ACAP

Austin Competency Analysis Profile

Fire Protection Technology

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What's Inside?

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Austin Community College would like to express our sincere appreciation to our business, industry, labor, and community partners who donated their time and expertise toward the identification and validation of competencies in the following Austin Competency Analysis Profile.

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The ACAP (Austin Competency Analysis Profile) initiative comes out of the Instructional Development Services of Instructional Resources and Technology at Austin Community College. This initiative is ACC's primary source for Competency-Based Curriculum development, providing a connection between our academic and workforce programs and the needs of business and industry.

The ACAP is a process for analyzing an occupation to develop curriculum. The product is a competency list, employability skills, and academic skill levels that have been developed and validated by subject matter experts who perform the occupation. This list will be used to develop programs that address the needs of business and industry by equipping our students with the entry skills required in a workplace environment.

ACAP Process Overview

What are Austin Competency Analysis Profiles (ACAPs)?

Austin Competency Analysis Profiles (ACAPs) are competency lists for academic and workforce programs verified by expert workers, or Subject Matter Experts. These lists 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—the concept of advancing items will only be introduced to students. Advancing items are those needed beyond entry level in a given occupation, and are designated as "Advanced [A]." If core competencies or competency builders are present in an "Advanced" unit, then they are designated as "Core [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.

Target Job Titles

ACAP: Fire Protection Technology

Firefighter / Engineer

Fire Officer

Fire Instructor

Fire Inspector

Fire Investigator

Occupational Competencies

The following Occupational Competencies have been identified and verified by a panel of subject matter experts currently employed in the field of Fire Protection Technology. This panel of experts has determined that these skills will adequately prepare students for *entry level* positions in this field. The *Competencies* are grouped into units. *Competency Builders* are included to help identify the knowledge, skills and attitudes students need to perform each competency. These *Competencies* and *Competency Builders* are designed to be the basis for curriculum development to ensure business and industry input that is relative and meaningful to the workplace. These *Competencies* are intended to include all basic, necessary skills for this occupational area, but may be supplemented with additional competencies as faculty and advisory committee members see the need to do so.

Key Terms:

Competency–an observable and measurable behavior that has a definite beginning and end; can be performed within a limited amount of time; consists of two or more competency builders; and leads to a product, service, or decision.

Competency Builders–the skills, knowledge, and attitudes (written in measurable terms) needed to perform a given competency.

Entry Level–position of employment that requires no previous experience, but may require some training and/or specific skills, knowledge, or attitudes.

ACAP: Fire Protection Technology

Unit 1	Documentation
Unit 2	Communication
Unit 3	Legal Issues
Unit 4	Administration and Planning
Unit 5	Leadership
Unit 6	Health and Safety
Unit 7	Codes and Inspections
Unit 8	Fire Protection
Unit 9	Fireground Strategy and Tactics
Unit 10	Investigation Techniques
Unit 11	Hazardous Materials
Unit 12	Instructional Skills

Sources:

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Workforce Education Manual, 2007-2008. FIRT Rubric.
http://www.thecb.state.tx.us/AAR/UndergraduateEd/WorkforceEd/wecm/wecmcourse.cfm

Certification Curriculum Manual. Texas Commission on Fire Protection.
http://www.tcfp.state.tx.us/standards/curriculum_manual/curriculum_toc.asp

State Firemen's & Fire Marshals' Association of Texas Performance Objectives.
http://www.sffma.org/smarty/index.php?page=certification#program

Occupational Competencies
ACAP: Fire Protection Technology

Unit 1 Documentation

Competency 1.1   **Write complete reports with clarity, conciseness and accuracy of expression**

Competency Builders:
1.1.1   Use appropriate terminology to communicate with target audience
1.1.2   Complete documentation according to applicable policies, procedures and instructions
1.1.3   Avoid extraneous or non-professional information in documentation
1.1.4   Review elements of documentation for subjectivity and objectivity
1.1.5   Proof a finished document for errors, omissions, spelling and proper use of abbreviations and acronyms
1.1.6   Avoid illegible, incomplete, or inaccurate documentation
1.1.7   Revise/Correct documentation properly

