ACAP

Austin Competency Analysis Profile

Printing and Desktop Publishing

Conducted

August 24 and 25, 1999

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What's Inside~~

ACAP Process Overview

What are Austin Competency Analysis Profiles (ACAPs)?

Austin Competency Analysis Profiles (ACAPs) are competency lists that are verified by expert workers called Subject Matter Experts or SMEs, that evolve from a well-established job analysis process involving business, industry, labor, and community agency representatives from throughout the Austin area.

How is an Austin Competency Analysis Profile used?

Each ACAP identifies the occupational, academic, and employability skills (or competencies) needed to enter a given occupation or occupational area. The ACAP not only lists the competencies but also clusters those competencies into broader units and details the knowledge, skills, and attitudes (competency builders) needed to perform each competency.

Within the competency list are two levels of items: core and advancing. Core items, which are essential for entry-level employment, are required to be taught. Advancing items are those needed to advance in a given occupation, and are designated by a superscripted "a". If core competencies or competency builders are present in "advancing" unit, then they are designated with a superscripted "c".

Educational institutions may add as many units, competencies, and/or competency builders as desired to reflect local employment needs, trends, and specialties. Local advisory committees are actively involved in the identification and verification of additional items. Faculty members formulate their courses of study using the varied contents of the ACAP. Faculty also monitor gains using many forms of assessment.

Sources for Initial Competency List for Printing and Desktop Publishing

National Printing Skill & Knowledge Standards Project
      Skill Standards for Imaging
      Skill Standards for Finishing and Distribution
      Skill Standards for Press

Workforce Education Course Manual

Dictionary of Occupational Titles

ACAP Session Agenda

August 24 and 25, 1999

Tuesday, August 24

Welcome and Introductions

Identify Job Titles for Target Occupation

Brainstorm: *What do people need to know and be able to do as an entry-ready employee in this occupation?*

Process Overview:
      Purpose~Why are we here?
      Review definitions
      Identify outcomes

Verify Units

~Lunch Break~

Verify Competencies

Verify Competency Builders

Wednesday, August 25

Continue Verifying Competency Builders

Determine Core and Advancing Units, Competencies, and Competency Builders

~Lunch Break~

Develop Work Keys Occupational Profile

Review and Wrap Up

Target Job Titles

Systems operator	Page Imposition Specialist
Conventional Stripper	Application Specialist
Plate Maker	Proofer
Pre-flight Specialist	Press Operator
Pre-press Technician	Systems technician
Typesetter	Proof reader
Designer	Cutter Operator
Folder Operator	Sticher Operator
Perfect Binder Operator	Docutech Operator
Digital Press Operator	

ACAP: Printing and Desktop Publishing

Occupational Competencies

UNITS

Unit 1: Production Management

Unit 2: Digital Asset Management

Unit 3: Preflight

Unit 4: Image Acquisition

Unit 5: Assembly

Unit 6: Output

Unit 7: Printing Safety

Unit 8: Paper Transfer System

Unit 9: Basic Press Operations

Unit 10: Ink and Inking

Unit 11: Preventive Maintenance

Unit 12: Quality Control

Unit 13: Binding Operations

Unit 14: Specialty Operations

Unit 15: Mailing and Distribution Operations

Unit 1   Production Management

Competency 1.1   Establish and maintain a positive relationship with the client

Competency Builders:

1.1.1   Build and maintain rapport with client through direct communication via e-mail, phone, and fax
1.1.2   Identify opportunities to provide additional services to client

Competency 1.2   Match customer needs and expectations with production process requirement

Competency Builders:

1.2.1   Clarify job requirements with client and compare with quote/estimate
1.2.2   Create a job ticket/docket
1.2.3   Serve as liaison between client and technical staff
1.2.4   Use client job specifications and job parameters to define appropriate production procedures and processes (A)
1.2.5   Apply company services, equipment capabilities, limitations, and workflow (A)
1.2.6   Evaluate project and provide feedback to client (A)
1.2.7   Distinguish preliminary proof and contract proof
1.2.8   Ensure that client has reviewed and approved all proofs at appropriate stages in the production process
1.2.9   Document and compile job information (e. g., work orders, quotes, job tickets)
1.2.10   State the duties of a printing estimator
1.2.11 Outline current estimating procedures used by the printing industry (A)
1.2.12 Estimate price proposals (A)
1.2.13 Examine printing trade customs
1.2.14 Examine factors that influence production schedule

Competency 1.3   Manage project budget and timeline (A)

Competency Builders:

1.3.1   Monitor and document client-requested changes and communicate the impact on budget and timeline to the client
1.3.2   Advise the client on alternative production techniques
1.3.3   Develop and use budget hourly cost rates and production standards

Competency 1.4   Plan and coordinate production (A)

Competency Builders:

1.4.1. Plan project schedule from approved job
        specifications
1.4.2   Identify and schedule resources to meet job specifications (A)
1.4.3   Log job into system and assign both internal and external due dates
1.4.4   Communicate, evaluate, and monitor project schedule with technical production
        staff (A)
1.4.5   Perform post-job accounting

Competency 1.5   Monitor production quality

Competency Builders:

1.5.1   Identify acceptable quality for client's work
1.5.2   Interpret plant's standards for acceptable quality
1.5.3   Establish production quality control points (A)
1.5.4   Determine stages of production where clients approval is required
1.5.5   Communicate quality standards and expectations to both technical production
        staff and clients (A)
1.5.6   Examine quality management techniques

Unit 2   Digital Asset Management

Competency 2.1   Back up client files(A)

Competency Builders:

2.1.1   Copy appropriate files to disks, servers, etc.
2.1.2   Back up and document all client-supplied files on in-house
        system

Competency 2.2   Archive client files

Competency Builders:

2.2.1   Verify file integrity
2.2.2   Archive and document completed files as necessary (e. g., completed
        analog/digital materials)
2.2.3   Determine materials necessary to return to client
2.2.4   Purge system

2.2.5   Manage and index files using appropriate naming conventions
2.2.6   Complete appropriate documentation
2.2.7   Maintain a library of current information

Competency 2.3   **Retrieve archived files**

Competency Builders:

2.3.1   Verify copyright permission for repurposing
2.3.2   Compare file transfer protocols in regards to image versions

Unit 3   Preflight

Competency 3.1   **Preview materials for imaging**

Competency Builders:

3.1.1   Scan files for viruses.
3.1.2   Open an electronic file and check for linkages (scans, fonts etc.)
3.1.3   Receive and view disk files and hard copy from client and ensure that files match
        client inventory
3.1.4   Receive and review analog components of the job.
3.1.5   Interrogate all client disk files for software and hardware compatibility
3.1.6   Document incoming and outgoing media/materials
3.1.7   Identify required job components (e.g., fonts, graphics, images, transparencies,
        hard mechanicals, and film)
3.1.8   Explain the concepts and concerns associated with image resolution and file size
3.1.9   Open an electronic file and check for linkages(scans, fonts etc.)

