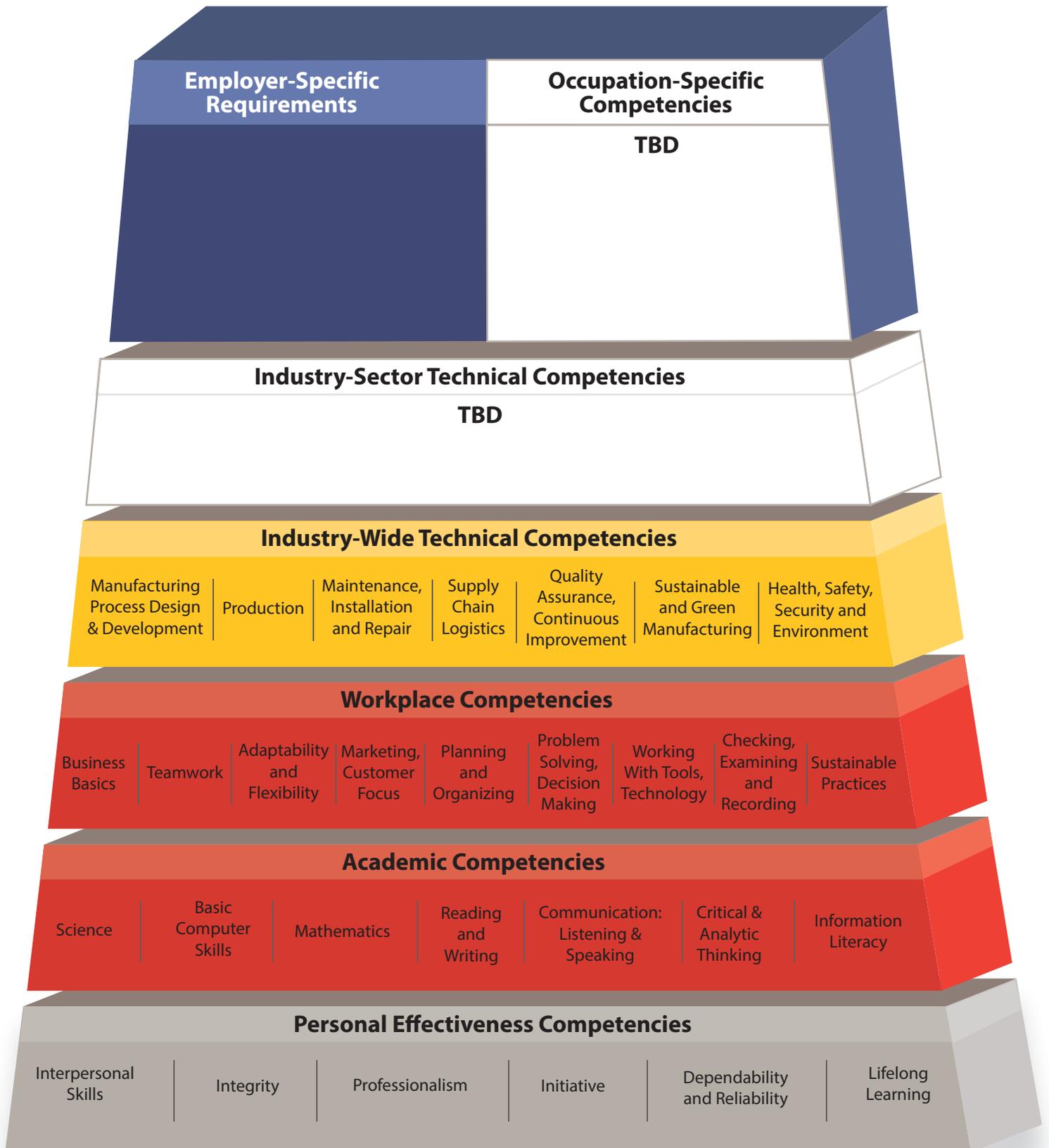


Based on: Advanced Manufacturing Competency Model Employment and Training Administration, United States Department of Labor, April 2010. -

PIPELINE Project

Competency Model for Advanced Manufacturing

Occupation: Mechatronics -



Based on: Advanced Manufacturing Competency Model Employment and Training Administration, United States Department of Labor, April 2010. -

Appendix E

Minnesota Dual- Training Programs in Advanced Manufacturing

REGISTERED APPRENTICESHIP PROGRAMS

MANUFACTURING



October 1, 2014

Program Sponsor	Year Program Began	Graduated Apprentices	Current Apprentices	Apprenticeable Occupation(s)	Related Training Provider
American Crystal Sugar - #4108	2001	3	4	Electronic control technician, maintenance electrician and electrician	American Crystal Sugar training staff
Boise Cascade- #3867	1992	49	0	Instrumentation technicians, maintenance millwrights, maintenance electricians, maintenance pipefitters	Rainy River Technical College
Buhler Inc. Apprenticeship Academy - #4284	2013	0	16	Machine maintenance and repair	Dunwoody Buhler Academy
CHS Mankato - #4237	2010	0	1	Maintenance Electrician	In house Century College – online SC tech MKTO – classroom
Eaton Corporation - #3092	2006	15	1	Tool & Die makers, Machine maintenance, Machinist	National Institute of Metalworking Skills (NIMS)/ Tooling University/ Hennepin Tech
EJ Ajax - #3888	2001	25	8	Machine operator, production sheet metal worker, punch press operator, maintenance mechanic	Hennepin Tech/ NIMS
Federal Mogul - #4140	2002	74	13	Lab Technician, tool maker, control technician, gage room technician, maintenance mechanic, maintenance electricians	South East Technical College
Haberman Machine - #4262	2012	1	19	NIMS Certified CNC Operator-Milling	NIMS
McNeilus Steel- #4213	2009	2	0	Machine setter, steel handler	Training on site from McNeilus training staff
Mackay Envelope - #2532	1999	34	3	Machine adjusters, paper cutter, platen-press operator	Tooling University

Program Sponsor	Year Program Began	Graduated Apprentices	Current Apprentices	Apprenticeable Occupation(s)	Related Training Provider
Massman Automation Design, LLC- #4272	2012	0	1	Machinist	Alexandria Tech/National Institute of Metal Working
Medtronic - #4250	2011	2	0	Tool & Die makers	NIMS
New Page Corp - #3893	1998	33	11	Electrical instrumentation electrician, mechanical Reliability Specialists	Training on site from staff
Profab, Inc. - #4271	2012	0	9	Machinist	Alexandria Tech/National Institute of Metal Working
Rock Tenn- #2338 & #4083	1999	54	7	Predictive maintenance inspector, maintenance machinist, industrial truck mechanic, millwright and instrument control technicians	Dunwoody/ St. Paul Technical College
Schuneman Equip Company Farm Equip Dealer - #4287	2014	0	1	Diesel Technician	Web based online coursework from John Deere national curriculum
Toro Company- #3970 & #3852	2000	154	12	Die cast maintenance, tool & die, millwright, prototype machinist, CNC machinist, maintenance technicians, tool inspector	Hennepin Tech
United Taconite - #4214	2008	30	18	Maintenance millwrights, electrical/electronic technicians, Automotive Mechanic	Curriculum from Virginia Tech/Instruction given at workplace
Valley Custom Mold- #3017	1992	7	1	Mold Maker	Online coursework
Wells Academy - #4199	2006	8	3	CNC Operator – Set up Tech, CNC Programmer – Swiss Machining	In-house classes

Bühler Inc.

Apprenticeship Academy

Industrial Specialist for Machine and Process Technology

Start a
successful
future today.

Customer Service
Engineer



Bühler is a specialist and technology partner for plant, equipment, and services for processing basic foods and for manufacturing advanced materials. The company is a global market leader in the supply of flour production plants, pasta and chocolate production lines, animal feed manufacturing installations, and aluminum die casting systems. Bühler Group operates in over 140 countries with the North American headquarters located in Plymouth, MN.

Customer Service Engineer Profile

Customer Service Engineers are primarily responsible for the repair, installation, inspection and modification of machinery at customer sites.

Responsibilities

- Repair, install, troubleshoot, inspect and modify Bühler and other manufacturers' equipment both at customer sites and at Bühler locations
- Assess customer's maintenance and spare part needs
- Understand and follow Bühler procedures in order to timely and accurately follow through on customer needs
- Provide customer training
- Assist customers with process improvements
- Provide input for improvements in equipment and processes
- Promote Bühler Customer Service and help customers plan future service



Build a successful professional future as a Customer Service Engineer with Bühler.

The Bühler Apprenticeship Academy offers an apprenticeship for the next generation of Customer Service Engineers. The apprenticeship is a formalized 3-year dual training program that combines structured on-the-job training and related technical instruction. Our apprenticeship connects learning directly to the world of work. Apprentices are paid as full time employees of Bühler Inc. for the entire length of the program and receive benefits. This 3-year program is divided into modules with classes at Dunwoody College of Technology, Minneapolis, and the Bühler Apprenticeship Workshop in Plymouth, MN. All training classes, tools, books, computer and uniforms are paid for by Bühler (contingent upon successful completion and employment commitment). Upon completion of the program the apprentices receive their journeyworker card from the Minnesota Department of Labor and Industry.



Bühler Inc. Apprenticeship Academy

Industrial Specialist for Machine and Process Technology



Apprenticeship Training Content

First Year

- Manufacturing Processes & Materials
- Blueprint Reading, Production Drawings
- Geometric Dimensioning & Tolerancing
- Math for Machining Technology
- Statics & Strength of Material
- Communication

Second Year

- Electrics, Fundamental Theory
- Electrics, Applications
- Understanding of Schematics
- Electrical Application II
- Math for Computers
- Electronic Devices Lab
- Introduction to PLC's

Third Year

- Product Design
- Quality, Lean Systems Theory
- Business Fundamentals
- Operations Management
- Introduction to Management & Supervision
- On-the-Job Training

Applying for the Apprenticeship Academy

To apply go to www.buhlerusa.iapplicants.com and complete the questionnaire. Candidates will then be invited to an Open House at Bühler Inc. to receive more information. Bühler uses several assessments to evaluate and select appropriate candidates for the Bühler Apprenticeship Program. New apprentices are chosen in March and start at Bühler in August of each year. Applicants must be 18 years of age and have a high school diploma or GED by the start of the program.

Additional Information

Visit the career page of www.buhlergroup.com for additional information.

Bühler Inc.
13105 12th Ave N
Plymouth, MN 55441
763-847-9900
buhler.minneapolis@buhlergroup.com
www.buhlergroup.com

Questions? Contact:

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• ellen.bies@buhlergroup.com
- Bernd W. Weber
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Alexandria Technical & Community College

Standards for Machinist Apprentice

Developed by

Alexandria Technical & Community College

ATCC Registered Apprenticeship: Program Overview

The National Institute for Metalworking Skills, Inc. (NIMS) approach is time-base apprenticeship in a competency-based training program. These standards of apprenticeship represent a way of conducting and delivering apprenticeship training in the nation's metalworking industry.

The competency-based apprenticeship training approach provides the opportunity for the apprentice and employer sponsor to move through the system at a modified pace. By benchmarking the achievement through the core competencies of the NIMS program, the apprentice will be able to build a portfolio of skills and credentials validating the acquired skilled levels. This will provide a return on investment for the apprentice in training and employer sponsor through better on-the-job performance along with a "Certificate of Completion of Training" for the apprentice from the apprenticeship unit of the Minnesota Department of Labor & Industry. With this program, the apprentice will be able to validate the levels of achievement that is recognized throughout the industry as well as obtaining college credits. These standards of apprenticeship were developed in accordance with the standards recommended by the Minnesota Department of Labor Apprentice Unit as a basis for Alexandria Technical & Community College to work towards a NIMS competency based apprenticeship program. The skill standards used in the core competencies required are industry written and validated. The assessments used to measure the attainment of the competencies are developed from the skill standards and are industry designed and validated.

Recognizing the need and advantage of having a highly skilled and efficient machinist, the Alexandria Technical & Community College along with participating employer sponsors will work to together under direction of Director of Apprenticeships and Apprenticeship Committee to provide the related instruction and on the job training to insure the success of the machinist apprenticeship program.

To insure the program is meeting the need to fulfill the above there will be an Apprenticeship Committee consisting of Director of Apprenticeships along with two staff Alexandria Technical & Community College, three former or present employer sponsors, and three people employed in the machining field. The committee will be updated quarterly on the progress of participating apprentices, sponsors, and related instruction by the Director of Apprenticeships.

Contact Information: Rich Davy
Sr. Field Representative, MN Department of Labor and Industry
(P) 651-284-5199 Richard.Davy@state.mn.us

SKILLED MANUFACTURING CUSTOMIZED TRAINING PROGRAM

New program now available through Jan. 15, 2015



Minnesota's new Skilled Manufacturing Customized Training Program is designed to create skilled workers for current and projected manufacturing openings and to meet the needs of Minnesota employers that have customized training programs.

ACADEMIC INSTRUCTION AND JOB-RELATED LEARNING

The Minnesota Legislature passed funding for this program in 2013. The legislation directs the Minnesota Department of Labor and Industry (DLI) to collaborate with **Alexandria Community and Technical College, Central Lakes College, Century College** and **Hennepin Technical College** to develop a program for manufacturing industries that integrates academic instruction and job-related learning in the workplace. State funding for this program ends Jan. 15, 2015.

The program is employee-centered. A student would take some classes at the school and get training at the manufacturer's worksite. The employer pays wages to the participant (new employee), who is hired to produce work and learn. This program is designed to provide:

- training for a variety of workers in a high-demand industry, such as dislocated workers, secondary and postsecondary school participants, individuals with disabilities, retired or disabled veterans, etc.;
- employment for workers during training and unsubsidized employment upon program completion; and
- employers in high-tech manufacturing industries with skilled employees.



The State of Minnesota seeks manufacturing employers and participants for a new training program that combines employment, economic development and workforce development to grow business and improve productivity in Minnesota's manufacturing industry.