Competency 1.2   **Evaluate documentation**

Competency Builders:
1.2.1   Review elements of documentation for subjectivity and objectivity
1.2.2   Proof a finished document for errors, omissions, spelling and proper use of abbreviations and acronyms
1.2.3   Review documentation for legibility, completeness, and accuracy
1.2.4   Revise/Correct documentation properly
1.2.5   Review documentation for applicable policies, procedures and instructions

Competency 1.3   **Route documentation**

Competency Builders:
1.3.1   Route documentation according to applicable policies, procedures and instructions to appropriate personnel/department
1.3.2   Verify receipt of document
1.3.3   Follow-up as necessary

Competency 1.4   **Document a reportable incident**

Competency Builders:
1.4.1   Prepare and organize field notes
1.4.2   Document a fire scene using proper composition and photographic/videography techniques
1.4.3   Utilize a localized record management system
1.4.4   Utilize a fire incident reporting system (i.e., NFIRS)

Competency 1.5   Prepare documentation for presentation

Competency Builders:
1.5.1   Gather applicable information relevant to the topic and audience
1.5.2   Develop visual aids as necessary
1.5.3   Follow all applicable laws, policies and procedures

Unit 2 Communication

Competency 2.1   Communicate appropriately with the audience

Competency Builders:
2.1.1   Identify applicable communication model and methods
2.1.2   Describe the importance and purpose of communications between various entities
2.1.3   Choose appropriate communication for the situation

Competency 2.2   Communicate professionally

Competency Builders:
2.2.1   Use appropriate mode of communication (formal vs informal)
2.2.2   Select the appropriate terminology for the audience
2.2.3   Apply appropriate non-verbal communication
2.2.4   Dress appropriately for the audience and situation

Unit 3 Legal Issues

Competency 3.1   Follow federal, state and local laws, policies and procedures while performing duties

Competency Builders:
3.1.1   Identify applicable legal liabilities
3.1.2   Identify federal, state and local laws, policies and procedures
3.1.3   Identify legal importance of national standards (NFPA)
3.1.4   Define associated legal terms
3.1.5   Recognize the impact of case law

Competency 3.2   Follow labor and employment laws

Competency Builders:
3.2.1   Review employment and labor laws
3.2.2   Recognize laws and rules relating to civil service, collective bargaining, etc.
3.2.3   Identify the regulating agencies (TCFP, TCLEOSE, DSHS)
3.2.4   Stay current on changes in the law

Competency 3.3   **Participate as a witness in legal proceedings**

Competency Builders:
3.3.1   Follow laws and procedures relating to testimony
3.3.2   Follow departmental procedures while participating as a witness
3.3.3   Identify the requirements of a witness
3.3.4   Prepare for testimony by reviewing notes/reports
3.3.5   Apply recommended presentation practices during testimony
3.3.6   Identify legal resources

Unit 4 Administration and Planning

Competency 4.1   **Apply management principles and techniques for effective organizational performance**

Competency Builders:
4.1.1   Identify the management principles and techniques
4.1.2   Identify common organizational structures
4.1.3   Describe officer roles for emergency and non-emergency management
4.1.4   Explain the relationships with outside organizations and their impact on operations
4.1.5   Develop an organizational structure demonstrating interagency cooperation (interagency response, mutual/automatic aid response, NIMS)

Competency 4.2   **Apply short term, long term and strategic planning**

Competency Builders:
4.2.1   Explain the relationships between the short term, long term and strategic planning
4.2.2   Explain the differences between short term, long term and strategic planning
4.2.3   Identify the various organizational roles involved in each type of planning
4.2.4   Explain the fire risk analysis

Competency 4.3   **Supervise personnel according to the job performance requirements**

Competency Builders:
4.3.1   Utilize personnel to accomplish assignments in an efficient manner
4.3.2   Comply with all safety standards
4.3.3   Assign tasks or responsibilities to personnel
4.3.4   Train personnel so that assignments are performed in accordance with safety standards, efficiently, and as directed

Competency 4.4   Initiate actions to maximize member performance and/or to correct unacceptable performance

Competency Builders:
4.4.1   Identify the correct policy addressing issue
4.4.2   Correctly follow the policy process to resolve the issue
4.4.3   Recommend appropriate coaching, counseling, disciplinary or other action(s), if justified
4.4.4   Identify actions to be taken if the situation is not corrected or recurs
4.4.5   Follow up to ensure understanding
4.4.6   Apply actions fairly, firmly, and equally
4.4.7   Refer member to Employee Assistance Program, if situation warrants