Competency 3.2   **Communicate files errors**

Competency Builders:

3.2.1   Communicate with client if there are problems with files or with conversion
3.2.2   Document any file errors resolution issues, and missing components
3.2.3   Manage files according to acceptable standards

Unit 4   **Image Acquisition**

Competency 4.1   **Set up scanning equipment**

Competency Builders:

4.1.1   Evaluate original to determine appropriate scanner settings
4.1.2   Understand key variables to be adjusted (e.g., percentage of enlargement/reduction, input resolution)

Competency 4.2   **Operate scanning equipment**

Competency Builders:

4.2.1   Crop, adjust, and/or mount images as required
4.2.2   Scan originals, such as film, camera ready, photos, and art
4.2.3   Evaluate resultant images and make necessary adjustments
4.2.4   Complete archival documentation

Competency 4.3   **Calibrate and maintain scanning equipment**

Competency Builders:

4.3.1   Follow manufacturer's instructions for cleaning/maintenance or equipment
4.3.2   Establish and maintain process control and calibration

Competency 4.4   **Modify images to conform to layout design**

Competency Builders:

4.4.1   Set appropriate size and resolution of digital images
4.4.2   Produce digital color separations
4.4.3   Perform digital color correction and color retouching
4.4.4   Convert file formats
4.4.5   Originate and manipulate images to meet client specifications

Competency 4.5   **Use color theory**

Competency Builders:

4.5.1   Differentiate color gamuts
4.5.2   Differentiate between additive and subtractive color
4.5.3   Relate screen angles to color
4.5.4   Use basic halftone theory in production of images

Unit 5   Assembly

Competency 5.1   Build document

Competency Builders:

5.1.1   Review all instructions, related material, and other elements to be incorporated into the document
5.1.2   Identify files and formats
5.1.3   Use appropriate peripheral software (e. g., font managing, translation, compression)
5.1.4   Maintain/retrieve backup files of all electronic and proof documents
5.1.5   Import data into page layout and/or graphics software
5.1.6   Format and place copy on each page of the document applying design principles
5.1.7   Scale and place photographs, illustrations, and other graphic images on pages of document
5.1.8   Prepare preliminary proofs to meet client specifications
5.1.9   Apply design principles to document

Competency 5.2   Prepare files for imaging

Competency Builders:

5.2.1   Add crop marks or assign templates.
5.2.2   Set up overlaying methods
5.2.3   Review file and edit colors according to production requirements (e. g., touch plates, varnishes, fifth and sixth colors)
5.2.4   Provide all final electronic files and required components to output group

Competency 5.3   Troubleshoot document problems

Competency Builders:

5.3.1   Diagnose and communicate problems having to do with text, graphics, and images
5.3.2   Resolve, communicate and document problems having to do with text, graphics, and images

Unit 6   Output

Competency 6.1   **Trap files**

Competency Builders:

6.1.1   Determine which elements to trap
6.1.2   Review and determine trap settings to meet press requirements before film is output
6.1.3   Trap digital files within appropriate software applications
6.1.4   Complete appropriate documentation

Competency 6.2   **Impose pages or job components**

Competency Builders:

6.2.1   Review layout and job requirements including special circumstances (e. g., shingling, bottling, binding method, cross-overs)
6.2.2   Interpret job specifications and select appropriate imposition technique
6.2.3   Prepare pages or components to final imaging size
6.2.4   Impose digital files using appropriate software applications according to layout and job requirements

Competency 6.3   **Create proofs**

Competency Builders:

6.3.1   Create a visual representation of the job to meet client specifications
6.3.2   Create digital and/or analog proofs
6.3.3   Check proof compared to client specifications and company quality standards
6.3.4   Prepare final proofs for both single color and multiple color printing

Competency 6.4   **Assemble images**

Competency Builders:

6.4.1   Review all layout instructions, related material and other elements to be incorporated into the final product
6.4.2   Gather analog elements and prepare film for plates
6.4.3   Combine and register film and images onto a flat
6.4.4   Assemble negatives in final form in preparation for exposing plates

Competency 6.5   **Construct images**

Competency Builders:

6.5.1 Review all layout instructions, related material and other elements to be incorporated into the final product
6.5.2 Create spreads and chokes
6.5.3 Create reverses, lines and tone combinations, and mechanical color breaks
6.5.4 Prepare flat for contacting
6.5.5 Produce composite films

Competency 6.6   **Operate output devices**

Competency Builders:

6.6.1 Follow manufacturer's operating procedures
6.6.2 Address PostScript errors
6.6.3 Download fonts and files
6.6.4 Set up and monitor appropriate output devices(s)
6.6.5 Process output materials according to production specifications

Competency 6.7   **Expose, process, and store plates**

Competency Builders:

6.7.1 Review all instructions, safety procedures, related material, and other elements to be incorporated into the plate
6.7.2 Review production specifications for plate selection
6.7.3 Calibrate plate making devices
6.7.4 Operate plate making devices safely
6.7.5 Inspect plates for quality according to company standards
6.7.6 Follow correct procedure for handling plates
6.7.7 Inspect plate image against proof.
6.7.8 Complete appropriate documentation

Competency 6.8   **Resolve output problems (A)**

Competency Builders:

6.8.1 Diagnose and address PostScript errors
6.8.2 Diagnose and correct network errors
6.8.3 Diagnose and address system and software errors
6.8.4 Diagnose and address file errors
6.8.5 Diagnose Raster Image Processor messages

Unit 7   Printing Safety

Competency 7.1   **Adhere to regulations**

Competency Builders:

7.1.1   Comply with Hazardous Materials Information Sheets (HMIS) material safety
data sheets and OSHA regulations
7.1.2   Interpret and comply with all MSDS regulations regarding hazardous materials

Competency 7.2   **Operate the press safely**

Competency Builders:

7.2.1   Set and inspect machine safety devices
7.2.2   Use safe operating procedures for presses and press auxiliary equipment
        (e.g., infrared, UV lamps)
7.2.3   Use appropriate safety practices to remove paper jam-ups
7.2.4   Guard appropriate areas of the press
7.2.5   Locate and activate all emergency stops on press in order to stop machine at
        various points during press operation
7.2.6   Recognize conditions under which static electricity is a fire danger
7.2.7   Perform setup and shutdown procedures of add-on control devices
7.2.8   Monitor add-on control devices for proper functioning

Competency 7.3   **Maintain a safe environment**

Competency Builders:

7.3.1   Minimize workplace causes of environmental burdening, pollutants, and
        poisoning (e.g., solvents, ink, fumes, spills)
7.3.2   Maintain a clean work area by removing waste, keeping aisles and walkways
        clear, cleaning tools, and preventing spills in order to avoid slippage, prevent fire,
        and improve efficiency
7.3.3   Consider all pollution solution limits imposed by permits and regulations and
        comply with those guidelines in handling and disposal of all solutions
        (e.g., fountain solution chemicals, inks, wash-up solutions)

Competency 7.4   **Maintain personal safety**

Competency Builders:

7.4.1   Adhere to personal safety rules as defined by employer
7.4.2   Avoid behaviors that have the potential of leading to accidents
7.4.3   Perform the steps to be taken in case of injury (first aid, CPR, etc.)

7.4.4 Read and understand safety bulletins and posters
7.4.5 Communicate safety issues by reporting problems and defective safety devices
7.4.6 Follow plant procedures for fire protection

Competency 7.5   **Handle materials safely**

Competency Builders:

7.5.1 Use approved procedures to secure, store, and dispose of flammable chemicals in appropriate locations to prevent accidents, illnesses, burns, fires, and pollution
7.5.2 Minimize risk of chemical exposure and the dangers arising from mixing solutions with appropriate apparel (e.g., wearing eye goggles, gloves, appropriate protective clothing)
7.5.3 Utilize safe lifting techniques

Competency 7.6   **Perform lockout/tagout procedures**

Competency Builders:

7.6.1 Adheres to the company's energy control program
7.6.2 Identify what activities require lockout/tagout and when the inch-safe-service method is sufficient
7.6.3 Identify the setup and minor servicing exceptions to the lockout/tagout procedures
7.6.4 Perform lockout/tagout procedures according to OSHA standards and understand when they are to be used

Unit 8   Paper Transfer System

Competency 8.1   **Operate the feeder system**

Competency Builders:

8.1.1 Review all instructions, related material, and other elements to be incorporated into the document
8.1.2 Set the feeder for effective operation
8.1.3 Load sheets onto feeder while making sure the pile is square

Competency 8.2 **Operate the infeed register system**

Competency Builders:

8.2.1 Apply the operating principles of the basic parts of the infeed system including: direct, swing-arm, rotary-drum, overfeed, and roll-to-sheet systems
8.2.2 Set and/or adjust the following parts for a pressrun including: Front guides, side guides, sheet detectors, wheels and tapes, sheet/hold-downs (e.g., vacuum, metal tabs), insertion device, front gates, fans and slowdowns

Competency 8.3 **Operate the transfer system**

Competency Builders:

8.3.1 Use the principal methods of sheet transfer according to the characteristics of each such as: chain transfer, single-drum transfer, three-drum transfer, perfecting transfer, air-cushion drum to reduce marking, loose-fitting, ink-repellent cloth net to reduce marking, beaded blanket
8.3.2 Set up and operate the paper transport systems
8.3.3 Operate sheet transport control devices in a way that ensures smooth and stable feeding and registration of the substrate
8.3.4 Identify and maintain of mechanical and electronic sheet detectors
8.3.5 Check proper stock travel by running sheets through the press in order to confirm that the feeder and delivery systems are properly set up

Competency 8.4 **Select and handle feeder substrates**

Competency Builders:

8.4.1 Select between various types of paper stock and other substrates in order to meet job ticket specifications
8.4.2 Identify the effects of temperature and humidity on substrates and the necessary environmental conditions for storage
8.4.3 Follow the procedures for proper handling and preparation prior to and after printing
8.4.4 Identify paper and other substrate characteristics and conditions that affect the quality of the print job (e.g., moisture content, internal strength, printability, surface strength, absorbency, grain direction)
8.4.5 Recognize paper problems and apply appropriate remedies for each (e.g., piling, linting, picking, blistering, delaminate, bagginess)

Competency 8.5   **Operate the delivery system**

Competency Builders:

8.5.1   Identify delivery devices common to delivery systems and their functions
8.5.2   Identify the characteristics of both the chute and chain delivery systems
8.5.3   Diagnose and correct common problems associated with the sheetfed delivery system (e.g., increased anti-setoff spray, ink setoff and blocking, static electricity, sheets which fail to jog neatly)
8.5.4   Make adjustments to the anti-setoff spray powder during pressrun

Unit 9   Basic Press Operations

Competency 9.1   **Prepare and operate the dampening (or waterless) system**

Competency Builders:

9.1.1   Identify the function, operation, and basic parts of a conventional dampening system
9.1.2   State the advantages and disadvantages associated with the conventional dampening system as compared to continuous flow and waterless systems
9.1.3   Identify the parts of the continuous flow system and each part's function in the system
9.1.4   Identify types of dampening covers, their properties, and principal functions (e.g., molleton, cloth, and paper covers, and bareback)
9.1.5   State the characteristics and composition of dampening solutions
9.1.6   Identify the purpose and characteristics of additives in dampening solutions
9.1.7   Select appropriate dampening solution for different applications
9.1.8   Measure pH, using the pH scale.
9.1.9   Explain how pH maintains optimum strength in fountain solutions
9.1.10 Identify the effects of conductivity on the component for the dampening system
9.1.11 State the difference between using tap water and purified water when mixing dampening solutions
9.1.12 Recognize the effects of substrates on dampening solutions
9.1.13 Prepare the conventional dampening system by mounting roller sleeve, testing pH-conductivity, and adding dampening solutions
9.1.14 Select, measure, and appropriately mix additives in dampening solution
9.1.15 Apply appropriate procedures for setting dampening rollers
9.1.16 Use clean dampening rollers and prevent contaminating dampening rollers
9.1.17 Use the dampening sleeve
9.1.18 Analyze and resolve problems related to the adjustment of dampening systems

Competency 9.2   **Perform make-ready**

Competency Builders:

9.2.1   Check customer requirements
9.2.2   Check paper, ink, proof, and proof against plate
9.2.3   Set sheet-handling and register mechanisms
9.2.4   Set feeder and delivery detection devices
9.2.5   Mount and pack the plates
9.2.6   Check, prepare, and pack new and existing blankets
9.2.7   Check and prepare dampening and inking systems
9.2.8   Prepare press make-ready set-ups
9.2.9   Make necessary adjustments to register image position
9.2.10 Check and reset register
9.2.11 Adjust/set color to customer specifications
9.2.12 Adjust impression pressure
9.2.13 Rule out a sheet
9.2.14 Appropriately sequence the order of inks
9.2.15 State the purpose and function of automatic registering systems with single and multiple register marks and/or scanning heads (A)
9.2.16 Schedule a productive make-ready plan which shortens downtime (A)
9.2.17 Store tools and materials appropriately and retrieve them in a timely manner for the make-ready operations
9.2.18 Operate the press computer console (A)
9.2.19 Diagnose and correct the sources of make-ready problems within various press components (e.g., plates, side guides, blankets)
9.2.20 Operate the three basic quality control devices for the make-ready system and understand their primary functions including: process control devices, diagnostic control devices, and standardization control devices

Competency 9.3   **Prepare the ink and inking system**

Competency Builders:

9.3.1   Match a sample with a color book as appropriate
9.3.2   Establish proper ink sequence for a job based on the type of stock and coverage required in order to allow for proper drying, eliminate waste, prevent marking, and take advantage of stock characteristics
9.3.3   Recognize alternative color sequences on final product
9.3.4   Identify the principles, uses, and characteristics of ink pigments
9.3.5   Identify and select types of ink and varnishes according to job ticket specifications and the characteristics of a given substrate (e. g., coated or un-coated)
9.3.6   Mix printing inks and adjust to match specifications of the job ticket (e.g., fade resistant, food safe, coated/uncoated plastics)

9.3.7   Prepare inking system by installing rollers, setting roller pressures, and mounting and adjusting ductor and form rollers

9.3.8   Consider important conditions when estimating ink quantity (e.g., surface characteristics of substrate, viscosity of ink film, area to be covered and proportion that is ink, number of sheets to be produced)

9.3.9   Calculate ink consumption

9.3.10 Maintain appropriate ink level in ink fountain

Competency 9.4   **Prepare plates**

Competency Builders:

9.4.1   Carry out appropriate procedures for mounting a litho plate (e.g., bend plate, check, and adjust plate positions)

9.4.2   Identify conditions relating to plate mounting which affect image position and register

9.4.3   Use specific tools to adjust proper plate pressure (e.g., micrometer, packing gauges)

9.4.4   Make appropriate initial and subsequent plate adjustments including: tension, lateral position, circumferential position, tangential position

9.4.5   Increase or decrease length of print

9.4.6   Select and use appropriate plate-securing clamps

9.4.7   Troubleshoot common plate problems including: blinding, tinting, scumming, out-of-contact spots, plate cracking, plate frame registration, plate wear and plate exposure

9.4.8   Select and apply desensitizers to the plates

9.4.9   Gum a plate

Competency 9.5   **Prepare the blanket for printing**

Competency Builders:

9.5.1   Select appropriate blankets for the print job based on the characteristics of the blanket

9.5.2   Change, mount, and pack offset litho blankets

9.5.3   Adjust blanket pressure and packing as needed

9.5.4   Adjust tension to solve problems associated with over and under tensioned blankets

9.5.5   Diagnose and correct faults which may arise from incorrectly fitted blankets and packings

9.5.6   Maintain a blanket over time so as to minimize damage

Competency 9.6   **Prepare cylinders for printing**

Competency Builders:

9.6.1   Check for cylinder alignment and make appropriate adjustments
9.6.2   Recognize condition affecting impression squeeze, including the relationship between the bearer pressure and packing height
9.6.3   Monitor the impression squeeze and use a packing gauge
9.6.4   Identify conditions which influence print length (e.g., temperature, paper distortion, moisture, curvature of plates)

Competency 9.7   **Set the drying system**

Competency Builders:

9.7.1   Differentiate between drying properties and other characteristics associated with specific inks (e.g., quickset, heatset, non-heatset, ultraviolet, electron beam, laser, fluorescent, fade resistant, and hard-dry)
9.7.2   Compare web press ink drying systems and their properties affecting drying speed
9.7.3   Identify dryer characteristics and advantages and dis-advantages of each type
9.7.4   Analyze and diagnose common problems associated with individual components of the drying system in order to prevent and/or apply the appropriate remedy, including: dryer and chill roll problems, wet ink, uneven ink drying, setoff, hue change, reduced gloss, blistering, fluting
9.7.5   Identify the variables which affect drying temperature and their impact (e.g., speed of press, weight of the web, amount of ink, stability of the ink, temperature of dryer, length of dryer, flash point of ink, conductivity of fountain solutions)
9.7.6   State the purpose of chill rolls