TECHNICAL COLLEGES

Alexandria Technical and Community College

www.alextech.edu
Alexandria, Minnesota

Central Lakes College

www.clcmn.edu
Brainerd, Minnesota

Century College

www.century.edu
White Bear Lake, Minnesota

Hennepin Technical College

www.hennepintech.edu
Brooklyn Park

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Rich Davy, DLI representative

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Appendix F

Agriculture Industry Council Meetings

Minnesota PIPELINE Project

Agriculture Council List

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Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Agricultural Industry Council

Meeting I

August 14, 2014

1:30 – 4:30

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner

Department of Labor and Industry

PIPELINE Project Vision & Overview

Senator Terri Bonoff

Dave Kornecki

Minnesota State Senate

Framing the Issue for the Industry

Dr. Brian Buhr

Dean

U of M College of Food, Agriculture
and natural Resolved Sciences (CFAN)

BREAK at approximately 2:45

**Examples of Current Competency
Standards Training Models
U.S. and Europe**

Jessica Looman

Assistant Commissioner

Department of Labor and Industry

**Occupations and Competencies
Activity**

Cristine Leavitt

Continuous Improvement Consultant

Department of Administration

Next Steps & Closing

Cristine Leavitt

Continuous Improvement Consultant

Department of Administration

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Agriculture Industry Council

Meeting 2

October 3, 2014

9:00– 11:30 (optional lunch at 11:30)

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner
Department of Labor and Industry

Senator Terri Bonoff

Minnesota State Senate

Representative Kim Norton

Minnesota House of Representatives

MN PIPELINE Project Status

Heather McGannon

MN PIPELINE Project Manager
Department of Labor and Industry

Overview of Dual-Training System in United States

Jessica Looman

Assistant Commissioner
Department of Labor and Industry

BREAK at approximately 10:00

Selection of Agriculture Occupations and Identification of Experts

Dual- Training System in Minnesota Discussion

Next Steps & Closing

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Agriculture Industry Council

Meeting 3

November 12, 2014

9:00 – 11:00

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner
Department of Labor and Industry

Senator Terri Bonoff

Minnesota State Senate

Representative Kim Norton

Minnesota House of Representatives

MN PIPELINE Project Status

Heather McGannon

MN PIPELINE Project Manager
Department of Labor and Industry

Update on Competency Work for Selected Agriculture Occupations

Recommendations on
implementing dual-training on 4
selected occupations

Identify MN PIPELINE next steps
and/or projects to support dual-
training for Agriculture industry in
Minnesota.

Next Steps & Closing

Appendix G

PIPELINE Project Occupations and Competency Standard Models for Agriculture

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

MN PIPELINE PROJECT
Agriculture Industry Council

List of Selected Agriculture Occupations:

- 1. Skilled Mechanic (Agriculture)**
- 2. Agronomist**
- 3. Herd Manager**

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

PIPELINE PROJECT
Agriculture Industry Council

Agriculture Council Selected Occupations and Descriptions

Below are the 3 occupations and Descriptions the Agriculture Industry Council selected to begin investigating dual-training models and implementation in Minnesota.

Skilled Mechanic (Agriculture) * Apprenticiable occupation

Source: www.bls.gov and www.maizisandmiller.com

Agriculture equipment mechanics have the experience, training and skills to maintain and repair many different types of agricultural equipment including tractors, combines and a wide range of other machinery. They also know how to diagnose and troubleshoot the large engines in this equipment and the electrical, transmission and hydraulic systems that make it work. Agriculture equipment tills the soil, plants the seeds, applies agrichemicals to facilitate yields and harvests a wide range of crops that enrich our lives. Skilled agriculture equipment mechanics keep this equipment working safely and efficiently year after year. Most agriculture equipment mechanic positions require some travel working on equipment out in the field.

Types of Agricultural Machinery

Soil Cultivation:

Cultivator, Cultipacker, Chisel plow, Harrow, Spike harrow, Drag harrow, Disk harrow, Plough, Power tiller /Rotary tiller / Rototiller, Spading machine, Subsoiler, Two-wheel tractor, Stone Picker

Planting:

Broadcast seeder, Planter (farm implement), Plastic mulch layer, Potato planter, Seed drill, Air seeder, Precision drill, Transplanter, Rice transplanter

Harvesting / Post-Harvest:

Beet harvester, Bean harvester, Cane Harvester, Carrot Puller, Chaser bin, Combine harvester, Conveyor belt, Corn harvester, Cotton picker, Fanning mill, Farm truck, Forage harvester, Gleaner Gravity wagon, Haul out Transporter, Potato digger, Potato harvester, Rice huller, Sickle, Swather

Loading:

Backhoe, Front end loader, Skid-steer loader

Agronomist

Source: <http://education-portal.com> and www.jobsdescriptions.org

Agronomists have varied duties that require them to think critically to solve problems. First and foremost, agronomists experiment and plan studies to improve crop yields. They study a farm's crop production in order to discern the best ways to plant, harvest, and cultivate the plants, regardless of the climate. It is also important for agronomists to develop methods to control weeds and pests to keep crops disease-free.

They use technological processes for sowing crops and the growing of the seedlings of vegetables, fruits, grape vines, etc...They determine ways of cultivating crops on different plots of land, having in consideration the conditions of soil. They make decisions about the plowing, sowing and plant protection, select and procure the seeds, fertilizers and other materials required for plant growth, schedule the plowing and sowing. They manage the exploitation of land resources, prepare laboratory tests for agricultural land and organization of the ground, and determine the fertilization process. They prepare the production plan for the crop plants, record the operative documents, and ensure the coordination with the production of animals

In professional work, the agronomist develop plans for irrigation, draining and soil enrichment, investigate and develop methods to obtain quality products.

They also perform environmental studies to control pests and parasitic plants and to protect soil and water. They study and apply scientific methods to obtain various valuable crops, both qualitatively and quantitatively. They develop and supervise environmental projects, industrial buildings, etc...They also:

- Design and coordinate the necessary testing equipment and agricultural machinery
- Develop plans and projects on cultivation of agricultural areas
- Prepare reports and present scientific papers in his field of specialty
- Determine the technological processes for the planting of crops, etc
- Manage and modify the agro-technical processes and work processes in the plant cultivation
- Determine ways of cultivating crops on different plots of land, as per the ground conditions
- Make decisions on plowing and sowing

Herd Manager - **Bison Herd Manager Apprenticable occupation*

Source: www.onetonline.org

Herd Managers are responsible for overall management of the dairy herd including milking, herd health and breeding. Coordinate and share duties and responsibilities with the assistant herd manager. Make decisions pertaining to day-to-day operation, such as when an animal needs to be bred, treated, culled, etc.; also which animals are candidates for embryo transfer program. Decide when veterinarian or service personnel need to be called; decide when a tank of milk must be dumped. Discuss herd nutrition issues with feed manager. They also:

- Collect and record data on cows, heifers and bulls
- Observe all livestock for signs of illness or distress (several times daily)

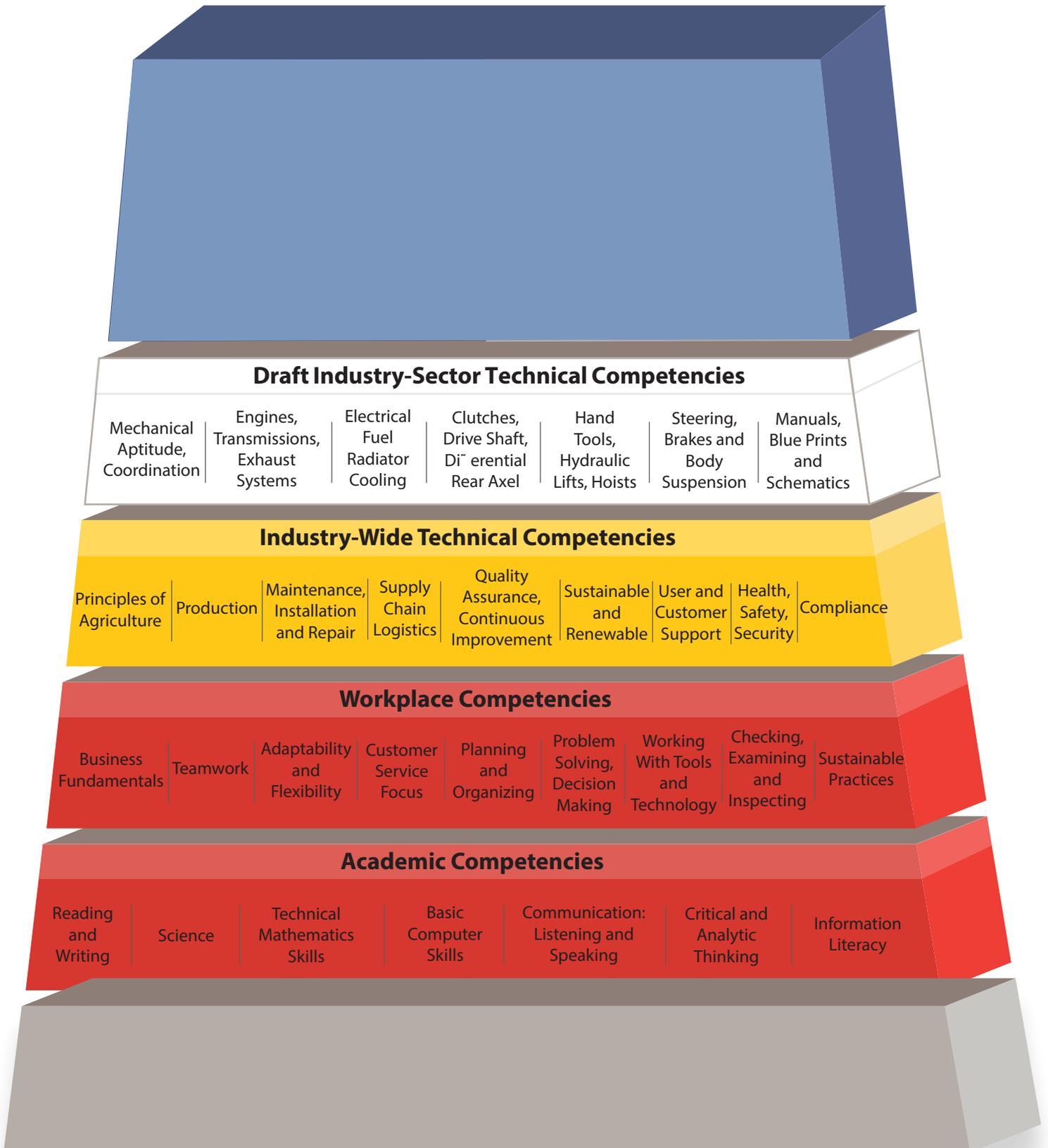
- Monitor and adjust environment for cow comfort; schedule bedding
- Monitor maternity area and assist with difficult births
- Monitor and assist with care of fresh cows and newborn calves
- Manage grouping of cows, heifers and bulls in pens
- Keep all animals visibly identified
- Move cows from far-off dry pen to close-up dry pen weekly
- Recommend culling decisions
- Communicate management decisions with owners and managers

Herd Health Management

- Observe cows, heifers and bulls for health problems
- Treat and care for sick animals; record treatments in cow health records
- Schedule and assist with pregnancy checks or other veterinary visits
- Dry off cows weekly
- Maintain mastitis and dry cow treatment programs
- Maintain herd vaccination program
- Maintain and administer hoof trimming program