Competency 4.5   Follow administrative procedures

Competency Builders:
4.5.1   Follow policies and procedures for transferring personnel
4.5.2   Follow policies and procedures for promotions/demotions
4.5.3   Follow policies and procedures regarding pay and benefits
4.5.4   Follow policies and procedures regarding commendations
4.5.5   Follow policies and procedures for disciplinary actions and grievances

Competency 4.6   Evaluate the job performance of personnel

Competency Builders:
4.6.1   Demonstrate knowledge of agency personnel evaluation policy
4.6.2   Measure employee's past performance against established goals and objectives
4.6.3   Rate performance according to agency established standards
4.6.4   Follow agency policy when conducting employee evaluations
4.6.5   Communicate a professional development plan for employee's future goals and objectives
4.6.6   Document evaluation in writing according to agency policy

Competency 4.7   Recommend changes to existing departmental policies and/or implement a new departmental policy

Competency Builders:
4.7.1   Identify and document the policy or procedure problem(s)
4.7.2   Document proposed solution(s)
4.7.3   Identify how proposed solution solves the policy or procedure problem(s)
4.7.4   Identify benefit to internal or external customers
4.7.5   Identify other policies affected by proposed change
4.7.6   Identify cost to implement (time, personnel, money, training, equipment, etc.)
4.7.7   Write policy or procedure, and cover memorandum so that documents are grammatically correct and properly formatted

Competency 4.8   Develop a new departmental policy or procedure so that it identifies the problem and proposes a solution

Competency Builders:
4.8.1   Identify and documents the policy or procedure problem(s)
4.8.2   Document proposed solution(s)
4.8.3   Identify how proposed solution solves the policy or procedure problem(s)
4.8.4   Identify benefit to internal or external customers
4.8.5   Identify other policies affected by proposed change
4.8.6   Identify cost to implement (time, personnel, money, training, equipment, etc.)
4.8.7   Write policy or procedure, and cover memorandum so that documents were grammatically correct and properly formatted

Competency 4.9   Develop a project or budget so that capital, operating, and personnel costs are determined and justified

Competency Builders:
4.9.1   Identify a purchasing need
4.9.2   Identify benefits of purchase or consequences of non-purchase
4.9.3   Develop a written budget proposal
4.9.4   Allocate for all capital, operating, and personnel costs
4.9.5   Account for all capital, operating, and personnel costs
4.9.6   Use the correct type of budget for the project
4.9.7   Justify the budget, cost vs. benefit
4.9.8   Utilize clear and concise written communication
4.9.9   Follow the department's policies, procedures or guidelines
4.9.10   Present a verbal budget proposal to the appropriate person

Competency 4.10   Follow the process of purchasing, including soliciting and awarding bids

Competency Builders:
4.10.1   Gather all applicable information before beginning
4.10.2   Describe the process of soliciting for bids
4.10.3   Describe the process of evaluating and awarding bids
4.10.4   Describe the process of purchasing, both verbally and in writing
4.10.5   Describe the process of competitive bidding
4.10.6   Utilize clear and concise verbal and written communication
4.10.7   Describe the ethics involve with relationships with vendors and with spec writing

Competency 4.11   Prepare a news release according to agency guidelines

Competency Builders:
4.11.1   Identify communications objective
4.11.2   Gather key facts and data
4.11.3   Identify your primary audience
4.11.4   Inform your chain of command of the public statement

4.11.5   Follow agency public information policy
4.11.6   Present in a clear, concise manner, free of technical terminology
4.11.7   Represent agency in a positive manner

Competency 4.12   Initiate action on a community need, given policies and procedures, so that the need is addressed

Competency Builders:
4.12.1   Identify the need
4.12.2   Determine if the need is within the mission of agency
4.12.3   Initiate action to address the need
4.12.4   Communicate with the members of the community to address the need
4.12.5   Follow agency policies and procedures
4.12.6   Represent agency to the community in a positive manner

Competency 4.13   Evaluate fire service grading for your organization

Competency Builders:
4.13.1   Define fire service grading process
4.13.2   Identify your organization's current grading
4.13.3   Analyze the deficiencies in the grading
4.13.4   Implement plan for improvement of the deficiencies

Competency 4.14   Develop a pre-incident plan with required elements, acquire approval and complete forms in accordance with policies and procedures