Competency 9.8   **Operate the press**

Competency Builders:

9.8.1   Operate single-color and multi-color presses
9.8.2   Set ink and water fountains according to their effects on print and color density needs
9.8.3   Measure pH conductivity with an appropriate method
9.8.4   Identify parts of the printing system (e.g., blanket, plate, impression cylinder)
9.8.5   Install adjust, operate, and maintain on-line auxiliary equipment in order to assist in the sheet production process (e.g., perforators, numbering machines, scorers, coaters)
9.8.6   Follow precedures for maintaining registration
9.8.7   Set reel braking and web tension control systems
9.8.8   Check and reset register
9.8.11 Set automatic registering systems, (eg. guidance, control devices)

Competency 9.9   **Monitor color quality**

Competency Builders:

9.9.1   Monitor color density and diagnose and correct problems associated with
        controlling and maintaining appropriate color
9.9.2   Diagnose and correct incorrect color reproduction and other color problems
9.9.3   Adjust press operating procedures accord to the differences between conventional
        color separations and stochastic separations (A)
9.9.4   Maintain quality according to specifications (e.g., tint values, ink selection, paper
        stock, ink hues)
9.9.5   Recognize conditions that affect inking system quality
9.9.6   Recognize and adjust color fit
9.9.7   Monitor ink density and the balance between water and ink

Competency 9.10   **Maintain register**

Competency Builders:

9.10.1 Operate the register system according to press requirements
9.10.2 Recognize how register marks affect the pressrun
9.10.3 Diagnose misregister problems and make appropriate adjustments
9.10.4 Estimate and control the degree of misregister and determine what amount of
        misregister is acceptable

Competency 9.11   **Generate and inspect press proofs**

Competency Builders:

9.11.1 Pull sheets out of the pressrun and inspect for defects with appropriate
        instruments
9.11.2 Use appropriate instruments to compare a printed proof to a standard ink
reference
9.11.3 Compare press sheet to contract proof

Competency 9.12   **Perform press wash-up**

Competency Builders:

9.12.1 Clean the press, including ink trays, fountains, water systems, rollers, plates, and
        blankets using approved safety procedures
9.12.2 Use solvents and cleaning materials for various parts of the press appropriate to
        various conditions (e.g., plate, inking system, dampening system)
9.12.3 Select and use appropriate plate cleaners and conditioners
9.12.4 Clean and gum plates in order to prevent oxidation
9.12.5 Properly store cleaned, gummed plates to enable their re-use

9.12.6 Use appropriate procedures to maintain the dampening roller covering
9.12.7 Demonstrate environmentally sound methods of saving and returning ink to the
can when appropriate and safe

Competency 9.13　　　　　　**Control press department conditions**

Competency Builders:

9.13.1 Identify the ideal lighting conditions for the press department and how different
factors influence those conditions
9.13.2 Recommend and maintain appropriate viewing conditions for effective appraisal
of copy and proof

Competency 9.14　　　　　　**Perform troubleshooting**

Competency Builders:

9.14.1 Recognize the primary cause and remedy for various problems that might arise
during the pressrun (e.g., paper, ink, plate, blanket problems, rollers fountains,
and problems with color and print quality)
9.14.2 Monitor problem areas during the pressrun (e.g., position side-guide, gripper
marks, register and fit, plugged halftones, dry-up on plate of non-image areas,
excessive inking, color consistency, dot gain, bad paper, ink and water spots)
9.14.3 Apply principles of dry and wet trapping
9.14.4 Recognize conditions that affect how well an ink film traps and how problems
develop
9.14.5 Analyze the causes of unintended screen patterns (moiré) and make appropriate
corrections to minimize them
9.14.6 Correct doubling, slurring, and ghosting

Unit 10   Ink and Inking

Competency 10.1   **Operate the inking system**

Competency Builders:

10.1.1   Name the basic parts of the inking system and their functions including: ink fountains, ductor and/or metering roller, oscillating drums, intermediate rollers, form rollers, fountain roller, anti-ghost rollers, hickey pickers
10.1.2   Balance ink and water systems
10.1.3   Prepare inking system by installing rollers, setting roller pressures, and mounting and adjusting ductor and form rollers.
10.1.4   Measure roller hardness with durometer and report inconsistencies as needed
10.1.5   Calculate ink consumption
10.1.6   Diagnose inking problems and make appropriate corrections

Competency 10.2   **Select inks**

Competency Builders:

10.2.1   Recognize the impact of certain ink properties on printing reproductions and quality (e.g., tack, color strength, drying time, opacity, flow properties, water resistance, temperature, UV coating)
10.2.2   Choose correct inks for job considering the composition and properties of printing inks (e.g., color consistency, viscosity and flow, additives, etc.)
10.2.3   Use the principles of four-color printing
10.2.4   Use magnetic inks according to their properties and purposes
10.2.5   Consider the effects of minimum temperature, coated stocks, and dryer duration when using ink
10.2.6   Use ink considering the effect of the characteristics of the color and thickness of the ink
10.2.7   Identify the solvents effect on the flow of the inking system
10.2.8   Diagnose and make appropriate corrections to ink-related problems (e.g., mechanical ghosting, gas ghosting, piling, slow drying, etc.)

Competency 10.3   **Select ink varnishes**

Competency Builders:

10.3.1   Identify specific ink vehicles appropriate for ink types
10.3.2   Describe the characteristics of specific ink vehicles

Competency 10.4   **Mix inks**

Competency Builders:

10.4.1 Mix printing inks in accordance with job ticket specifications including metallic inks
10.4.2 Recognize the effects of alternative color sequences on final product.

Competency 10.5 **Match Colors**

Competency Builders:

10.5.1 Recognize conditions affecting accurate color matching
10.5.2 Use correct procedures for matching with a color book
10.5.3 Use principal instruments for measuring colors in conjunction with the eyes, including: densitometer, colorimeter, spectrophotometer
10.5.4 Adjust color appropriately

Unit 11   Preventive Maintenance for Presses

Competency 11.1 **Identify what activities require lockout/tagout and when the inch-safe service method is sufficient**

Competency Builders:

11.1.1 Reference OSHA requirements, company saftey requirements and equipment safety manuals
11.1.2 Use personal protective equipment

Competency 11.2 **Clean equipment**

Competency Builders:

11.2.1 Select, use and maintain the correct tools for cleaning and maintenance
11.2.2 Clean and replace static bars in order to avoid shock hazard

Competency 11.3 **Lubricate equipment**

Competency Builders:

11.3.1 Apply lubrication according to specifications and requirements
11.3.2 Identify types of lubricants
11.3.3 Use proper methods of lubrication
11.3.4 Recognize consequences of failure to lubricate
11.3.5 Maintain ink fountains

Competency 11.4   **Troubleshoot and maintain mechanical devices and systems**

Competency Builders:

11.4.1 Troubleshoot problems with mechanical devices which affect equipment performance (e.g., chains and sprockets, pulleys and belts, cams, gears)
11.4.2 Troubleshoot problems associated with the air system, including compressors, pumps, and filters
11.4.3 Identify parts that need routine replacement and take appropriate action to ensure they are replaced
11.4.4 Make minor repairs and adjustments

Unit 12   Quality Control

Competency 12.1   **Monitor quality**

Competency Builders:

12.1.1 Verify all layout instructions, related materials and job specifications.
12.1.2 Apply company standards for acceptable quality printing
12.1.3 Monitor and control print quality characteristics
12.1.3 Record technical data and performance results

Competency 12.2   **Use quality control devices**

Competency Builders:

12.2.1 Use contract proofs to compare quality of printed product under a standard light source
12.2.2 Use calibration control devices to maintain operating standards

Unit 13   Binding Operations

Competency 13.1   **Use guillotine cutting procedures**

Competency Builders:

13.1.1 Apply cutting specifications, sequences, and appropriate cutting applications according to job specifications.
13.1.2 Use appropriately common terminology associated with cutting (e.g., dutch cut, flush cut, bleed edges, trim marks, head trim, foot trim, face trim, guide edge, backbone trim, etc.)
13.1.3 Analyze and correct the causes of typical cutting problems (e.g., blade pull/draw, press registration, grain direction, and variation in sheet size)
13.1.4 Apply appropriate maintenance procedures for programmable cutters and maintain cutting blades by cleaning, or changing blades and cutting sticks
13.1.5 Maintain cutting machine accessories (e.g., paper joggers, stackers, etc.)
13.1.6 Distinguish among types of cutting blanks and select appropriate blade type (e.g., carbine tip, high speed steel, etc.)