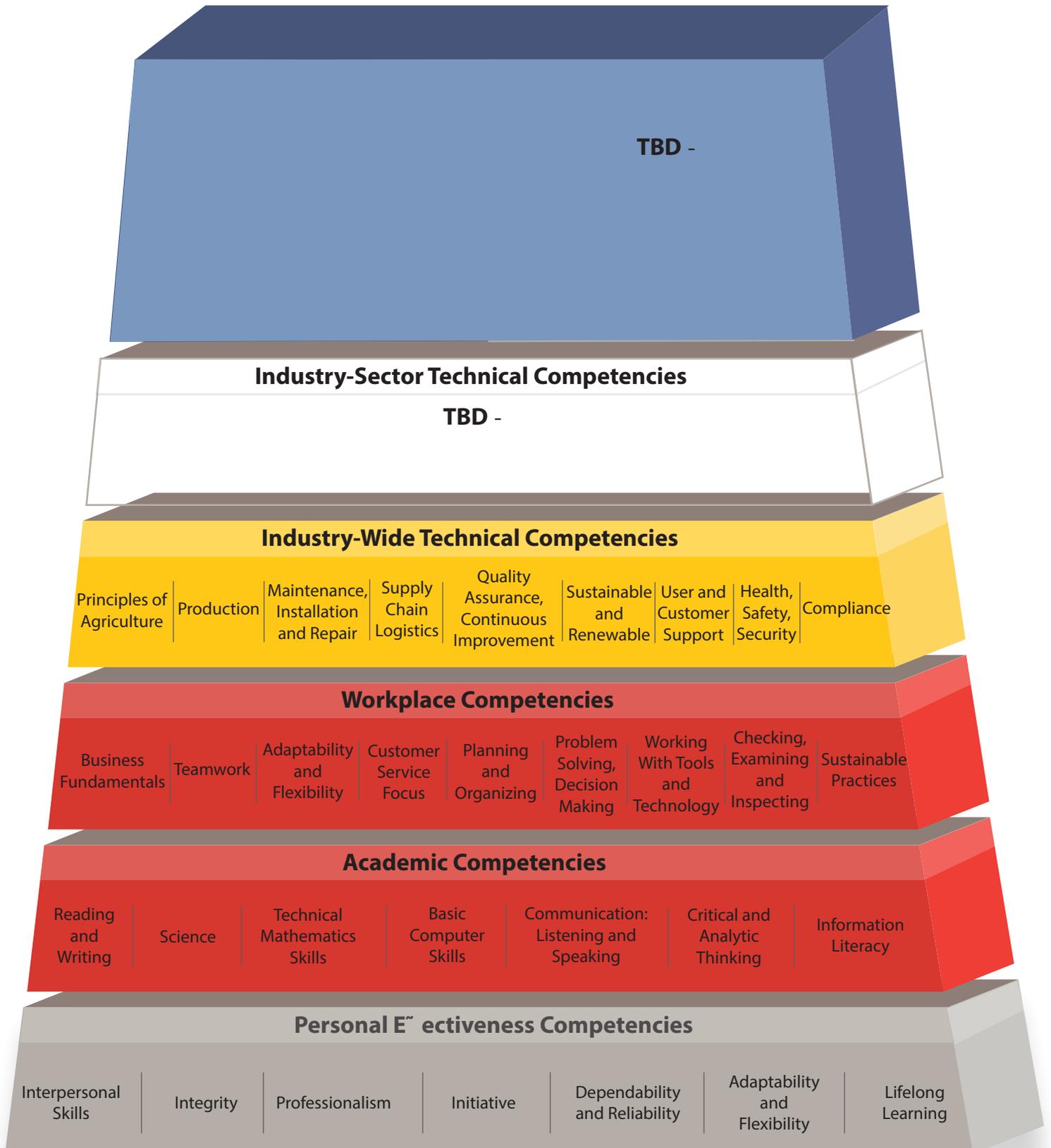
PIPELINE Project

Competency Model for Agricultural Occupation: Mechanic, Industrial Truck -



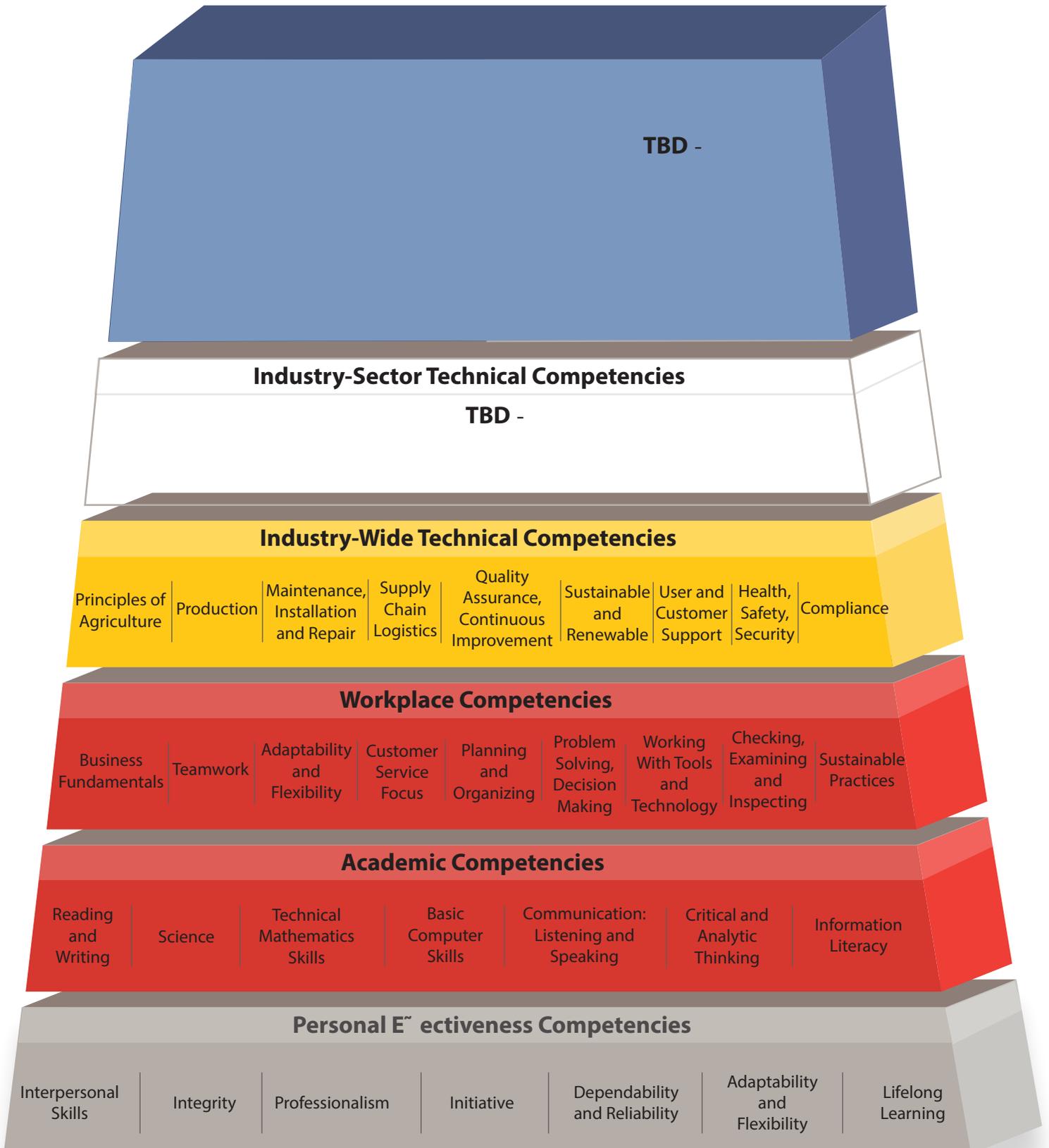
Based on: Truck Mechanics and Diesel Engine Specialists: Competency Model Employment and Training Administration, United States Department of Labor

PIPELINE Project - Competency Model for Agricultural Occupation: Agronomist -



Based on: Agricultural Industry Council input and feedback and modifications from the USDOL competency model

PIPELINE Project - Competency Model for Agriculture - Occupation: Herd Manager -



Based on: Competency Model for Employment and Training Administration, United States Department of Labor

Appendix H

Health Care Services Industry Council Meetings

Minnesota PIPELINE Project

Health Care Services Council List

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Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Health Care Industry Council

Meeting 1

August 15, 2014

9:30 – 12:00

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner

Department of Labor and Industry

PIPELINE Project Vision & Overview

Senator Terri Bonoff

Dave Kornecki

Minnesota State Senate

**Framing the Project in Health Care
Services**

Bethany Krom

Mayo School of Health Sciences

**Framing the Project in Health Care
Services**

Adam Suomala

Aging Services of Minnesota

BREAK at approximately 10:30

**Occupations and Competencies
Activity**

Cristine Leavitt

Continuous Improvement Consultant

Department of Administration

**LUNCH at approximately 11:15
Next Steps & Closing**

Cristine Leavitt

Continuous Improvement Consultant

Department of Administration



Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Health Care Services Industry Council

Meeting 2

October 1, 2014

9:30 – 11:30 (optional lunch at 11:30)

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner
Department of Labor and Industry

Senator Terri Bonoff

Minnesota State Senate

Representative Kim Norton

Minnesota House of Representatives

Bethany Krom

Mayo School of Health Sciences

MN PIPELINE Project Status

Heather McGannon

Department of Labor and Industry

Overview of Dual- Training System in United States

Jessica Looman

Assistant Commissioner
Department of Labor and Industry

BREAK at approximately 10:30

Selection of Health Care Services Occupations and Identification of Industry Experts

Cristine Leavitt

Continuous Improvement Consultant
Department of Administration

Dual-Training System in Minnesota Discussion

Cristine Leavitt

Continuous Improvement Consultant
Department of Administration

Next Steps & Closing

Heather McGannon

Department of Labor and Industry



Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Health Care Services Industry Council

Meeting 3

November 7, 2014

9:00 – 11:00

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner

Department of Labor and Industry

Senator Terri Bonoff

Minnesota State Senate

Representative Kim Norton

Minnesota House of Representatives

MN PIPELINE Project Status

Heather McGannon

MN PIPELINE Project Manager

Department of Labor and Industry

**Update on competency work for
selected health care services
occupations**

**Recommendations on
implementing dual-training on 4
selected occupations**

**Recommendations on MN PIPELINE
next steps and projects to support
dual-training in health care services
in Minnesota.**

Closing & Thank you

Appendix I

PIPELINE Project Occupations and Competency Standard Models for Health Care Services

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

MN PIPELINE PROJECT
Health Care Services Industry Council

List of Selected Health Care Services Occupations:

- 1. Health Information Technician**
- 2. Psychiatric/Mental Health Technician**
- 3. Health Support Specialist**
- 4. Medical Scribe - Special Projects**

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

PIPELINE PROJECT
Health Care Services Industry Council

Health Care Services Industry Council Selected Occupations and Descriptions

Below are the 4 occupations and descriptions the Health Care Services Industry Council selected to begin investigating dual-training models and implementation in Minnesota.

Health Information Technician

Source: www.onetcodeconnector.org

Compile, process, and maintain medical records of hospital and clinic patients in a manner consistent with medical, administrative, ethical, legal, and regulatory requirements of the health care system. Process, maintain, compile, and report patient information for health requirements and standards in a manner consistent with the healthcare industry's numerical coding system.

Other duties include:

- Protect the security of medical records to ensure that confidentiality is maintained.
- Review records for completeness, accuracy, and compliance with regulations.
- Retrieve patient medical records for physicians, technicians, or other medical personnel.
- Assign the patient to diagnosis-related groups (DRGs), using appropriate computer software.
- Process patient admission or discharge documents.
- Transcribe medical reports.
- Resolve or clarify codes or diagnoses with conflicting, missing, or unclear information by consulting with doctors or others or by participating in the coding team's regular meetings.
- Enter data, such as demographic characteristics, history and extent of disease, diagnostic procedures, or treatment into computer.
- Identify, compile, abstract, and code patient data, using standard classification systems.
- Release information to persons or agencies according to regulations.

Psychiatric Technician/Mental Health Technician

Source: www.onetcodeconnector.org

Care for individuals with mental or emotional conditions or disabilities, following the instructions of physicians or other health practitioners. Monitor patients' physical and emotional well-being and report to medical staff. May participate in rehabilitation and treatment programs, help with personal hygiene, and administer oral or injectable medications.

Other duties include:

- Take and record measures of patients' physical condition, using devices such as thermometers or blood pressure gauges.
- Monitor patients' physical and emotional well-being and report unusual behavior or physical ailments to medical staff.
- Provide nursing, psychiatric, or personal care to mentally ill, emotionally disturbed, or mentally retarded patients.
- Observe and influence patients' behavior, communicating and interacting with them and teaching, counseling, or befriending them.
- Collaborate with or assist doctors, psychologists, or rehabilitation therapists in working with mentally ill, emotionally disturbed or developmentally disabled patients to treat, rehabilitate, and return patients to the community.
- Encourage patients to develop work skills and to participate in social, recreational, or other therapeutic activities that enhance interpersonal skills or develop social relationships.
- Restrain violent, potentially violent, or suicidal patients by verbal or physical means as required.
- Train or instruct new employees on procedures to follow with psychiatric patients.
- Develop or teach strategies to promote client wellness and independence.
- Administer oral medications or hypodermic injections, following physician's prescriptions and hospital procedures.

Health Support Specialist * Apprenticable occupation

Source: www.healthsupportspecialist.org

All Household Staff are members of a self-directed, cross-trained work team assigned to a household of sixteen residents on a permanent basis. Their purpose is to plan and coordinate resident care creating a HOME and strengthening COMMUNITY while incorporating PersonFirst Values to establish a sense of belonging, usefulness and purpose in daily life. All staff are trained in housekeeping, laundry, dietary, social and activities services that directly affect the resident's environment. In addition, non-licensed staff is trained as nursing assistants. Services are provided for adult and geriatric residents in accordance with federal and state standards, guidelines, and regulations that govern the organization.

Activities include:

- Identifies, plans and incorporates resident's daily pleasures and interests into household life based upon recommendations from families and friends.
- Plan, observes and participates in the household/facility activity calendar.
- Incorporates children, plants, and pets into regular household life.
- Provides assistance to access activities and programs in/outside of the home.
- Provides 1:1 interaction with residents based upon preferences.
- Encourages residents to achieve highest level of practical functioning based upon their interests and abilities.
- Provides adaptations for desired activities such as magnifying glass, headphones and large print books.
- Performs a variety of miscellaneous tasks as requested such as shopping, running errands, assisting with correspondence, reading to the resident and distributing mail.

Medical Scribe - Special Projects

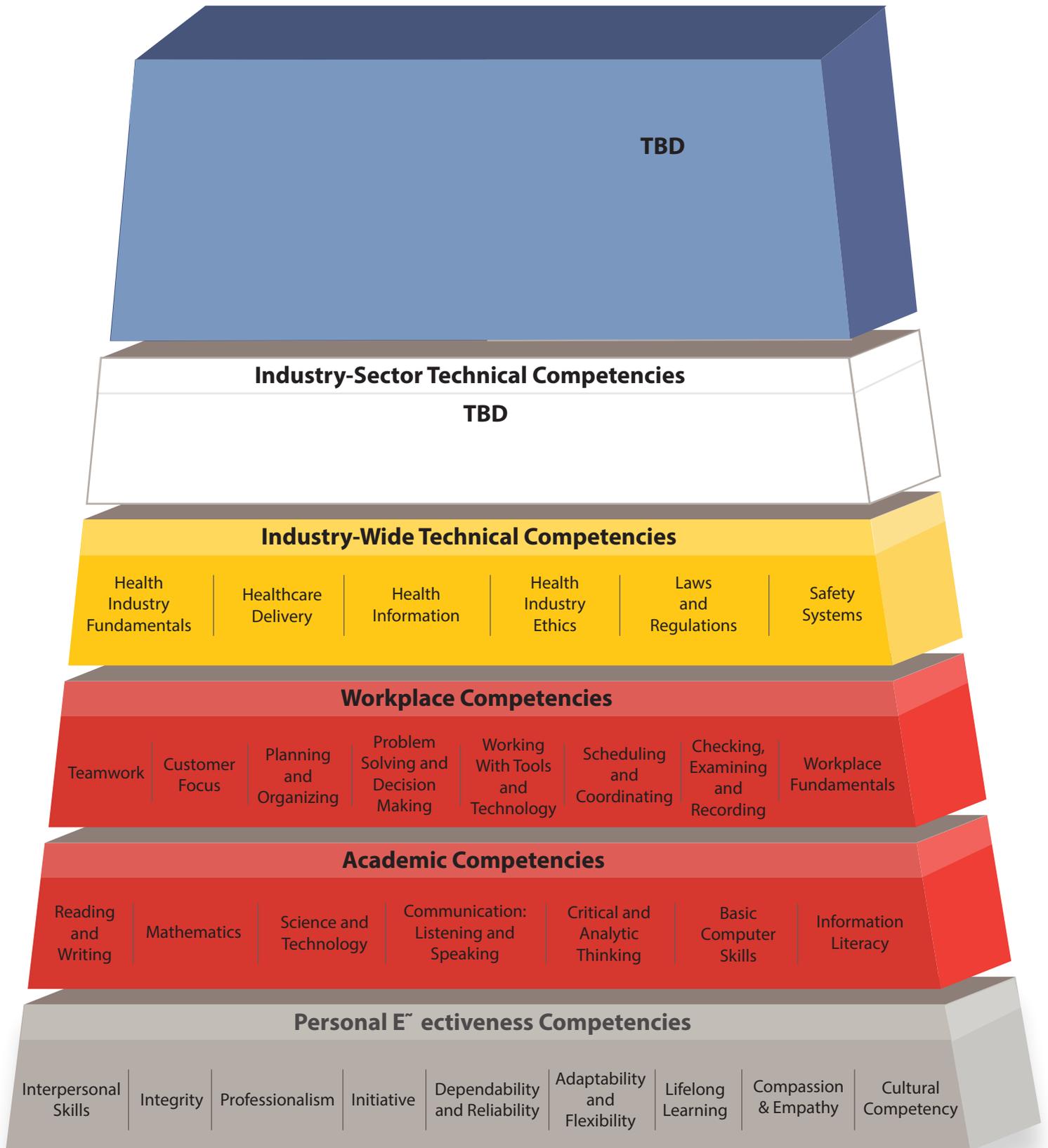
Source: www.onetcodeconnector.org

Transcribe medical reports recorded by physicians and other healthcare practitioners using various electronic devices, covering office visits, emergency room visits, diagnostic imaging studies, operations, chart reviews, and final summaries. Transcribe dictated reports and translate abbreviations into fully understandable form. Edit as necessary and return reports in either printed or electronic form for review and signature, or correction.