Competency Builders:
4.14.1   Define the components of pre-incident planning
4.14.2   Conduct a facility survey using appropriate survey components
4.14.3   Prepare diagrams or sketches of a facility using standard map symbols to record the locations of items of concern obtained from a pre-incident survey
4.14.4   Review plan with personnel
4.14.5   Discuss emergency response activities for pre-incident plan
4.14.6   Identify tactics that need to be reinforced or developed

Competency 4.15   Develop and conduct a post-incident analysis for a single or multi-unit response

Competency Builders:
4.15.1   Identify all required critical elements
4.15.2   Evaluate overall skill performance during the incident
4.15.3   Communicate results of analysis
4.15.4   Complete approved forms in accordance with policies and procedures
4.15.5   Process forms in accordance with policies and procedures

Competency 4.16   Fulfill duties and responsibilities according to assigned position in the incident management system

Competency Builders:
4.16.1   Supervise and account for assigned personnel
4.16.2   Identify the required resources
4.16.3   Identify resource assignments
4.16.4   Identify safety considerations for successful incident control
4.16.5   Produce and verbally present an appropriate operational plan
4.16.6   Follow standard operating procedures

Unit 5 Leadership

Competency 5.1   Model exceptional behavior at all times

Competency Builders:
5.1.1   Take appropriate action when needed
5.1.2   Solve problems at the lowest level
5.1.3   Model service oriented behavior to personnel
5.1.4   Communicate effectively
5.1.5   Dress professionally
5.1.6   Motivate others
5.1.7   Serve others
5.1.8   Represent all personnel in a professional manner

Competency 5.2   Identify levels of leadership within the organization

Competency Builders:
5.2.1   Identify formal leadership roles
5.2.2   Identify informal leadership roles
5.2.3   Develop professional and personal roles
5.2.4   Identify "followership" roles

Competency 5.3   Provide effective Fire Department leadership by applying the BE, KNOW, DO characteristics

Competency Builders:
5.3.1   Represent ownership of the job
5.3.2   Accept responsibility
5.3.3   Think outside the box to solve problems
5.3.4   Exhibit technical and organizational knowledge and skills

Competency 5.4   Communicate effectively

Competency Builders:
5.4.1   Identify the elements of the communication process
5.4.2   Identify elements of verbal and nonverbal communication

5.4.3   Identify levels of listening
5.4.4   Identify barriers to effective communication
5.4.5   Identify communication systems to exchange information
5.4.6   Identify essential elements of information in oral and written communications
5.4.7   Identify methods to reduce barriers to communication

Competency 5.5   Exhibit the human dimension role in leader development

Competency Builders:
5.5.1   Identify the three major elements important in the makeup and success of the
          personnel, team, and organization
5.5.2   Identify the types and causes of stress
5.5.3   Identify the direct leader's responsibilities for controlling stress
5.5.4   Identify how the environment and culture effects how you lead personnel
5.5.5   Identify leadership styles
5.5.6   Identify how leader actions/decisions have intended and unintended consequences

**Competency 5.6   Participate in personal and professional development for self and
                          personnel**

Competency Builders:
5.6.1   Participate in a formal education degree program
5.6.2   Participate in formalized process of education such as NFA (EFO) and IAFC (CFOD)
5.6.3   Complete training for certifications at the appropriate level (IFSAC, TCFP, etc.)
5.6.4   Take advantage of opportunities to gain professional experience
5.6.5   Encourage professional and personal development for others

Competency 5.7   Counsel effectively

Competency Builders:
5.7.1   Identify the developmental counseling process
5.7.2   Identify the types of developmental counseling (coaching and mentoring)
5.7.3   Identify correct and incorrect counseling procedures
5.7.4   Identify techniques for effective conflict resolution
5.7.5   Document the counseling process accurately

Competency 5.8   Exhibit ethical behavior

Competency Builders:
5.8.1   Identify the types and elements of harassment
5.8.2   Identify what constitutes a conflict of interest
5.8.3   Explain the meaning of public trust
5.8.4   Identify the code of ethics for your organization
5.8.5   Recognize the value of diversity
5.8.6   Adhere to the accepted moral standards of the organization