Competency 13.2   **Use folding procedures**

Competency Builders:

13.2.1 Identify various impositions (e.g., sheetwise, work and turn, work and tumble, work and flop, work and twist)
13.2.2 Identify the appropriate imposition, depending on job specifications
13.2.3 Carry out the folding process, including split guides and split and chase types of machine folding (e.g., buckle, chop, knife, etc.)
13.2.4 Select the type of folds specified according to job requirements (e.g., single, french, gate, accordion, double parallel, letter, map, right angle, zigzag, pharmaceutical, roll, cross, double gate, etc.)
13.2.5 Produce each type of fold on the appropriate equipment
13.2.6 Consider factors that affect the choice of folding methods and their impact on folding (e.g., stock size, type of paper, grain direction, etc.)
13.2.7 Take appropriate precautions to minimize the hazards associated with folding machines

Competency 13.3   **Set up and operate folder**

Competency Builders:

13.3.1 Set up and operate different types of feeders and delivery systems, including continuous, pile, stream, friction, and gravity feeders
13.3.2 Carry out ancillary operations on a folding machine (e.g., perforating, creasing, slitting, scoring, gluing, batch counting, bundling, etc.)

13.3.3 Set up and adjust the feed rollers and wheels, fold rollers, fold gate and deflectors, special attachments, 8 and/or 16 page unit, and delivery table

13.3.4 Check and adjust product quality according to company policy and to meet job specifications

13.3.5 Troubleshoot folding machine operation to ensure high quality by adjusting deflector position, ensuring dry stock and appropriate grain direction, reducing or equalizing roller pressure, and adjusting side guide and plate

Competency 13.4   **Use adhesive or perfect binding techniques**

Competency Builders:

13.4.1 Apply the operating principles of adhesive or perfect binding

13.4.2 Identify the functions of binding equipment such as gatherers, backbone cutters, gluers, cover feeders, trimmers, and counter stackers

Competency 13.5   **Collate signatures**

Competency Builders:

13.5.1 Apply appropriate procedures for manual and machine collating of signatures

13.5.2 Determine placement and sequence of signatures to be collated

13.5.3 Jog and stack signatures as appropriate

13.5.4 Set up and operate a gathering machine (e.g., rotary, swing-arm, and Z-U disk types, etc.)

13.5.5 Diagnose common problems associated with assembling signatures, their causes, and how they can be corrected (e.g., creep shingling, etc.)

Competency 13.6   **Perform special bindery operations**

Competency Builders:

13.6.1 Review all layout instructions, related material and other elements to be incorporated into the final product.

13.6.2 Make ready and operate paper drill according to job specifications

13.6.3 Operate plastic comb binding

Competency 13.7   **Use saddle stitching procedures**

Competency Builders:

13.7.1 Apply common methods of securing single or multiple signatures

13.7.2 Use common terminology associate with saddle stitching (e.g., lip, lap, head-up device, caliper, crown, stagger, stitching, securing stitching, etc.) appropriately

13.7.3 Operate the principle components of saddle stitchers (e.g., pockets, stitching sections, trimmers, stackers, etc.)

13.7.4 Apply appropriate binding methods based on factors including substrate, leaves per section, binding margins, width of margin, flatness of product, strength of securing, machine grain direction, and function of end product

13.7.5 Make ready and operate the gatherer including adjusting the timing of the gathering chain and determining the placement of signatures

Competency 13.8   **Perform wire and saddle stitching operations**

Competency Builders:

13.8.1 Make ready and operate the signature feeders including adjusting the timing of the feeders to gathering chain

13.8.2 Inspect signatures and load them into feeder, and adjust feeder to signatures

13.8.3 Make ready and operate securing equipment including the operation of the wire stitching machine and stapling machine

13.8.4 Make ready and operate the stitching unit by setting and adjusting as necessary stitching heads, adjusting clincher units, setting and adjusting hold-down guides, selecting proper wire, and setting length of stitch

13.8.5 Set and adjust as necessary the timing balance and stroke of the stitching carriage and caliper

13.8.6 Perform stitching operations by setting up hand and power stitcher, cover feeder, double-sheet detector, and saddle stitcher

13.8.7 Diagnose common hazards associated with saddle stitching (e.g., missing guards, moving parts, oil spills, jammed switches) and take precautions to minimize them

13.8.8 Troubleshoot the stitching process by adjusting side levers, checking wire for burning, adjusting the knife, straightening the wire, and adjusting the clutch pressure

13.8.9 Examine stitched publications for pagination, register of print, method of securing, proper collation, and quality of print according to job ticket specifications and contract proof.

13.8.10   Set and adjust timing and operation of reject gate

13.8.11   Set and adjust placement of product to trimmer infeed

13.8.12   Make ready and adjust trimmer by setting and adjusting timing of trimmer

13.8.13   Install and remove knives

13.8.14   Set and adjust trimmer to job ticket specifications

13.8.15   Make ready and adjust peripheral and auxiliary equipment (e.g., counter stacker, strappers)

Unit 14   **Specialty Operations**

Competency 14.1   **Describe the principles of embossing**

Competency Builders:

14.1.1 Identify the principle types of embossing (raised foil or relief embossing, blind embossing, debossing, ornamental, register embossing) and apply each type appropriately to the needs of the job.
14.1.2 Identify die making materials and processes used in embossing—such as machine-cut, acid-etched, and hand-tooled, magnesium, copper and brass
14.1.3 Specify correct thickness of dies and temperature appropriate to the characteristics of the substrate being used
14.1.4 List the common problems that impact the quality of embossing including product design, stock selection, equipment, die characteristics, sharpness and detail of dies, and heat control
14.1.5 Describe common embossing equipment including embossing presses and letter presses

Competency 14.2   **Describe the principles of foil stamping**

Competency Builders:

14.2.1 Recognize conditions under which foil stamping is used
14.2.2 Identify the types of foil stamping—flat stamped, foil embossing
14.2.3 Identify types of foil used in foil stamping and their properties—pigmented colors, wood grains, matte, and shiny finishes
14.2.4 Identify factors that impact the quality of foil stamping e.g. correct balance of heat, pressure, and dwell according to material and foil used
14.2.5 Describe common foil stamping equipment including foil stamping presses and letterpresses
14.2.6 List common problems and remedies encountered in foil stamping (e.g., blocking out of square, blurred/dull image, material surface visible through foil image, impression too deep, and poor transference of image onto material)

Competency 14.3   **Describe the principles of diecutting**

Competency Builders:

14.3.1 Recognize the difference between a platen press and a cylinder press and when each type is appropriate
14.3.2 Specify die requirements based on job specifications
14.3.3 List common problems encountered in diecutting

Unit 15   Mailing and Distribution Operations

Competency 15.1   **Examine the principles of ink jet printing**

Competency Builders:

15.1.1 Identify the principle uses of ink jet printing
15.1.2 Choose between ink jet printing and conventional label printing based on job requirements
15.1.3 Facilitate demographic personalization of mail and other materials with ink jet
15.1.4 Use template to set up a job for bar coding according to postal regulations
15.1.5 Explain the messaging process
15.1.6 Describe data entry and upload process of data into the company's ink jet system

Competency 15.2   **Describe mailing and distribution operations**

Competency Builders:

15.2.1 Provide advice to both internal and external clients regarding relevant postal regulations
15.2.2 Apply company and postal specifications, rules, and regulations for mail preparation and handling
15.2.3 Estimate postage costs for both internal and external customers
15.2.4 Consult with internal and external customers on the most efficient and cost effective methods of mailing
15.2.5 Maintain a data base of selected information by inputting and keeping current demographic information
15.2.6 Produce reports of data from data base
15.2.7 Examine inventory control systems for warehoused materials
15.2.8 Prepare shipping documents for both domestic and international delivery (e.g., bill of lading, shipping manifest, packing slip)
15.2.9 Examine kitting and fulfillment operations

Employability Competencies

Unit 1:   **Career Development**

Unit 2:   **Decision Making and Problem Solving**

Unit 3:   **Work Ethic**

Unit 4:   **Job-Seeking Skills**

Unit 5:   **Job Retention and Career Advancement Skills**

Unit 6:   **Technology in the Workplace**

Unit 7:   **Lifelong Learning**

Unit 8:   **Economic Education**

Unit 9:   **Balancing Work and Family**

Unit 10:   **Citizenship in the Workplace**

Unit 11:   **Leadership**

Unit 12:   **Entrepreneurship**

Unit 1:   Career Development

Competency 1.1:   **Investigate career options**

Competency Builders:

1.1.1   Determine interests and aptitudes
1.1.2   Identify career options
1.1.3   Research interests, knowledge, abilities, and skills needed in an occupation
1.1.4   Select careers that best match interests and aptitudes
1.1.5   Identify advantages and disadvantages of career options, including self-employment and nontraditional careers

Competency 1.2:   **Utilize career information**

Competency Builders:

1.2.1   Identify a range of career information resources
1.2.2   Use a range of resources to obtain career information (e.g., handbooks, career materials, labor market information, and computerized career-information delivery systems)
1.2.3   Demonstrate knowledge of various classification systems that categorize occupations and industries (e.g., *Dictionary of Occupational Titles*)
1.2.4   Describe the educational requirements of various occupations
1.2.5   Identify individuals in selected occupations as possible information resources, role models, or mentors
1.2.6   Describe the impact of factors such as population, climate, employment trends, and geographic location on occupational opportunities
1.2.7   Assess differences in the wages, benefits, annual incomes, cost of living, and job opportunities associated with selected career options
1.2.8   Determine labor market projections for selected career options

Competency 1.3:   **Participate in a career exploration activity**

Competency Builders:

1.3.1   Identify career exploration activities (e.g., job shadowing, mentoring, volunteer experiences, part-time employment, and cooperative education)
1.3.2   Compare traits, skills, and characteristics required for specific career choices with individual's traits, skills, and characteristics
1.3.3   Recognize potential conflicts between personal characteristics and career choice areas
1.3.4   Describe the impact of exploration activities on current choices

Competency 1.4:   **Assess the relationship between educational achievement and career planning**

Competency Builders:

1.4.1   Describe how skills developed in academic and vocational programs relate to career goals
1.4.2   Describe how education relates to the selection of a college major, further training, and/or entry into the job market
1.4.3   Identify skills that can apply to a variety of occupational requirements
1.4.4   Explain the importance of possessing learning skills in the workplace

Competency 1.5:   **Develop an individual career plan**

Competency Builders:

1.5.1   Identify career goal(s)
1.5.2   Identify worker conditions, education, training, and employment opportunities related to selected career goal(s)
1.5.3   Describe school and community resources available to help achieve career goal(s)
1.5.4   Identify career ladders possible within selected career goal(s)*
1.5.5   Identify additional experiences needed to move up identified career ladders*
1.5.6   Recognize that changes may require retraining and upgrading of employees' skills

Competency 1.6:   **Annually review/revise the individual career plan**

Competency Builders:

1.6.1   Identify experiences that have reinforced selection of the specific career goal(s) listed on the individual career plan
1.6.2   Identify experiences that have changed the specific career goals(s) listed on the individual career plan
1.6.3   Modify the career goal(s) and educational plans on the individual career plan
1.6.4   Ensure that parents or guardians provide input into the individual career plan process
1.6.5   Identify the correlation between the individual career plan and the actual courses to be taken in high school
1.6.6   Identify the correlation between the individual career plan and postsecondary training, adult education, or employment

Unit 2:   Decision Making and Problem Solving

Competency 2.1:   **Apply decision-making techniques in the workplace**

Competency Builders:

2.1.1   Identify the decision to be made
2.1.2   Compare alternatives
2.1.3   Determine the consequences of each alternative
2.1.4   Make decisions based on values and goals
2.1.5   Evaluate the decision made

Competency 2.2:   **Apply problem-solving techniques in the workplace**

Competency Builders:

2.2.1   Diagnose the problem, its urgency, and its causes
2.2.2   Identify alternatives and their consequences in relation to the problem
2.2.3   Recognize multicultural and nonsexist dimensions of problem solving
2.2.4   Explore possible solutions to the problem using a variety of resources
2.2.5   Compare/contrast the advantages and disadvantages of each solution
2.2.6   Determine appropriate action
2.2.7   Implement action
2.2.8   Evaluate results of action implemented

Unit 3:   Work Ethic

Competency 3.1:   **Evaluate the relationship of self-esteem to work ethic**

Competency Builders:

3.1.1   Identify special characteristics and abilities in self and others
3.1.2   Identify internal and external factors that affect self-esteem
3.1.3   Identify how individual characteristics relate to achieving personal, social, educational, and career goals
3.1.4   Identify the relationship between personal behavior and self-concept

Competency 3.2:   **Analyze the relationship of personal values and goals to work ethic both in and out of the workplace**

Competency Builders:

3.2.1   Distinguish between values and goals
3.2.2   Determine the importance of values and goals
3.2.3   Evaluate how one's values affect one's goals
3.2.4   Identify own short- and long-term goals
3.2.5   Prioritize own short- and long-term goals
3.2.6   Identify how one's values are reflected in one's work ethic
3.2.7   Identify how interactions in the workplace affect one's work ethic
3.2.8   Identify how life changes affect one's work ethic

Competency 3.3:   **Demonstrate work ethic**

Competency Builders:

3.3.1   Examine factors that influence work ethic
3.3.2   Display initiative
3.3.3   Demonstrate dependable attendance and punctuality
3.3.4   Demonstrate organizational skills
3.3.5   Adhere to schedules and deadlines
3.3.6   Demonstrate a willingness to learn
3.3.7   Demonstrate a willingness to accept feedback and evaluation
3.3.8   Demonstrate interpersonal skills required for working with and for others
3.3.9   Describe appropriate employer-employee interactions for various situations
3.3.10 Express feelings and ideas in an appropriate manner for the workplace

Competency 3.4:   **Demonstrate safety skills**

Competency Builders:

3.4.1   Practice safe work habits
3.4.2   Identify safety hazards
3.4.3   Employ preventative safety measures
3.4.4   Demonstrate appropriate care and use of equipment and facilities to ensure safety
3.4.5   Comply with safety and emergency procedures

Unit 4: Job-Seeking Skills

Competency 4.1:   **Prepare for employment**

Competency Builders:

4.1.1   Identify traditional and nontraditional employment sources
4.1.2   Utilize employment sources
4.1.3   Research job opportunities, including nontraditional careers
4.1.4   Interpret equal employment opportunity laws
4.1.5   Explain the critical importance of personal appearance, hygiene, and demeanor
       throughout the employment process
4.1.6   Prepare for generic employment tests and those specific to an
       occupation/organization

Competency 4.2:   **Develop a resume**

Competency Builders:

4.2.1   Identify personal strengths and weaknesses
4.2.2   List skills and/or abilities, career objective(s), accomplishments, educational
       background, work experience, volunteer/community contributions, and
       organizational memberships
4.2.3   Select an acceptable resume format
4.2.4   Use correct grammar and spelling and concise wording
4.2.5   Secure references
4.2.6   Complete the resume

Competency 4.3:   **Complete the job application process**

Competency Builders;

4.3.1   Explain the importance of an application form
4.3.2   Obtain job application forms
4.3.3   Demonstrate behaviors (e.g., personal appearance, hygiene, and demeanor) for
       obtaining job application forms in person
4.3.4   Describe methods for handling illegal questions on job application forms
4.3.5   Demonstrate legible written communication skills using correct grammar and
       spelling and concise wording
4.3.6   Return application to appropriate person
4.3.7   Request interview
4.3.8   Follow up on application status