Other duties include:

- Take dictation using shorthand, a stenotype machine, or headsets and transcribing machines.
- Return dictated reports in printed or electronic form for physician's review, signature, and corrections and for inclusion in patients' medical records.
- Review and edit transcribed reports or dictated material for spelling, grammar, clarity, consistency, and proper medical terminology.
- Transcribe dictation for a variety of medical reports, such as patient histories, physical examinations, emergency room visits, operations, chart reviews, consultation, or discharge summaries.
- Distinguish between homonyms and recognize inconsistencies and mistakes in medical terms, referring to dictionaries, drug references, and other sources on anatomy, physiology, and medicine.
- Translate medical jargon and abbreviations into their expanded forms to ensure the accuracy of patient and health care facility records.
- Produce medical reports, correspondence, records, patient-care information, statistics, medical research, and administrative material.
- Identify mistakes in reports and check with doctors to obtain the correct information.
- Perform data entry and data retrieval services, providing data for inclusion in medical records and for transmission to physicians.
- Set up and maintain medical files and databases, including records such as x-ray, lab, and procedure reports, medical histories, diagnostic workups, admission and discharge summaries, and clinical resumes.

PIPELINE Project
Competency Model for Health Care Services
Occupation: Health Information Technician -

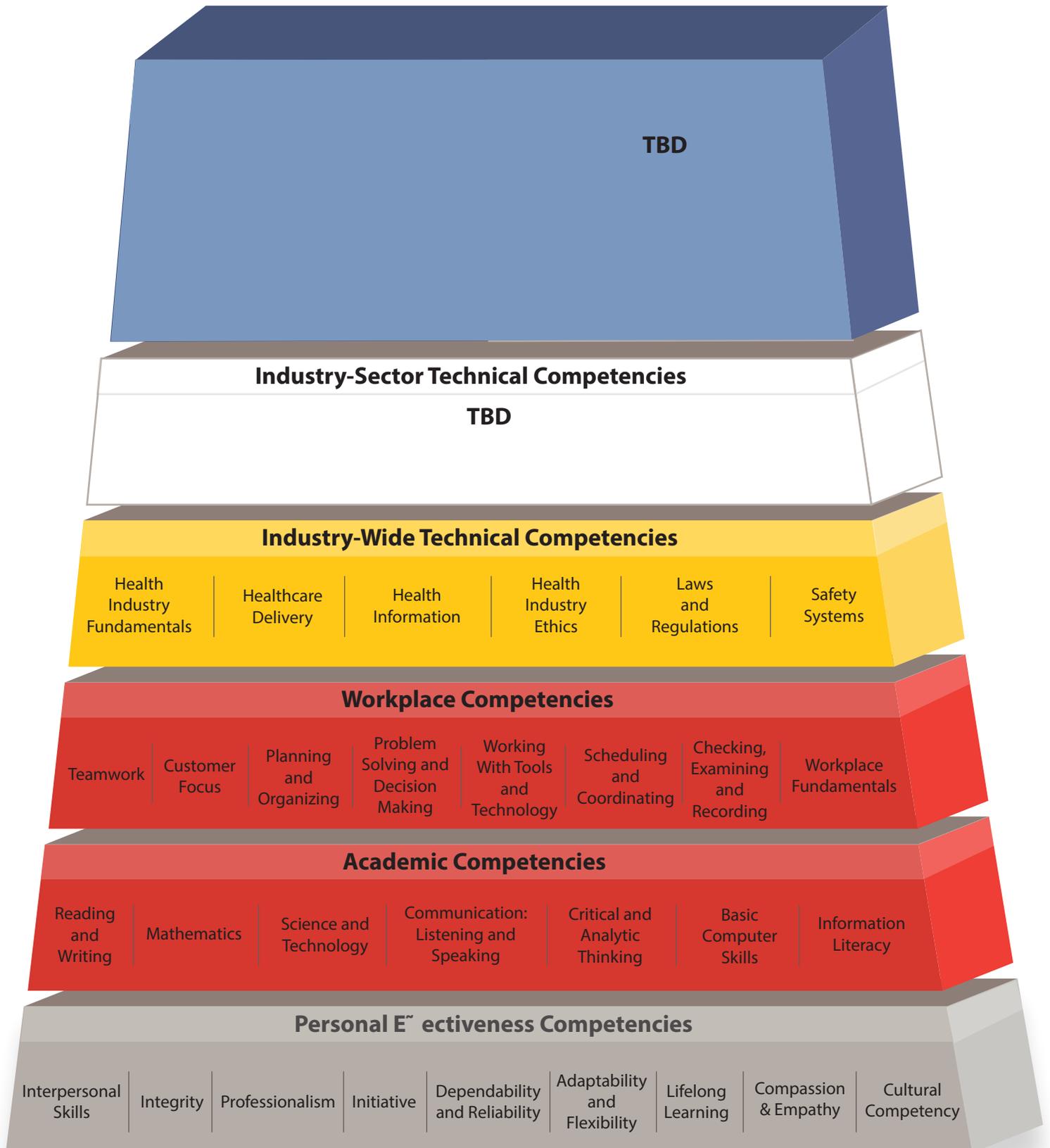


Based on: Health: Allied Health Competency Model Employment and Training Administration, United States Department of Labor, December 2011. -

PIPELINE Project

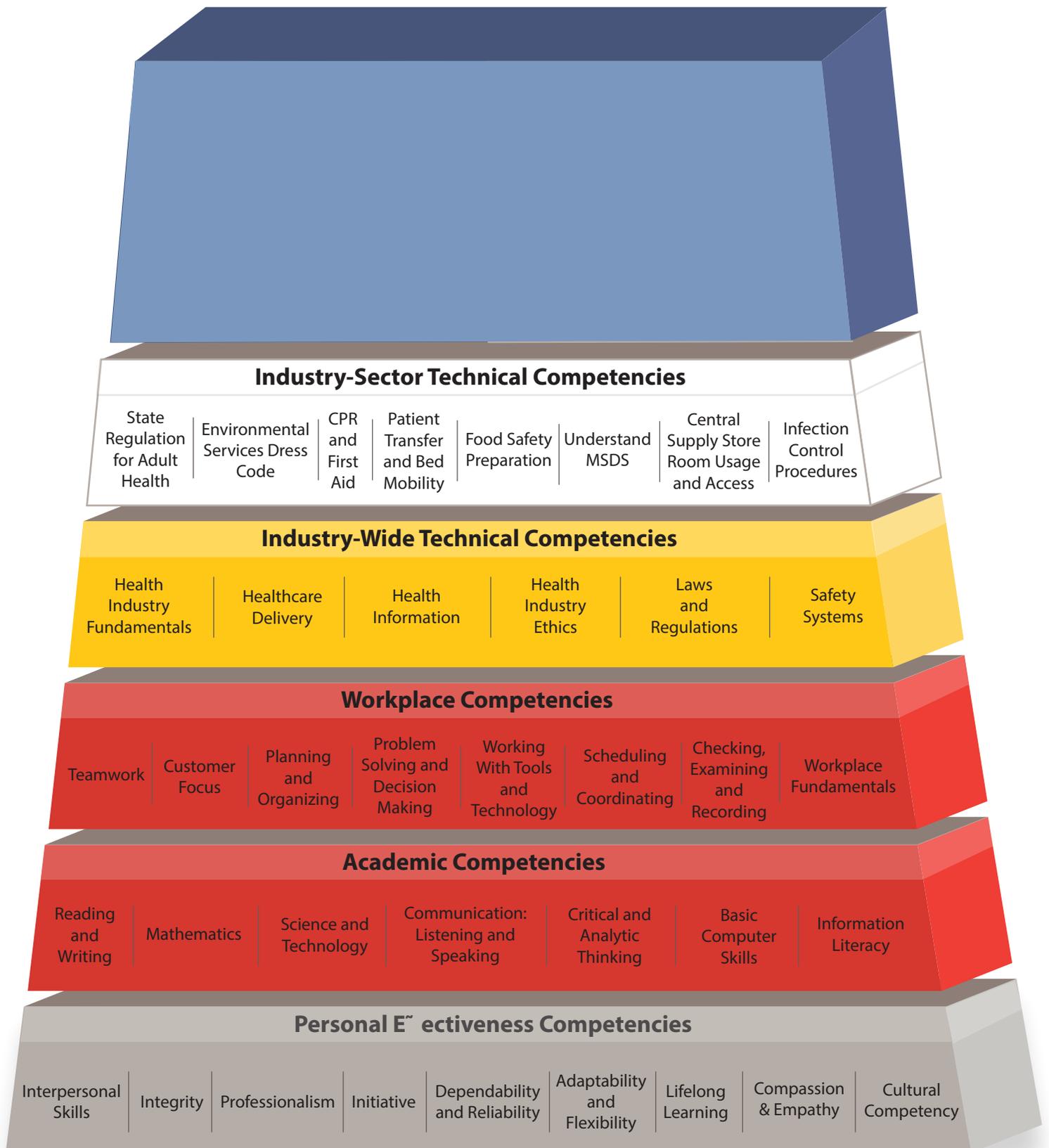
Competency Model for Health Care Services

Occupation: Medical Scribes -



Based on: Health: Allied Health Competency Model Employment and Training Administration, United States Department of Labor, December 2011. -

PIPELINE Project - Competency Model Health Care Services Occupation: Health Support Specialist -

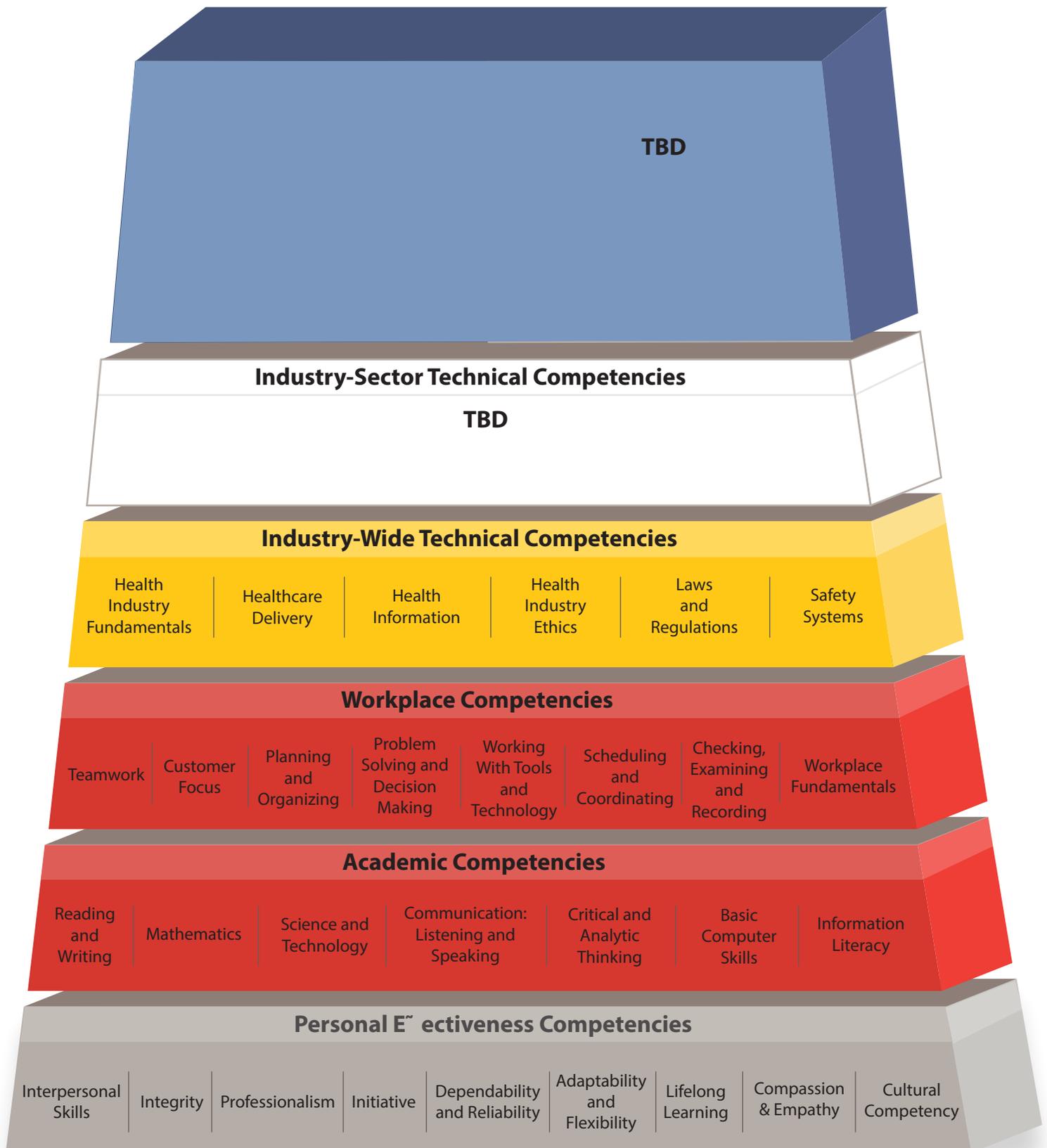


Based on: Health: Allied Health Competency Model Employment and Training Administration, United States Department of Labor, December 2011. -

PIPELINE Project

Competency Model for Health Care Services -

Occupation: Psychiatric Technician/Mental Health Technician -



Based on: Health: Allied Health Competency Model Employment and Training Administration, United States Department of Labor, December 2011. -

Appendix J

Minnesota Dual-Training Programs in Health Care Services



Your path to a more rewarding future!



**Health Support
SPECIALIST**

A new era in older adult services has arrived and with it has evolved a new type of professional caregiver – the **Health Support Specialist (HSS)**. Your opportunity to be part of these exciting changes is now here. As part of this new generation of Health Support Specialists, you can:

- *Earn while you learn*
- *Take classes online*
- *Qualify for a scholarship*
- *Receive a Registered Apprenticeship Health Support Specialist certificate for 145 hours from a Minnesota State College*



If you are experienced in an adult care setting, you know the rewards. You are part of an important mission to care for individuals who have earned the respect that comes with age and the right to grow older with dignity. You, too, deserve to grow in your career as the models for care centers evolve. Organizations pioneering these changes recognize their staff members are on the front lines of these changes and they have provided the path for you to become a certified Health Support Specialist. Much of what you already know and the training you've already completed may be recognized toward your new certification.

If you are new to the field of aging services, you have made a wise choice. You are part of a cutting edge of change that offers you more opportunities than ever before. Care centers are removing the limits of compartmentalized roles that have stood in the way of reaching each staff member's fullest potential. Health Support Specialist apprenticeship programs are redefining and transforming these roles for the benefit of dedicated caregivers and the older adults they serve. You have been drawn to the field of older adult services at a truly exciting time!

Research has shown that new career frameworks like Minnesota's Health Support Specialist are the key to creating a team-based, person-directed environment where everyone can thrive. As you expand your skills, you will expand your satisfaction with your career and your value to your organization. Employers are developing new job descriptions and wage schedules to meet this new wave of employees. Will you be part of this landmark change?

Eligibility

Being selected for the Health Support Specialist program can be your career ladder to a more rewarding future. To be eligible, you must have the support of your employer, be at least 18 years old, have a high school diploma or GED and a Certified Nursing Assistant Certificate. Further minimum qualifications for enrollment are established by each employer and by the program sponsor, Aging Services of Minnesota.

On-the-Job Learning

HSS apprentices blend online learning with practice in their job setting. Experienced caregivers can receive credit for their skills and previous training while they learn new skills. Apprentices complete 2,500 hours of on-the-job training.

Mentoring

HSS apprentices work and learn under the direction of experienced, certified mentors whose goal is to help each apprentice succeed.

Professional Development

HSS is offered through a series of seven online college courses, each designed in partnership with several of Minnesota's leading provider organizations, and taught by Minnesota State Colleges and University (MnSCU) system faculty.

Wage Progression

HSS apprentices are provided the opportunity to "earn while they learn" based on a progressive pay scale that increases as skills increase. Each participating organization establishes a unique pay scale for their employees moving towards HSS certification.



Health Support SPECIALIST

HSS Curriculum

Career Skills, Culture & Diversity, Health Promotion	Assessment & Orientation	
	Health Support Specialist in Physiological Care – 1 credit	
	Health Support Specialist in Meaningful Activities 1 credit	Health Support Specialist in Psychosocial Care – 1 credit
	Health Support Specialist in Memory Care – 1 credit	Health Support Specialist in Environmental Services - 1 credit
	Health Support Specialist in Culinary Care – 1 credit	
	CNA pre-requisite is required.	
	145 hours of online classroom training, 9 credits plus 2,500 hours of on-the-job training.	
Participants may not be required to duplicate any existing certifications.		

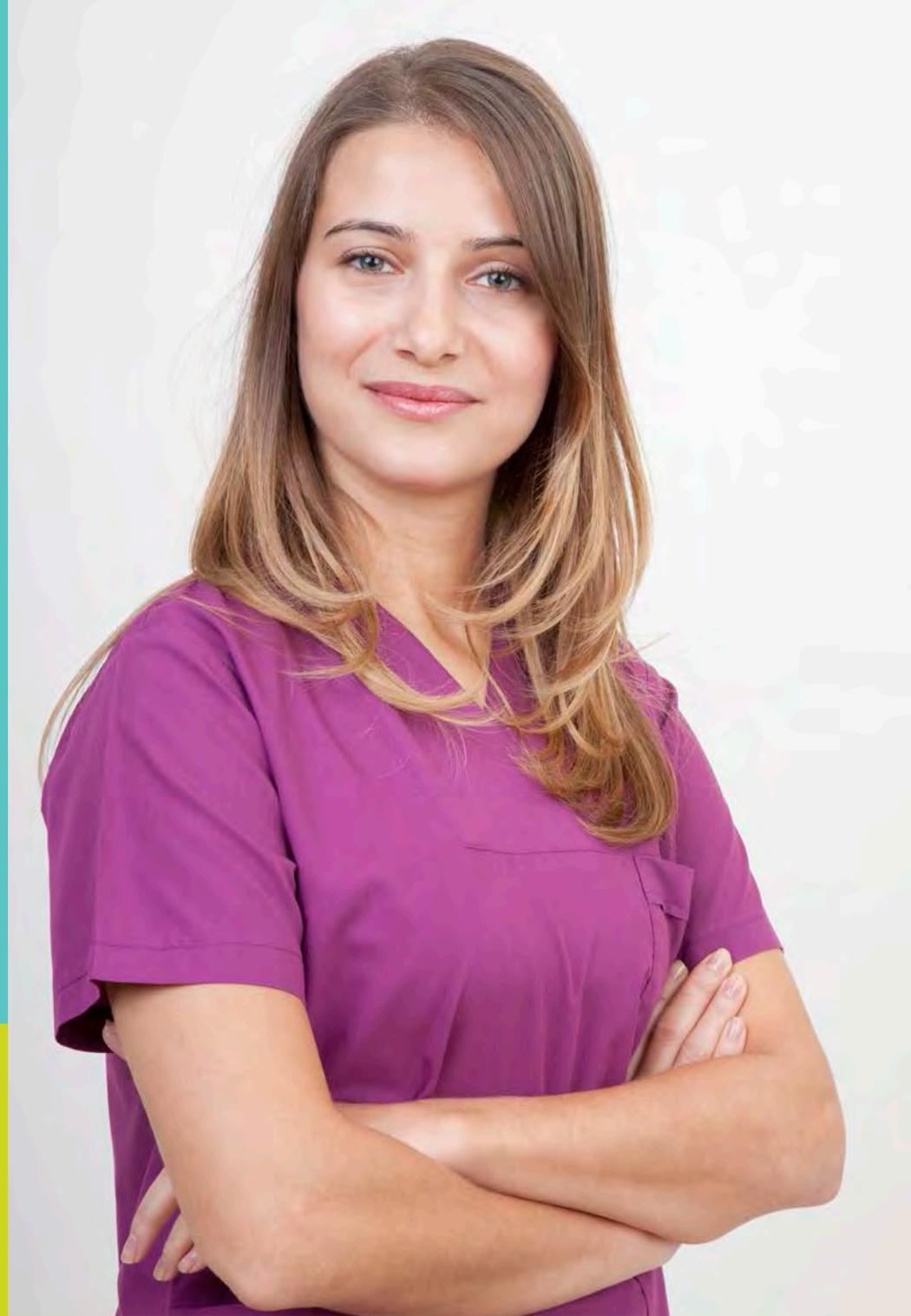
Cost and Scholarships

Fees to complete the seven HHS courses are approximately \$190 per credit hour, a total of about \$1,710. For participating organizations, this program has been designed to be entirely reimbursable through the Minnesota Nursing Facility Employee Scholarship Program, which is administered through the Minnesota Department of Human Services.

Support

HSS was developed through, and has the full support of, Minnesota's largest older adult services association, Aging Services of Minnesota. Lifelong learning opportunities and resources for caregivers are a hallmark of this highly respected organization.

Health Support Specialist was developed in part through an innovation grant from HealthForce Minnesota – a Center of Excellence within the Minnesota State Colleges and Universities System. The Center is a collaborative partnership of educators, healthcare providers and the community, working to increase the number and expand the diversity of healthcare workers; integrate health science education practice and research; and build capacity for both education partners and the provider community to enhance care and services for all Minnesotans.



For further information, visit:

www.healthsupportspecialist.org

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Appendix K

Information Technology Industry Council Meetings

Minnesota PIPELINE Project

Information Technology Council List

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Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Information Technology Industry Council

Meeting I

August 18, 2014

9:30 – 12:30

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner

Department of Labor and Industry

PIPELINE Project Vision & Overview

Senator Terri Bonoff

Dave Kornecki

Minnesota State Senate

**Framing the Project in Information
Technology**

Margaret Anderson Kelliher

Minnesota High Tech Association

BREAK at approximately 10:30

**Occupations and Competencies
Activity**

Cristine Leavitt

Continuous Improvement Consultant

Department of Administration

LUNCH at approximately 11:45

Next Steps & Closing

Cristine Leavitt

Continuous Improvement Consultant

Department of Administration

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

I.T. Industry Council

Meeting 2

October 2, 2014

9:30 – 11:30 (optional lunch at 11:30)

AGENDA

Welcome & Introductions

Jessica Looman

Department of Labor and Industry

Senator Terri Bonoff

Minnesota State Senate

Representative Kim Norton

Minnesota House of Representatives

Dr. Ryan Brovold

Hennepin Technical College

MN PIPELINE Project Status

Heather McGannon

MN PIPELINE Project Manager
Department of Labor and Industry

Overview of Dual-Training System in United States

The Eagle Creek Model: Addressing the IT Talent Supply Gap

Brendan Nolan

Director of Business Development
Eagle Creek Software Services

Selection of I.T. Occupations and Identification of Experts

Dual-Training System in Minnesota Discussion

Next Steps & Closing

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

Information Technology Industry Council

Meeting 3

November 10, 2014

9:00 – 11:00

AGENDA

Welcome & Introductions

Jessica Looman

Assistant Commissioner
Department of Labor and Industry

Senator Terri Bonoff

Minnesota State Senate

Representative Kim Norton

Minnesota House of Representatives

MN PIPELINE Project Status

Heather McGannon

MN PIPELINE Project Manager
Department of Labor and Industry

Update on competency work for
selected IT occupations

Recommendations on
implementing dual-training on 4
selected occupations

Identify MN PIPELINE next steps
and/or projects to support IT dual-
training in Minnesota.

Next Steps & Closing

Appendix L

PIPELINE Project Occupations and Competency Standard Models for Information Technology

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

MN PIPELINE PROJECT
Information Technology Industry Council

List of Selected Information Technology Occupations:

- 1. Security Analyst**
- 2. Web Developer**
- 3. Software Developer**
- 4. Service Desk/Front Line Support or
Computer User Support Specialist**

Minnesota PIPELINE Project

Private Investment, Public Education, Labor & Industry Experience

PIPELINE PROJECT
Information Technology Industry Council

Industry Council Selected Occupations and Descriptions

Below are the 4 occupations and Descriptions the IT Industry Council selected to begin investigating dual-training models and implementation in Minnesota.

Security Analyst

Source: www.infosecinstitute.com

A security analyst is responsible for maintaining the security and integrity of data. The security analyst has to have knowledge of every aspect of information security within the company. Their main job is to analyze the security measures of a company and determine how effective they are. They are responsible for implementing any training required including instructing staff on proper security measures both in the office and online. The security analyst must work with business administrators as well as IT professionals in communicating flaws in security systems. They recommend changes that will improve every aspect of company security. The security analyst is also responsible for creating documentation to help the company in case there are any breaches. They plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. Security Analysts respond to computer security breaches and viruses. Other tasks include:

- Encrypt data transmissions and erect firewalls to conceal confidential information as it is being transmitted and to keep out tainted digital transfers.
- Develop plans to safeguard computer files against accidental or unauthorized modification, destruction, or disclosure and to meet emergency data processing needs.
- Review violations of computer security procedures and discuss procedures with violators to ensure violations are not repeated.
- Monitor use of data files and regulate access to safeguard information in computer files.
- Monitor current reports of computer viruses to determine when to update virus protection systems.
- Modify computer security files to incorporate new software, correct errors, or change individual access status.
- Perform risk assessments and execute tests of data processing system to ensure functioning of data processing activities and security measures.
- Confer with users to discuss issues such as computer data access needs, security violations, and programming changes.
- Train users and promote security awareness to ensure system security and to improve server and network efficiency.
- Coordinate implementation of computer system plan with establishment personnel and outside vendors.

Web Developer

Source: www.infosecinstitute.com

A web developer is a software designer or engineer who is involved in the development and design of web and/or network applications. They work in a variety of organizations of any size, and some work as independent freelancers. This career is a very rewarding one which offers many attractive benefits including job satisfaction, job security and excellent pay and benefits.

Web developers are typically responsible for IT duties involved in web development and programming, as well as coding. Their role is very critical, as they are the driving force behind the success of an application. The creation of a web application usually involves one or more developers.

They design, create, and modify Web sites. Analyze user needs to implement Web site content, graphics, performance, and capacity. Web developers integrate Web sites with other computer applications. Web developers convert written, graphic, audio, and video components to compatible Web formats by using software designed to facilitate the creation of Web and multimedia content.

Other tasks include:

- Design, build, or maintain web sites, using authoring or scripting languages, content creation tools, management tools, and digital media.
- Perform or direct web site updates.
- Write, design, or edit web page content, or direct others producing content.
- Confer with management or development teams to prioritize needs, resolve conflicts, develop content criteria, or choose solutions.
- Back up files from web sites to local directories for instant recovery in case of problems.
- Identify problems uncovered by testing or customer feedback, and correct problems or refer problems to appropriate personnel for correction.
- Evaluate code to ensure that it is valid, is properly structured, meets industry standards and is compatible with browsers, devices, or operating systems.
- Maintain understanding of current web technologies or programming practices through continuing education, reading, or participation in professional conferences, workshops, or groups.
- Analyze user needs to determine technical requirements.
- Develop or validate test routines and schedules to ensure that test cases mimic external interfaces and address all browser and device types.

Software Developers

Source: www.infosecinstitute.com

A software developer is somebody who designs and develops software for computer based systems. They do so by using knowledge of computer science and mathematics. This knowledge is used to create, analyze, test, and improve computer software. The skills and tasks performed by people who work in this field are in constant motion as a result of the fact that computer technology is currently a field where rapid development is taking place. Specialization is often necessary in the job, with new fields of specialization appearing quite rapidly. Software developers may work on various different types of programs such as games, operating systems, business applications, and network software. During the job, they will analyze how software is used, determine what needs need to be met by the software, use flowcharts and diagrams to describe how the software works, and create algorithms for resolving issues. They might transform these algorithms into computer language, but this is typically the work of computer programmers. They develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. Software Developers supervise computer programmers.