Competency 4.4:   **Demonstrate interviewing skills**

Competency Builders:

4.4.1   Investigate interview procedures
4.4.2   Demonstrate appropriate behaviors (e.g., appearance, hygiene, and demeanor) for
          the interview
4.4.3   Demonstrate question-and-answer techniques
4.4.4   Demonstrate methods for handling difficult and/or illegal interview questions
4.4.5   Use correct grammar and concise wording

Competency 4.5:   **Secure employment**

Competency Builders:

4.5.1   Identify present and future employment opportunities within an
          occupation/organization
4.5.2   Research the organization/company
4.5.3   Use follow-up techniques to enhance employment potential
4.5.4   Evaluate job offer(s)
4.5.5   Respond to job offer(s)

Unit 5:   Job Retention and Career Advancement Skills

Competency 5.1:   **Analyze the organizational structure of the workplace**

Competency Builders:

5.1.1   Identify employer expectations regarding job performance, work habits, attitudes,
          personal appearance, and hygiene
5.1.2   Comply with company policies and procedures
5.1.3   Examine the role/relationship between employee and employer
5.1.4   Recognize opportunities for advancement and reasons for termination
5.1.5   Recognize the organization's ethics

Competency 5.2:   **Maintain positive relations with others**

Competency Builders:

5.2.1   Exhibit appropriate work habits and attitudes
5.2.2   Identify behaviors for establishing successful working relationships
5.2.3   Cooperate through teamwork and group participation
5.2.4   Demonstrate a willingness to compromise

5.2.5   Identify methods for dealing with harassment, bias, and discrimination based on race, color, national origin, gender, religion, disability, or age
5.2.6   Cooperate with authority
5.2.7   Accept supervision

Competency 5.3:   **Demonstrate accepted social and work behaviors**

Competency Builders:

5.3.1   Demonstrate a positive attitude
5.3.2   Demonstrate accepted conversation skills
5.3.3   Use good manners
5.3.4   Accept responsibility for assigned tasks
5.3.5   Demonstrate personal hygiene
5.3.6   Demonstrate knowledge of a position
5.3.7   Perform quality work

Competency 5.4:   **Analyze opportunities for personal and career growth***

Competency Builders:

5.4.1   Demonstrate opportunities within chosen occupation/organization*
5.4.2   Determine other career opportunities outside chosen occupation/organization*
5.4.3   Evaluate the factors involved in considering a new position within or outside an occupation/organization*
5.4.4   Exhibit characteristics needed for advancement*

Unit 6:   Technology in the Workplace

Competency 6.1:   **Demonstrate knowledge of technology issues**

Competency Builders:

6.1.1   Demonstrate knowledge of the characteristics of technology
6.1.2   Demonstrate knowledge of how technology systems are applied
6.1.3   Assess the impact of technology on the individual, society, and environment
6.1.4   Demonstrate knowledge of the evolution of technology
6.1.5   Identify how people, information, tools and machine, energy, capital, physical space, and time influence the selection and use of technology
6.1.6   Identify legal and ethical issues related to technology (e.g., confidentiality, information sharing, copyright protection)

Competency 6.2: **Demonstrate skills related to technology issues**

Competency Builders:

6.2.1 Exhibit willingness to adapt to technological change
6.2.2 Utilize technological systems
6.2.3 Utilize a variety of resources and processes to solve technological problems
6.2.4 Employ higher-order thinking skills for solving technological problems
6.2.5 Work as a team member in solving technological problems
6.2.6 Use technology in a safe and responsible manner
6.2.7 Apply science, mathematics, communication, and social studies concepts to solve technological problems
6.2.8 Demonstrate ingenuity and creativity in the use of technology*
6.2.9 Utilize a formal method (systems approach) in solving technological problems*

Unit 7: Lifelong Learning

Competency 7.1: **Apply lifelong learning practices to individual situations**

Competency Builders:

7.1.1 Define lifelong learning
7.1.2 Identify factors that cause the need for lifelong learning
7.1.3 Identify changes that may require the retraining and upgrading of employee's skills
7.1.4 Identify avenues for lifelong learning
7.1.5 Participate in lifelong learning activities

Competency 7.2: **Adapt to change**

Competency Builders:

7.2.1 Analyze the causes and effect of change
7.2.2 Identify the effect of change on goals
7.2.3 Identify the importance of flexibility when reevaluating goals
7.2.4 Evaluate the need for lifelong learning experiences in adapting to change

Unit 8: Economic Education

Competency 8.1:   **Analyze how an economy functions as a whole**

Competency Builders:

8.1.1   Describe how individuals and societies make choices to satisfy needs and wants
       with limited resources
8.1.2   Identify how production factors (land, labor, capital, and entrepreneurship) are
       used to produce goods and services
8.1.3   Illustrate how individuals and households exchange their resources for the income
       they use to buy goods and services
8.1.4   Explain how individuals and business firms use resources to produce goods and
       services to generate income
8.1.5   Identify characteristics of command, market, and traditional economics*
8.1.6   Describe how all levels of government assess taxes in order to provide services

Competency 8.2:   **Analyze how an economic system is a framework within
                          which decisions are made by individuals and groups**

Competency Builders:

8.2.1   List several individuals and groups that make economic decisions at the local,
       state, and national levels
8.2.2   Identify the important roles that local, state, and national governments play in a
       market economy
8.2.3   List examples of how government decisions affect individuals
8.2.4   Identify how geographic locations affect the political and economic systems of
          the
       world
8.2.5   Evaluate how markets allocate goods and services
8.2.6   Explain how resources, goods, and services are exchanged in markets
8.2.7   Explain competition and its effect on the market

Competency 8.3:   **Analyze the importance of making informed personal
                          financial decisions**

Competency Builders:

8.3.1   Describe the need for personal management records
8.3.2   Create a personal budget
8.3.3   Create a budget for a family of four for one month
8.3.4   Explain how credit affects personal/family finances
8.3.5   Identify steps to avoid credit problems
8.3.6   Make informed consumer choices in response to personal needs and wants

8.3.7 Identify factors that influence consumer decisions (e.g., advertisements, peer groups, price, and location)

8.3.8 Explain the cost and benefits for individuals of various types of taxation at the local, state, and federal levels

Unit 9: Balancing Work and Family

Competency 9.1: **Analyze the effects of family on work**

Competency Builders:

9.1.1 Recognize how family values, goals, and priorities are reflected in the workplace
9.1.2 Identify present and future family structures and responsibilities
9.1.3 Describe personal and family roles
9.1.4 Analyze concerns of working parent(s)
9.1.5 Examine how family responsibilities can conflict with work
9.1.6 Identify ways to resolve family-related conflicts
9.1.7 Explain how to use support systems/community resources to help resolve family-related conflicts

Competency 9.2: **Analyze the effects of work on family**

Competency Builders:

9.2.1 Identify responsibilities associated with paid and nonpaid work
9.2.2 Compare the advantages and disadvantages of multiple incomes
9.2.3 Explain how work can conflict with family responsibilities
9.2.4 Explain how work-related stress can affect families
9.2.5 Identify family support systems and resources

Unit 10: Citizenship in the Workplace

Competency 10.1: **Exercise the rights and responsibilities of citizenship in the workplace**

Competency Builders:

10.1.1 Identify the basic rights and responsibilities of citizenship in the workplace
10.1.2 Identify situations in which compromise is necessary
10.1.3 Examine how individuals from various backgrounds contribute to the workplace
10.1.4 Demonstrate initiative to facilitate cooperation
10.1.5 Give/receive constructive criticism to enhance cooperation

Competency 10.2   **Prepare to work in a multicultural society**

Competency Builders:

10.2.1   Identify ways to live in a multicultural society with mutual respect and
         appreciation for others
10.2.2   Examine how culture and experience create differences in people
10.2.3   Demonstrate respect for the contributions made by all people
10.2.4   Investigate personal cultural background as a means of developing self-respect
10.2.5   Make personal choices that reduce discrimination, isolation, and prejudice
10.2.6   Work effectively with people irrespective of their race, gender, religion,
         ethnicity, disability, age, or cultural background

Unit 11:   Leadership

Competency 11.1:   **Evaluate leadership styles appropriate for the
                              workplace**

Competency Builders:

11.1.1   Identify characteristics of effective leaders
11.1.2   Compare leadership styles
11.1.3   Demonstrate effective delegation skills
11.1.4   Investigate empowerment concepts
11.1.5   Identify opportunities to lead in the workplace

Competency 11.2   **Demonstrate effective teamwork skills**

Competency Builders:

11.2.1   Identify the characteristics of a valuable team member
11.2.2   Identify methods of involving each team member
11.2.3   Contribute to team efficiency and success
11.2.4   Determine ways to motivate team members

Competency 11.3:　　　　　**Utilize effective communication skills**

Competency Builders:

11.3.1　Identify the importance of listening
11.3.2　Demonstrate effective listening skills
11.3.3　Demonstrate assertive communication techniques
11.3.4　Recognize the importance of verbal and nonverbal cues and messages
11.3.5　Prepare written material
11.3.6　Analyze written material
11.3.7　Give-receive feedback
11.3.8　Communicate thoughts
11.3.9　Use appropriate language
11.3.10　Follow oral and written instructions
11.3.11　Demonstrate effective telephone techniques
11.3.12　Identify technology in communications

Unit 12:　　　　　Entrepreneurship

Competency 12.1:　　　　　**Evaluate the role of small business**

Competency Builders:

12.1.1　Identify the impact of small business on local economy
12.1.2　Examine the relationship of small business to a national (USA) and global economy
12.1.3　Identify factors that contribute to the success of small business
12.1.4　Identify factors that contribute to the failure of small business
12.1.5　Identify the components of a business plan

Competency 12.2:　　　　　**Examine entrepreneurship as a personal career option**

Competency Builders:

12.2.1　Evaluate personal interests and skills
12.2.2　Compare personal interests and skills with those necessary for entrepreneurship
12.2.3　Determine motives for becoming an entrepreneur
12.2.4　Identify the advantages and disadvantages of owning a small business
12.2.5　Compare business ownership to working for others

ACT Work Keys Skill Levels

Skill Area	Entry Level	Performance Level
1. Locating Information	5	6
2. Reading for Information	4	6
3. Applied Mathematics	5	6

Levels of Work Keys Defined

The skills needed to achieve each level for each of the Work Keys skills are as follows.

Locating Information

Locating Information measures skill in using information taken from workplace graphics such as diagrams, blueprints, floor plans, tables, forms, graphs, charts, and instrument gauges. There are four levels of complexity, 3 through 6, with Level 3 being the least complex and Level 6 the most complex. The levels build on each other, each incorporating the skills at the preceding levels.

Level 3

*Find one or two pieces of information in elementary workplace graphics, such as simple order forms, bar graphs, tables, flowcharts, and floor plans.
*Fill in one or two pieces of information that are missing from elementary workplace graphics.

Level 4

*Find several pieces of information in these type of graphics.
*Summarize and/or compare information and trends in a single graphic.
*Summarize and/or compare information and trends among more than one workplace graphic, such as a bar chart and a table showing related information.

Level 5

*Summarize and/or compare information and trends in single graphic.
*Summarize and/or compare information and trends among more than one graphic, such as a bar chart and a table showing related information.

Level 6

*Make decisions, draw conclusions, and/or apply information to new situations using several related and complex workplace graphics that contain a great amount of information or have challenging presentations (e.g., very detailed graphs, charts, tables, forms, maps, blueprints, diagrams).

Reading for Information

Reading for Information measures skill in reading and understanding work-related reading materials. There are five levels of complexity, 3 through 7, with Level 3 being the least complex and Level 7 the most complex. Although Level 3 is the least complex, it still represents a level of reading skill well above "no skill at all." The levels build on each other, each incorporating the skills at the preceding levels.

Level 3

*Identify uncomplicated key concepts and simple details.
*Recognize the proper placement of a step in a sequence of events, or the proper time to perform a task.
*Identify the meaning of works that are defined with in a passage.
*Identify the meaning of simple words that are not defined within a passage.
*Recognize the application of instructions, from a passage to situations that are described in the passage.

Level 4

*Identify details that are more subtle than those in Level 3.
*Recognize the application of more complex instructions, some of which involve several steps, to described situations.
*Recognize cause-effect relationships.

Level 5

*Understand the paraphrased definition of specialized words or phrases (jargon or technical terms) defined in these reading materials
*Use jargon or technical terms appropriately in describing situations stated in these reading materials
*Understand the meaning of acronyms defined in these reading materials (an acronym is a work or collection of letters which stands for a longer phrase, such as HMO to mean Health Maintenance Organization).
*Figure out which definition of a word with multiple meanings is appropriate in the context of these reading materials.
*Apply information given in these reading materials to situations that are not directly described, but similar.
*Apply instructions or procedures with a number of steps to described situations. These instructions may include conditional (if X happens, then you should do Y).

Level 6

*Recognize the application of jargon or technical terms to new situations.
*Recognize the application of complex instructions to new situations.
*Recognize the less-common meaning of a word with multiple meanings from context.
*Generalize from a passage to situations not described in the passage.
*Identify implied details.
*Explain the rationale behind a procedure, policy, or communication.
*Generalize from a passage to a somewhat similar situation.

Applied Mathematics

Applied Mathematics measures skill in applying mathematical reasoning to work-related problems. There are five levels of complexity, 3 through 7, with Level 3 being the least complex and Level 7 the most complex. The levels build on each other, each incorporating the skills at the preceding levels.

Level 3

*Perform basic mathematical operations (addition, subtraction, multiplication, and division) and conversions from one form to another, using whole numbers, fractions, decimals, or percentages.
*Translate simple verbal problems into mathematical equations.
*Directly apply logical information provided to solve problems, including those with measurements and dollars and cents.

Level 4

*Perform one or two mathematical operations (such as addition, subtraction, or multiplication) on several positive or negative numbers. (Division of negative numbers is not covered until Level 5.)
*Add commonly known fractions, decimals, or percentages (e.g., ½, .75, 25%) or add three fractions that share a common denominator.
*Calculate averages, simple ratios, proportions, and rates, using whole numbers and decimals.
*Reorder verbal information before performing calculations.
*Read simple charts or graphs to obtain information needed to solve a problem.

Level 5

*Look up and calculate single-step conversions within English or non-English measurement systems (e.g., converting ounces to pounds or centimeters to meters) or between measurement systems (e.g., converting centimeters to inches).

*Make calculations using mixed unit (e.g., hours and minutes).
*Determine what information, calculations, and unit conversions are needed to find a solution.

Level 6

*Set up problems and do several steps of calculations or conversions.
*Calculate using negative numbers, fractions, ratios, percentages, or mixed numbers (e.g., 12 1/8).
*Transpose a formula before calculating (e.g., $8X = 20 \Rightarrow X = 20/8$).
*Look up and use two formulas to change from one unit to another unit within the same system of measurement (e.g., 1 cup = 8 fl oz, 1 quart = 4 cups).
*Find mistakes in calculations, such as those required in lower levels.
*Determine the best deal and perform a further calculation with the result.

WorkKeys Process Overview

Developed by American College Testing (ACT), the purpose of the Job Profiling process is to identify the level of applied academic skills that, according to business and industry, students must master to qualify for and be successful in their occupation of choice. The results of Job Profile "leveling" can help teachers to better target instruction toward their students' needs.

The WorkKeys assessment component, developed by ACT, measures students' applied academic skills in Applied Mathematics, Reading for Information, Locating Information, Listening, Writing, Teamwork, and Observation. Each Work Keys assessment is further broken down into four to five levels of achievement, with higher numbers indicating higher achievement in the assessed skill. For each academic skill, the Job Profiling process identifies the level required for successful entry into an occupational area.

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