Other tasks include:

- Modify existing software to correct errors, allow it to adapt to new hardware, or to improve its performance.
- Develop and direct software system testing and validation procedures, programming, and documentation.
- Confer with systems analysts, engineers, programmers and others to design system and to obtain information on project limitations and capabilities, performance requirements and interfaces.
- Analyze user needs and software requirements to determine feasibility of design within time and cost constraints.
- Design, develop and modify software systems, using scientific analysis and mathematical models to predict and measure outcome and consequences of design.
- Store, retrieve, and manipulate data for analysis of system capabilities and requirements.
- Consult with customers about software system design and maintenance.
- Supervise the work of programmers, technologists and technicians and other engineering and scientific personnel.
- Coordinate software system installation and monitor equipment functioning to ensure specifications are met.
- Obtain and evaluate information on factors such as reporting formats required, costs, and security needs to determine hardware configuration.

Service Desk/Front Line Support or Computer User Support Specialist

Source: www.onetonline.org

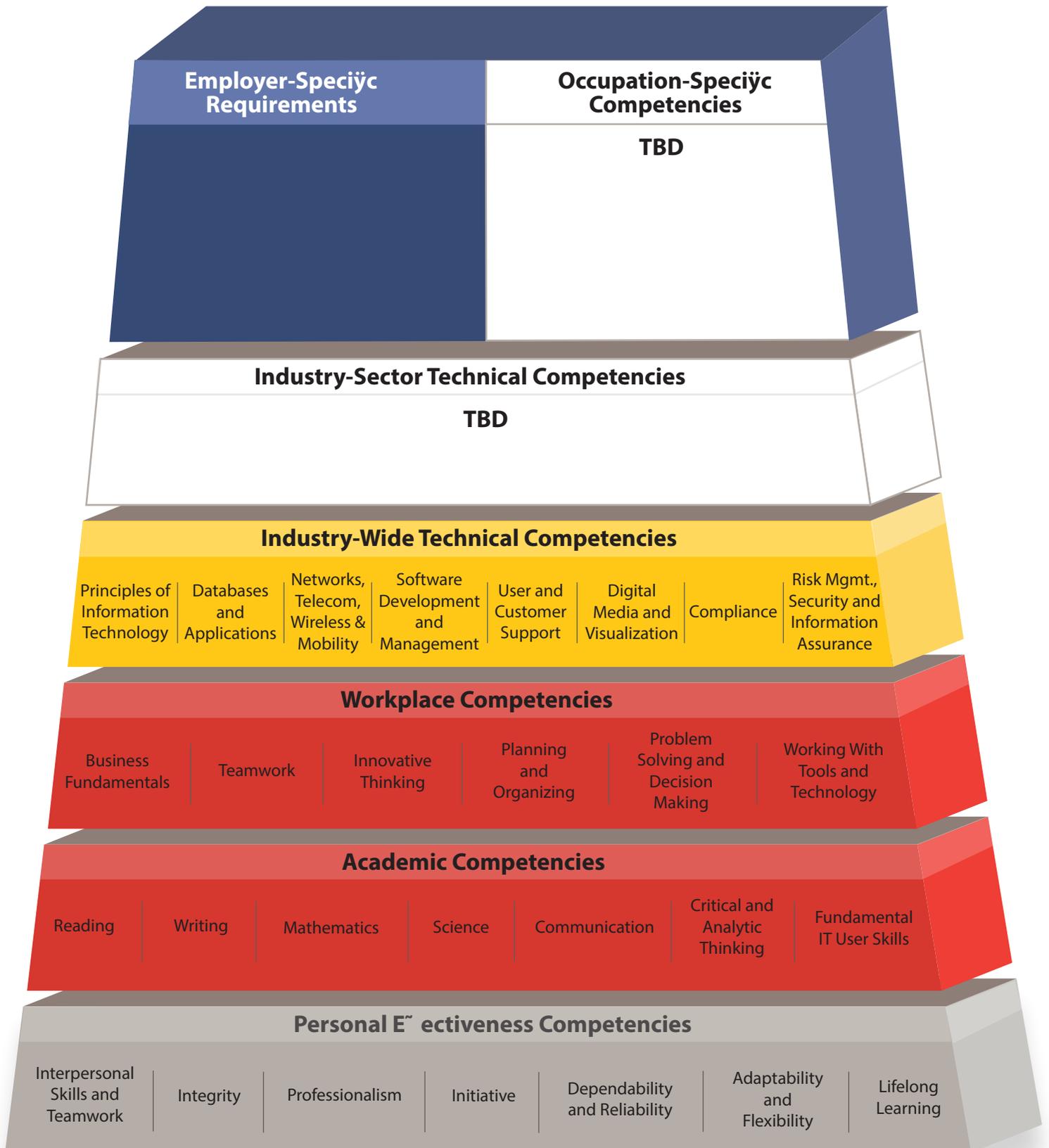
The role of the Service Desk Specialist is to assist customers who are experiencing any procedural or operating difficulty with the use of IT applications, products or services. Complex and/or high priority problems are elevated to specialized support groups for resolution when needed, but the technician is responsible to ensure that an effective solution is provided to the user. Provide technical assistance to computer users. They answer questions or resolve computer problems for clients in person, or via telephone or electronically. Computer Support Specialists provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.

Other tasks include:

- Oversee the daily performance of computer systems.
- Answer user inquiries regarding computer software or hardware operation to resolve problems.
- Enter commands and observe system functioning to verify correct operations and detect errors.
- Set up equipment for employee use, performing or ensuring proper installation of cables, operating systems, or appropriate software.
- Install and perform minor repairs to hardware, software, or peripheral equipment, following design or installation specifications.
- Maintain records of daily data communication transactions, problems and remedial actions taken, or installation activities.
- Read technical manuals, confer with users, or conduct computer diagnostics to investigate and resolve problems or to provide technical assistance and support.
- Refer major hardware or software problems or defective products to vendors or technicians for service.
- Develop training materials and procedures, or train users in the proper use of hardware or software.
- Confer with staff, users, and management to establish requirements for new systems or modifications

PIPELINE Project

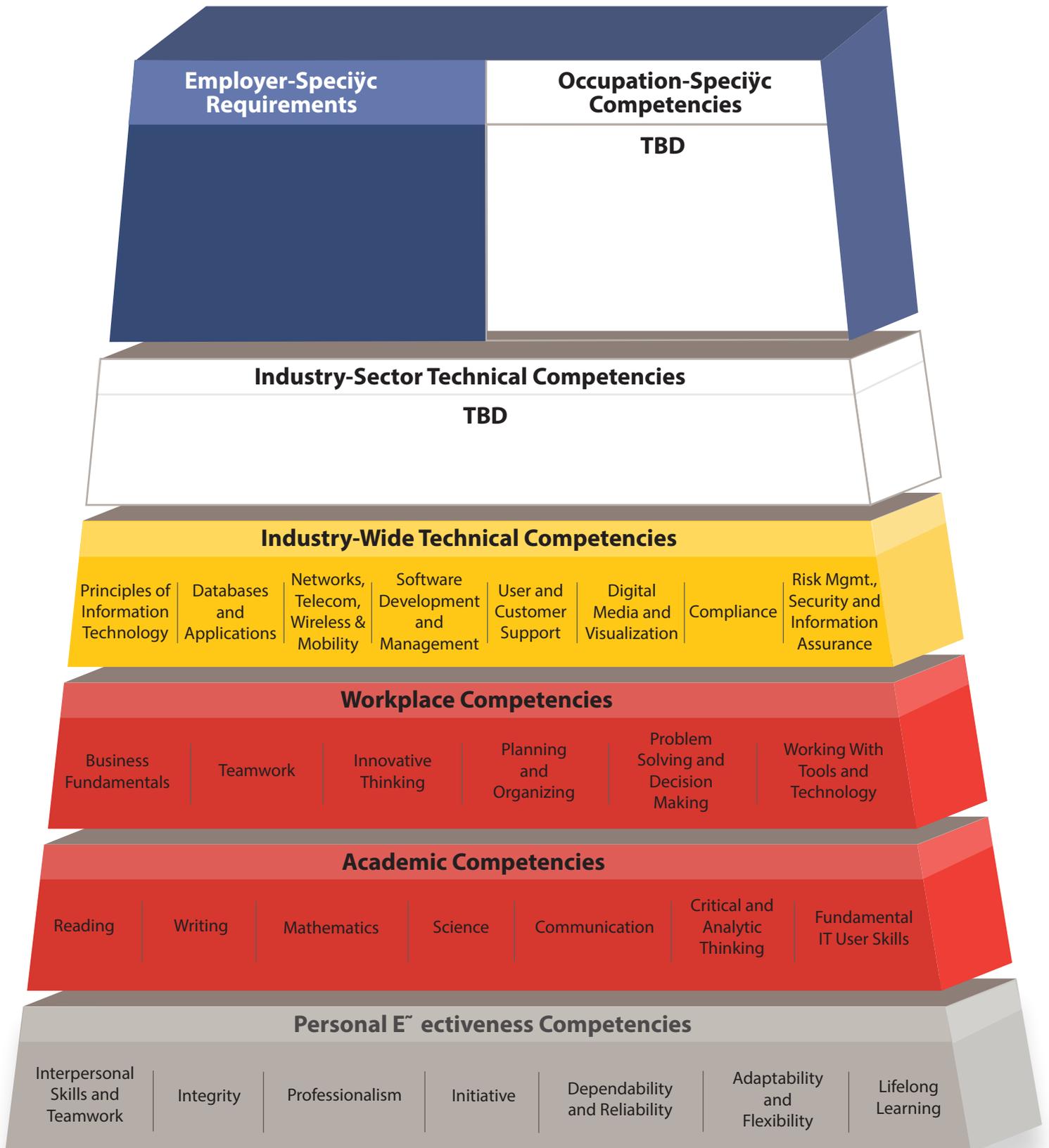
Competency Model for Information Technology - Occupation: Security Analyst -



Based on: Information Technology Competency Model Employment and Training Administration, United States Department of Labor, September 2012.

PIPELINE Project

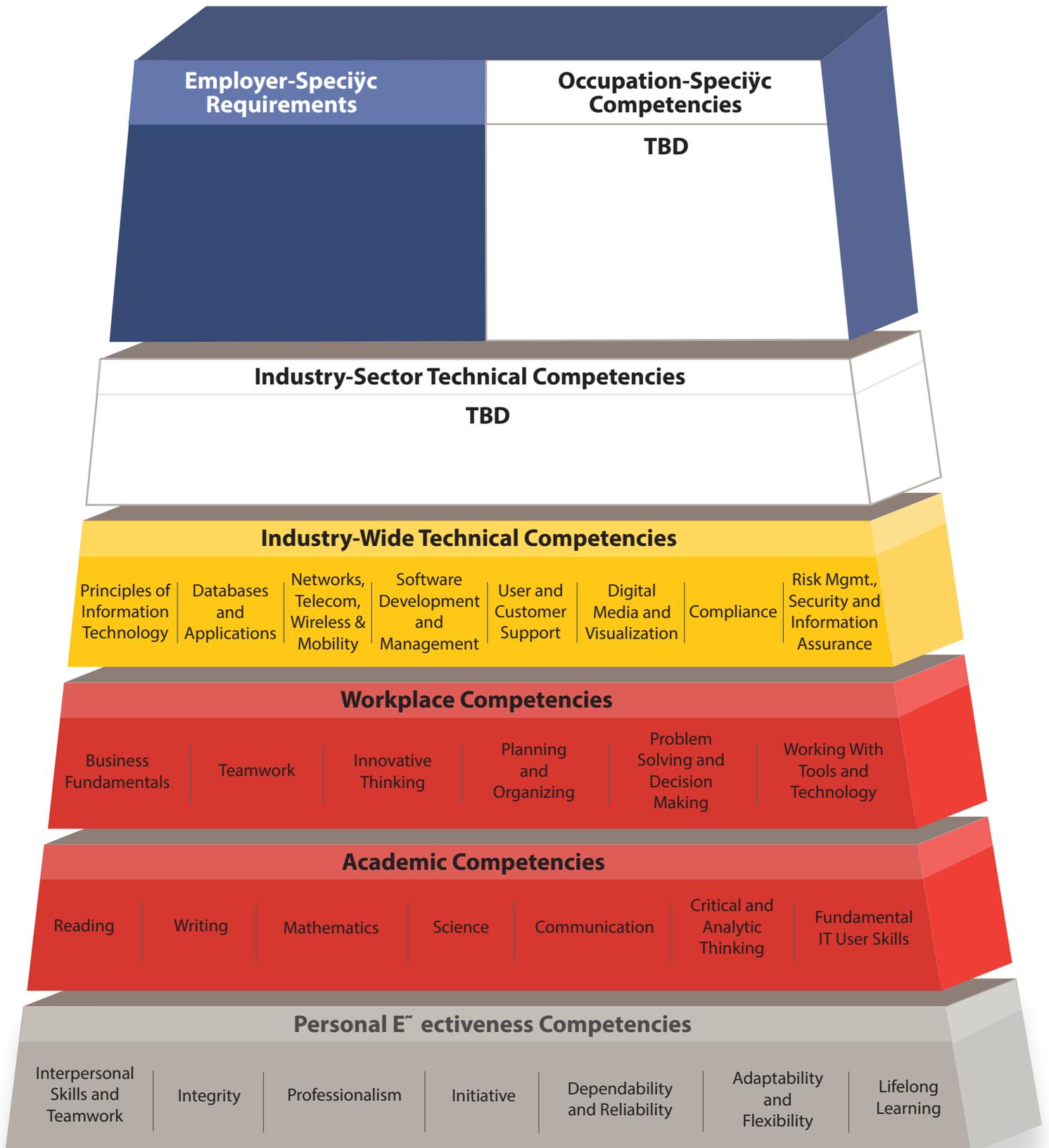
Competency Model for Information Technology - Occupation: Web Developer -



Based on: Information Technology Competency Model Employment and Training Administration, United States Department of Labor, September 2012.

PIPELINE Project

Competency Model for Information Technology - Occupation: Software Developer -

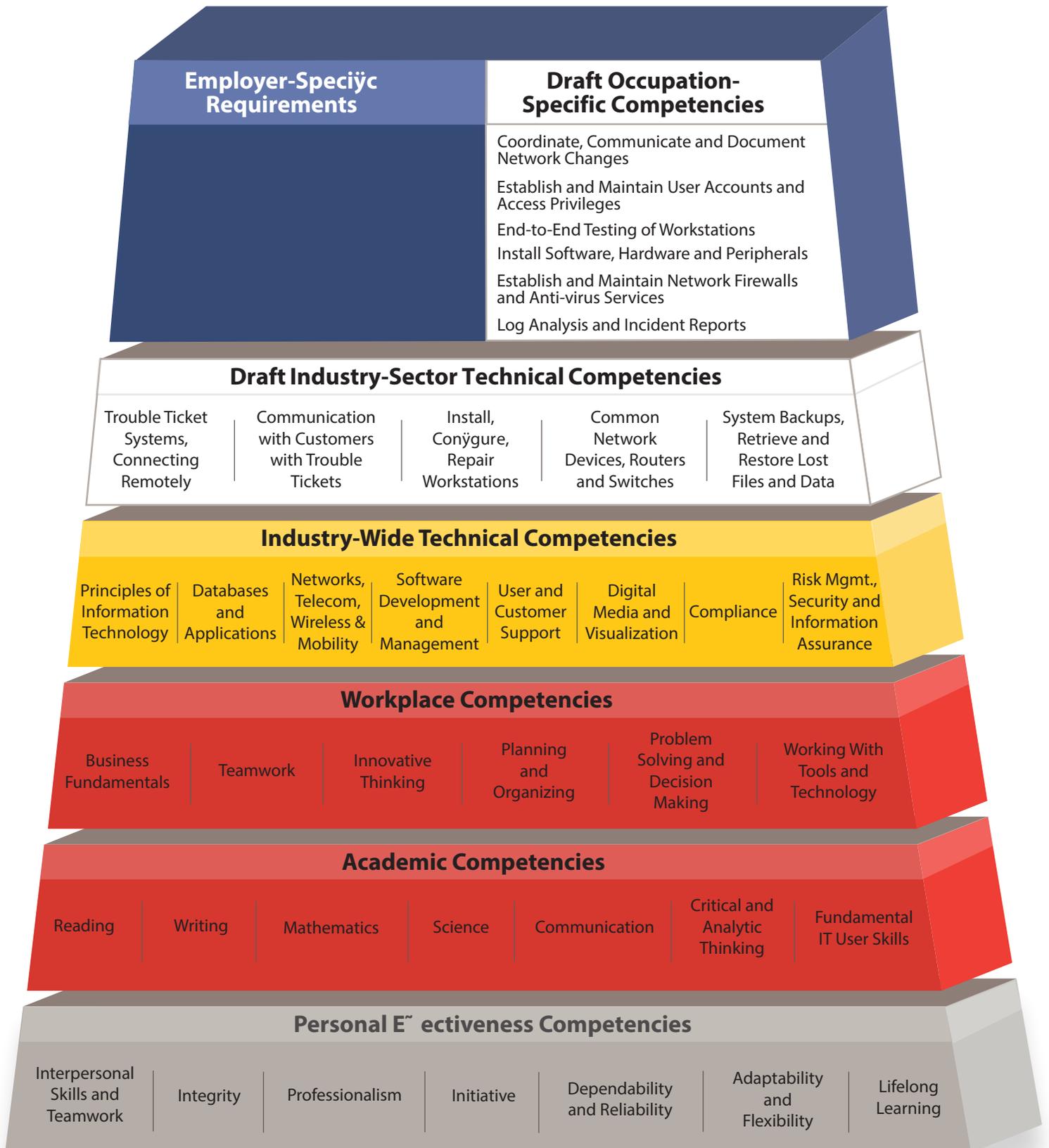


Based on: Information Technology Competency Model Employment and Training Administration, United States Department of Labor, September 2012.

PIPELINE Project

Competency Model for Information Technology

Occupation: Service Desk/Front Line Support or Computer User Support Specialist -



Based on: Information Technology Competency Model Employment and Training Administration, United States Department of Labor, September 2012. -

Appendix M

Training Initiatives Shared at Information Technology Industry Council Meetings



Are you having a difficult time finding skilled app and web development talent?

Introducing a groundbreaking solution designed for you.

Fusion: Employer Engaged Education

Advance IT Minnesota, Minnesota State University, Mankato, and Metropolitan State University have teamed up to create Fusion, an innovative program that will provide corporations, startups and government organizations with skilled application and web development talent.

Fusion pairs employer-endorsed students with partners like you to provide talent-in-training while students are in school, leading to workforce-ready employees upon graduation.

The Fusion program will benefit employers, students, universities and the Minnesota economy by bridging a critical gap between business needs and student learning, with a focus on developing cutting-edge tools and technologies.

Direct benefits of becoming one of the first Fusion employer partners include:

- Employer partners hand-select students from local universities to fill their entry-level tech talent shortage – today as interns, tomorrow as full-time, skilled employees.
- HR functions are administered by the university allowing employer partners to focus on their core competencies.
- Designed jointly by employers and academic leaders, this groundbreaking program will improve the tech talent landscape in Minnesota – and therefore raise your competitive edge in the industry.

You spoke, we listened, and now we need you to participate. Only 60 internship slots are available – contact us to reserve your spot(s) as soon as possible. If you would like to be one of the first companies to build and participate in this groundbreaking program, please contact us:

Bruce Lindberg, Executive Director
Advance IT Minnesota
bruce.lindberg@metrostate.edu
612-659-7228

Jennifer Hauschildt
jenniferhauschildt@me.com
651-270-9353



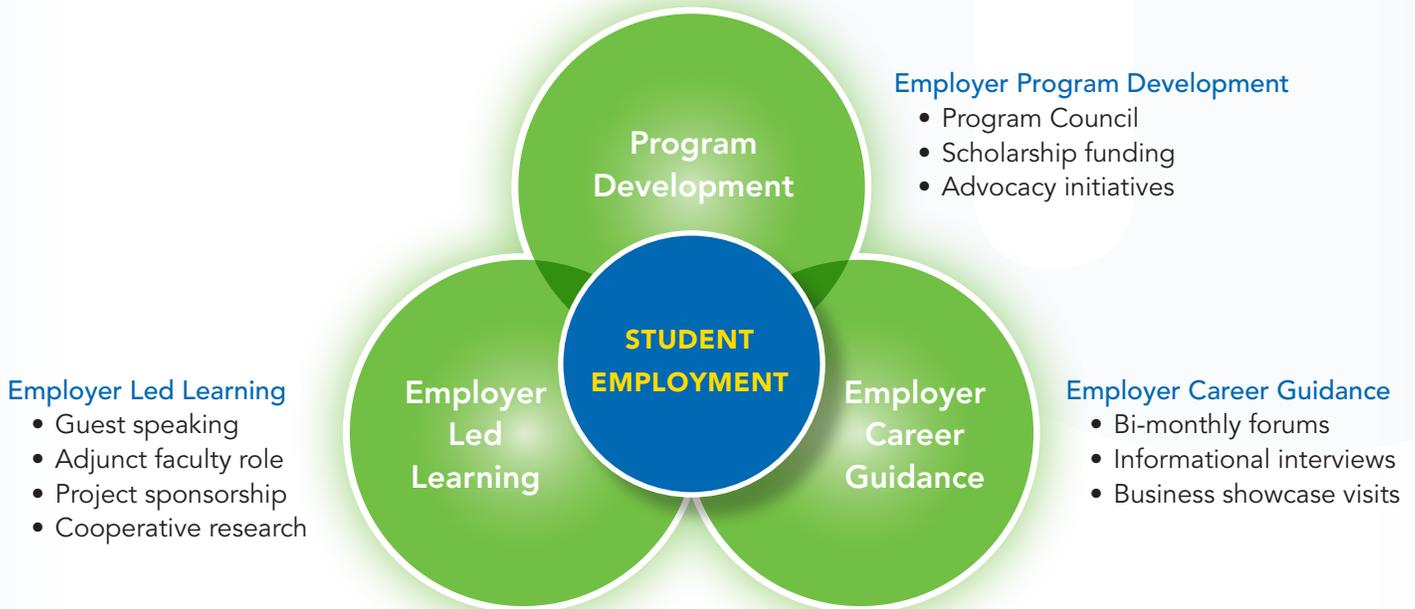
FUSION
EMPLOYER ENGAGED EDUCATION

www.advanceitmn.org/fusion

Fusion Engagement Opportunities

Employer partners are directly involved in shaping Fusion, giving technology companies a voice in preparing their future workforce. From selecting and training students, to weighing in on curriculum, to even having the opportunity to serve as guest speakers and instructors, employers

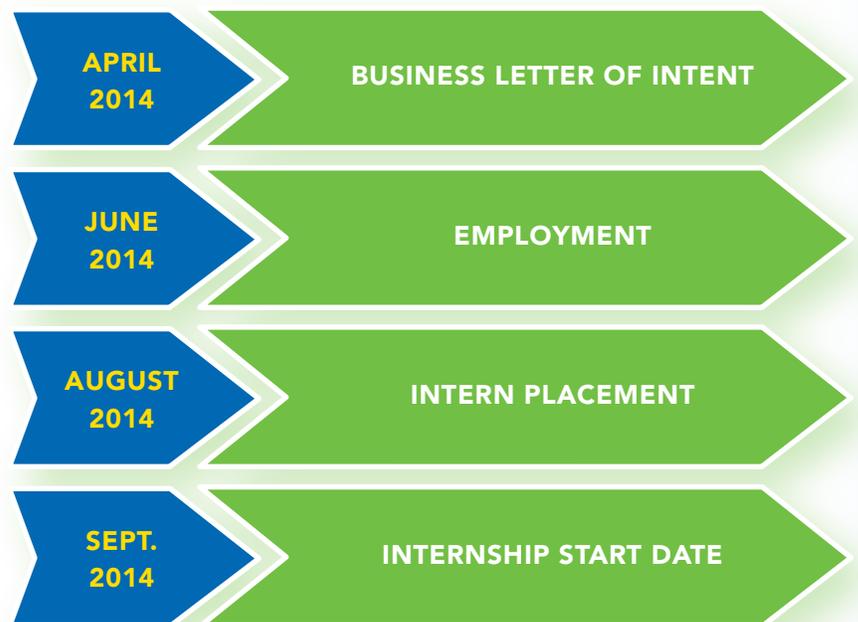
are a vital partner. This innovative approach will ensure that students receive training on relevant skills that match companies' rapidly changing technology needs. While employer engagement is centered on student employment, there are many other opportunities to be involved with the Fusion program as well, including:



Fusion Program Timeline

Join the forward-thinking high-profile employer supporters who helped shape the program to date:

- Blue Earth Interactive
- Diginer
- MOJO Minnesota
- The Nerderly
- Project Skyway
- Yugma





FUSION Application and Web Development Program

A bachelor's degree for students with a passion to work in the creative and dynamic world of app and web development

A proven pathway to rewarding employment

The FUSION program unites relevant, high quality university education with applied experience through an "IT Residency" to provide a dynamic career pathway for individuals who have a passion for the field of application and Web development. Designed for individuals who have earned two-year degrees in related programs or who have completed equivalent university-level course work, the program leads to a bachelor's degree and a proven pathway to full time employment¹. In addition, the program includes an innovative, paid IT Residency, which transforms the last two years of college from added debt to positive cash flow!

Student benefits

Why enroll in the FUSION program?

- The program follows a proven pathway to full time employment in the field;
- The program curriculum is tailored to the real-world competencies of developers and will give you an edge in career progression;
- You will have opportunities to network with employers and entrepreneurs in the rapidly evolving and creative workspace of application and Web development;
- You will earn as you learn; generating positive cash flow while completing your degree.

¹ Based on the nearly universal employment success of over 250 students who have worked in a similar part-time employment situation with Maverick Software Consulting over the past seven years.

Is the FUSION program right for you?

First and foremost, employer partners and program faculty are looking for individuals who are highly motivated and interested in the increasingly creative and dynamic field of application and Web development. If you can answer “yes” to the following questions, FUSION may be for you.

- Have you already developed your own apps and/or websites?
- Have you participated in extracurricular, volunteer work, or projects with others to create technology solutions?
- Did you find your previous programming and web development coursework to be engaging and did you challenge yourself to go beyond minimum expectations?
- Are you seriously interested in pursuing a career in the field?

What you will learn

The FUSION program blends technical competencies with essential workplace skills that are in high demand by employers. The academic program is designed to provide flexibility for students who may have varying levels of prior technical coursework and allows for electives tailored to your work and career interests.

The IT Residency

The IT Residency is an experiential learning component that includes a nontechnical skills preparation seminar and 18-24 months of work experience with one of program’s employer partners. You will work up to 20 hours per week during semesters and up to 40 hours per week during breaks and the summer. All residents start at \$13.50 per hour, and may progress up to \$18 per hour at the discretion of the employer, although increases are not guaranteed. You must meet minimum standards for employment and interview for positions with the companies you find most interesting.

How to learn more

Attend an upcoming student information session (to register email Sharon.hanson@metrostate.edu and indicate which session you’d like to attend).

TIME & DATE

4:30 PM Wednesday, August 27

PLACE

1380 Energy Park Place (EPP), Suite 104
Energy Lane, St Paul (Midway campus)

TIME & DATE

12 noon, Friday, August 29

PLACE

Ecolab, L302 (Library)
700 Maria Ave, St Paul (St Paul campus)

IT Residency and Program Admissions

The FUSION Application and Web Development program consists of two integrated components:

1. An **IT Residency and Preparation** (8 credits) that provides students with between 1200 and 2000 hours of paid experience working with one or more employer partners over three to four semesters of the program and a professional skills preparation seminar;
2. A **two-year upper division academic program** offered at Metropolitan State University

The "FUSION IT Residency" component serves as a cornerstone for employer engagement, the application of skills and knowledge gained in program courses, and overall student career success. Participation in the residency requires endorsement or "pre-screening" from a FUSION employer through an application process managed by Advance IT Minnesota.

Students who do not secure an employer endorsement may still apply for the academic program, but should be aware that the program was designed with concurrent employment in mind, and the probability of seamless post-program employment is significantly diminished without participation in the residency component. You may re-apply for the Residency component after six months if you have addressed employer recommendations to strengthen your candidacy.

How to apply for the FUSION IT Residency

The employer endorsement process embraces the participation of a diverse range of students, and favoring individuals with a passion for the field. At a minimum, applicants must meet the following criteria:

1. Evidence of extra-curricular involvement with application and/or web development, this could be volunteer projects, competitions, paid work, personal projects, etc.
2. A two-year degree in a related field (see below), OR at least 60 credits completed at a university, either of which includes the following courses completed with at least a "B" grade:
 - a. Fundamentals of programming
 - b. Object-oriented programming
 - c. Two semesters of a programming language beyond BASIC
 - d. At least one course related to Web development that includes HTML
3. Commitment to work part-time (20 hours per week maximum) with a designated employer partner, with the option for additional hours during breaks and the summer session. (Note: If you are already employed in a related position, you may use your current position to fulfill the six-credit experiential learning component.)

Applicant Admission Steps

1. Complete the program application and questionnaire
2. Update or create an online profile using one of the suggested tools (see application)
3. Sign a letter of commitment by the designated date in the offer letter.

B.A.S. in Application Development Major: Course Checklist

Degree Program Summary of Credits Needed	Range
Minnesota Transfer Curriculum (GenEd)	34-54
Metro State Upper Division Liberal Studies	8
Program Courses	58-78
Totals	120

Note: Total credits vary based on prior lower-division credits or associate degree composition. There are eight Transfer Curriculum courses (MATH) included in program credit requirements.

Course Color Codes: Foundation course Required Course Program Elective Upper Division Elective

Notes: Filled colors in credit columns indicate courses that fulfill column requirement
 Numbers entered in credit columns indicate required credits for those columns
 A single course may not count in more than one column

Lower or Upper	Metrostate Course Number	Transfer Equivalent Course Number	Name	Foundation courses	Additional Required Courses	Program Electives	Upper Division Electives
Program Credits Needed (minimum of 58)				18	20	8	12
LD	MATH 115		College Algebra (applies to transfer curriculum)	4			
LD	MATH 215		Discrete Math (applies to transfer curriculum)	4			
LD	ICS 140		Programming Fundamentals	3			
LD	ICS 141		Programming with Objects	3			
LD	ICS 311		Database Systems and Programming		4		
LD	ICS 225		Web Design and Implementation	4			
LD	ICS 265		Programming in C				
LD	ICS 266		Programming in C++				
LD	ICS 268		Programming in Visual Basic				
LD	CFS 264		Computer and Operating System Fundamentals II				
LD	CFS 262		Computer and Operating System Fundamentals I				
UD	ICS 349		Internship Preparation		2		
UD	ICS 350I		IT Residency		6		
UD	ICS 362		Computer Organization and Architecture				
UD	ICS 365		Comparative Programming Languages				
UD	ICS 370		Design and Implementation I		4		
UD	ICS 382		Application Security				
UD	ICS 425 or 325		Client/Server Architecture		4		
UD	ICS 462		Operating Systems				
UD	ICS 470		Software Engineering				
UD	Pending		Enterprise Integration Architecture				
UD	ICS 342		Mobile Application Development				
UD	ICS 440		Parallel and Distributed Algorithms				

Employer Endorsement Process

1. Advance IT Minnesota reviews application and questionnaire for minimum qualifications and notifies applicant if his/her application has been submitted to employers.
2. Three employer partners review each application and other evidence artifacts. Based on a structured survey, reviewers will rate applicants on work readiness dimensions and assign an overall recommendation level.
Acceptance is based on cumulative ratings and recommendations from three reviewers. Applicants will receive an anonymous summary of reviewer ratings and comments for career development purposes.
3. Students are notified of decision, and must commit to admission within one-week of notification. If not endorsed, applicants may re-apply after addressing concerns indicated by reviewers.

IT Residency Placement (Hiring Process)

Once endorsed, students become eligible to participate in a Residency Placement Event, which will take place near the beginning of each semester including summer session (three times per year). These events allow both employers and students to participate in multiple interviews at single location over a defined time frame. Students and employers then submit their ranked choices based on the perceived match of career interests, skills and other factors with the available positions. The placement coordinator will then work with employers to maximize the number of compatible placements. If a student is not placed through this process, he or she will be eligible for the next event, and will receive feedback on any potential issues that may have impacted employer hiring decisions. A limited number of alternative positions may be available to provide experience until the next placement event.

Academic Program Admissions

Students should apply to the program through established admission processes at Metropolitan State University. Application to the university may be pursued during or after application to the IT Residency program. Your employer endorsement results will be forwarded to university representatives once completed.

Prime Academy: Software Development

Our Program at a Glance

Prime prepares our students to join the industry as entry-level software engineers through a program centered around a 12 week immersive classroom experience. We'll use modern technologies like HTML / CSS, Javascript, jQuery, AngularJS and Node.js to give you foundational knowledge in software engineering you'll be apply in any technical environment. Your experience with Prime will look like this:

- **Preload**

Students come to Prime from different backgrounds and varying levels of technical experience. Preloading is our way of ensuring everyone shows up to the first day in class ready to speak the same language and successfully learn together. You'll warm up for your classroom experience over 6 weeks, learning online on your schedule and checking in weekly with the instructor who'll lead your cohort when you arrive at school.

- **Boot**

Your first six weeks at Prime is coding bootcamp. As you begin your in-person classroom experience, you'll dive headfirst into fundamental software engineering concepts. You'll learn from instructors, mentors and each other as you apply concepts from lectures in hands-on challenges. The days are long, but the skills you learn in Boot are foundational to your new career.

- **Build**

You learn by doing, that's why the second six weeks of the in-person classroom experience is focused on project work. You'll learn how to be part of a software development team, practicing behaviors and techniques you'll use every day as a working engineer. You'll have the chance to work on projects of your own design as well as helping real world startups build prototypes to prove their concepts.

- **Launch**

After 18 weeks, your classroom experience concludes. Students may seek entry-level positions immediately, but many will apply to positions in Prime's LAUNCH apprenticeship network to get exposure to other technologies first. Developed with employers specifically for our graduates, these apprenticeships provide a way to earn some real world experience and make some money while you're at it.

Learn by Doing

Prime's curriculum is engineered from top to bottom to prepare you for the software engineering workplace through exposure to pragmatic best practices and real world work. Our assignments are abstracted from work done by entry level programmers in our hiring network, and the projects in the second half of the program are tackling the real technology needs of startups in our community. You'll leave the program with a portfolio of work, not just a collection of homework exercises.

Learn Through Apprenticeship

The hardest part of launching a new career is getting your foot in the door. Prime Digital Academy's partnerships with dozens of local tech employers connect you with hiring managers at the industry's best workplaces. Our network of apprenticeship positions, designed specifically with Prime graduates in mind provides three or more months of paid, on the job experience to get your resume started. Placement in these programs must be earned, but we've worked with the network to ensure that you're learning everything you need to know to hit the ground running in your first gig as a software engineer.

What You'll Learn

We're constantly updating our curriculum to respond to the evolution of technology and the feedback from our hiring network. We start with fundamental programming methodologies and design patterns like MVC and object-oriented programming, but we quickly bring theory into practice with a focus on toolsets, authentic workplace context and behavioral skills.

<http://primeacademy.io/>
(952) 222-8108

hello@primeacademy.io

Prime Digital Academy
9401 James Ave S, Suite 152
Bloomington, MN 55431



Eagle Creek is the industry leader in US Onshoring, successfully operating technology centers from North and South Dakota for the last eight years. From CRM, to Java or .NET, to Business Intelligence; superior in capabilities to offshore, more reasonable than on site, while enabling knowledge retention and reliable governance. We are successfully delivering the most sophisticated projects to the world.

Founded in 1999, Eagle Creek Software Services provides consulting & technical expertise to the Enterprise. We focus on CRM, Information Management (BI) and Applications Development, helping our clients to increase quality and efficiencies while managing price and risk in software development, deployment, & support.

We're uniquely positioned by combining on site expertise with our U.S. Onshoring delivery platforms. This model utilizes on shore but offsite, technology center based resources, in a model that we developed in collaboration with the state governments of North & South Dakota. Through this approach, we are able to achieve consistency and sustainability in the provisioning of technical & consulting capabilities to our clients.

With over 15 years in business and over 4,000,000 hours of experience, Eagle Creek has expertise in a multitude of industries. From Hospitality to Manufacturing, we have the know-how to implement, upgrade or maintain your technology stack. But if you're in need of a company with a special understanding, a deep industry expertise, we have that also. For example, Healthcare, Insurance, Financial Services, Communications, Technology, and Life Sciences are just some of the areas we excel in.

We're committed to delivering a technology value proposition that positively impacts our customer and to helping you sustain your front office technology investments. Simply stated, you want the highest quality of services, at the most affordable price, where risk is continuously assessed and mitigated. With all of our years of experience we only know one way to achieve this, and that's through US Onshoring. Nine years ago, when everyone was building offshore facilities, we were investing in onshoring. Today, we are the innovation leader supporting over 40 different technologies, applications and platforms. CRM, Application Development, BI - Salesforce, Oracle, Marketo, Birst, Cognos, Informatica, Java, .Net and Drupal - depth of expertise and breadth of experience.

We're Eagle Creek - the innovative leader in U.S. outsourcing.

<http://www.eaglecrk.com/company/aboutus/>

Eagle Creek Software
Address: 10050 Crosstown Circle #650
Eden Prairie, MN 55344
Phone: (877) 258-5997

INFORMATION TECHNOLOGY CONSULTANT ACADEMY MODEL

*Providing individual skills to meet the workforce needs
of Eagle Creek Software Services.*



**Undergraduate
Certificate**
12 credit hours

Internship

**Interview for
Employment**

Employees of Eagle Creek
may have the opportunity
to pursue a sponsored
Graduate Degree

Master of Business Administration
(Customized IT specialization for Eagle Creek)

Customized Graduate Degree
offered collaboratively by
USD and DSU

FOR MORE INFORMATION

Visit www.usd.edu/cde/it.cfm or contact:

University of South Dakota
Division of Continuing & Distance Education
800-233-7937
605-677-6240
cde@usd.edu

The Information Technology Consultant Academy
is sponsored by:

Eagle Creek Software Services
South Dakota Board of Regents
Governor's Office of Economic Development
National Science Foundation EPSCoR
Vermillion Development Corporation
University of South Dakota

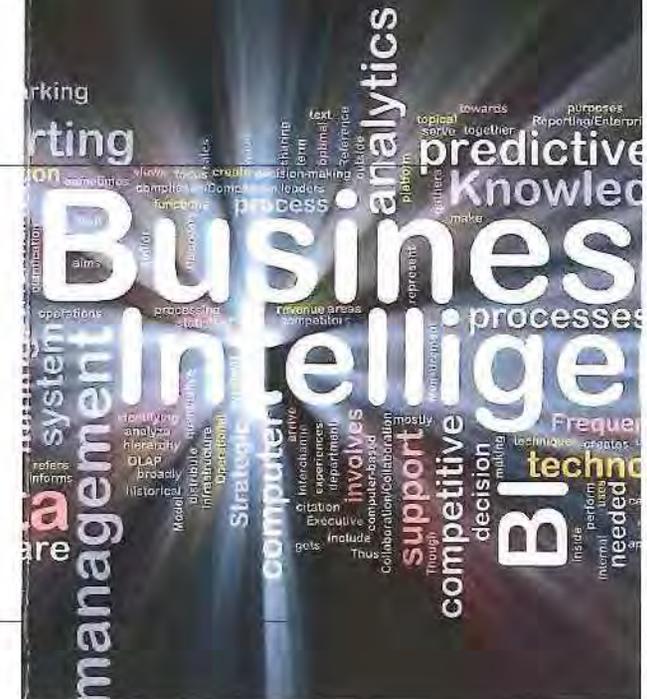


UNIVERSITY OF
SOUTH DAKOTA

414 East Clark Street
Vermillion, SD 57069-2390

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For assistance, call Disability Services at USD at: 605-677-6389
or email disabilityservices@usd.edu. USD/1M/\$.64pc

INFORMATION TECHNOLOGY CONSULTANT ACADEMY



Train and prepare for a career
in Information Technology Consulting
with Eagle Creek Software Services.



UNIVERSITY OF
SOUTH DAKOTA

PROGRAM DESCRIPTION

The University of South Dakota has partnered with Eagle Creek Software Services to develop an innovative learning experience that prepares individuals for the workforce needs of and potential employment with Eagle Creek. Eagle Creek is a consulting company that helps maximize clients software investments to improve efficiencies and quality while managing price and risk.

The Information Technology Consultant Academy uniquely integrates four undergraduate courses with an internship, which will provide participants a unique credential entering an IT-related profession.

ABOUT EAGLE CREEK SOFTWARE SERVICES

Eagle Creek was founded in 1999 and provides consulting and technical expertise to the enterprise, enabling IT professionals to increase quality and efficiency while managing risk and price. Eagle Creek is the largest systems integration company in North America dedicated to Oracle, CRM, BI and Application Development. By use of their revolutionary "Dakota Model," Eagle Creek has successfully served more than 300 Fortune 1500 organizations across 15 industries.

ADMISSION REQUIREMENTS

USD Admission Requirements:

1. Completed Application
2. Statement of Purpose
3. Official high school transcript or GED
4. ACT or SAT scores (not required if applicant is over the age of 24)
5. Official transcripts from all institutions of higher learning

Eagle Creek Admission Requirements:

- Applicants must have a baccalaureate degree or be degree-seeking and within two years of graduating with a baccalaureate degree.
- Resumé
- Completion of CSC 150 or an equivalent course is required. Completion of CSC 250 or an equivalent course or demonstration of competence in the content area is required.
- A minimum cumulative GPA of 2.7 in Computer Science courses and a minimum overall GPA of 2.5.

Apply today at: www.usd.edu/cde/it.cfm

REQUIRED COURSES*

COURSE TITLE	ROTATION
Project Management for Business Consulting (3 cr.)	Every Fall
Software Engineering for IT Consulting (3 cr.)	Every Fall, Every Spring
Database Management Systems (3 cr.)	Every Spring
Advanced Software Engineering for IT Consulting (3 cr.)	Every Fall, Every Spring

*All courses are offered at USD, Vermillion and/or Online

PROGRAM LOGISTICS

Application
Students will make application to the Academy.



Completion of the Undergraduate Certificate Program*
Students will complete the required courses and gain in-depth knowledge and skill in the professional areas of:
Software Engineering for IT Consulting,
Advanced Software Engineering for IT Consulting, Database Management Systems and Project Management for Business Consulting.
**Free tuition for qualifying students.*



Paid Internship**
Students who successfully complete the undergraduate courses are eligible to apply to a paid internship.



Interview for Employment**
Students who successfully complete the internship will qualify for a final interview, which may lead to employment with Eagle Creek.

** Internship and employment depend on performance and credentials; they are not guaranteed.