Unit 6 Health and Safety

Competency 6.1   Apply organizational safety standards and regulations

Competency Builders:
6.1.1   Identify applicable health and safety standards and regulations
6.1.2   Identify the role of the health and safety officer
6.1.3   Develop training on applicable health and safety standards and regulations
6.1.4   Identify individual responsibilities
6.1.5   Complete all safety reports

Competency 6.2   Manage wellness and fitness programs

Competency Builders:
6.2.1   Conduct needs assessment
6.2.2   Identify the physical fitness standards
6.2.3   Identify the requirements for physical evaluations
6.2.4   Identify the role of a peer fitness trainer
6.2.5   Follow department policies and procedures to ensure records remain confidential
6.2.6   Evaluate effectiveness of safety program

Competency 6.3   Analyze a member's accident, injury, or health exposure history

Competency Builders:
6.3.1   Create a written report of illness, injury, or health exposure
6.3.2   Identify unsafe work environment and/or behavior
6.3.3   Document actions taken in response to illness, injury, or exposure
6.3.4   Provide recommendations to prevent reoccurrence

Competency 6.4   Conduct an initial accident investigation so that the incident is documented and reports are processed in accordance with policies and procedures

Competency Builders:
6.4.1   Interview person involved in accident and witnesses to the accident
6.4.2   Review policy and procedures involving the accident
6.4.3   Document the accident on appropriate forms
6.4.4   Process report in accordance with policies and procedures

Unit 7 Codes and Inspections

Competency 7.1   Apply provisions of local building and fire prevention codes to fire prevention inspections

Competency Builders:
7.1.1   Define requirements for conducting fire prevention inspections
7.1.2   Identify the correct code, standard, or policy, including edition, and correctly interpret

7.1.3   Apply the adopted codes, standards, and referenced documents
7.1.4   Recognize the need for a permit so that requirements for permits are communicated in accordance with the policies of the jurisdiction
7.1.5   Identify the authorities and conditions giving fire service personnel the right to enter a property and perform fire prevention inspections

Competency 7.2   Perform a complete fire prevention inspection following policies and procedures

Competency Builders:
7.2.1   Identify fire load as set forth by NFPA 101, Life Safety Code Handbook
7.2.2   Identify and define causes and prevention of fires and typical fire hazards in and around a structure
7.2.3   Identify the fire hazards commonly found in manufacturing, commercial, residential, and public assembly occupancies
7.2.4   Define requirements covering the proper storage and use of flammable liquids and gases
7.2.5   Recognize hazardous conditions involving equipment, processes, and operations
7.2.6   Determine the operational readiness of existing fire detection and alarm systems
7.2.7   Determine the operational readiness of existing portable fire extinguishers
7.2.8   Inspect means of egress elements, given observations made during a field inspection of an existing building, so that means of egress elements are maintained in compliance with applicable codes and standards and all deficiencies are identified, documented, and reported in accordance with the policies of the jurisdiction
7.2.9   Determine the operational readiness of existing fixed fire suppression systems, given test documentation and field observations, so that the systems are in an operational state, maintenance is documented, and all deficiencies are identified, documented, and reported in accordance with the policies of the jurisdiction
7.2.10   Inspect emergency access for an existing site, given field observations, so that the required access for emergency responders is maintained or so that deficiencies are identified, documented, and corrected in accordance with the applicable codes, standards, and policies of the jurisdiction
7.2.11   Document inspections using Records Management Systems (RMS) per policies and procedures

Competency 7.3   Identify allowable occupancy load based on construction and occupancy classifications according to applicable codes and standards

Competency Builders:
7.3.1   Verify the type of construction for an addition or remodeling project, given field observations or a description of the project and the materials being used, so that the construction type is classified and recorded in accordance with the applicable codes and standards and the policies of the jurisdiction
7.3.2   Verify a change in occupancy load based on occupancy type

Competency 7.4   Apply fire prevention and code enforcement of hazardous materials storage

Competency Builders:
7.4.1   Describe fire inspection practices and procedures including hazard recognition and correction
7.4.2   Verify code compliance for incidental storage, handling, and use of flammable and combustible liquids and gases

Competency 7.5   Identify and interpret the appropriate standards for the installation, inspection, testing and maintenance of fire sprinkler systems

Competency Builders:
7.5.1   Review and approve the plan submitted for the fire sprinkler systems
7.5.2   Describe fire inspection practices and procedures including hazard recognition and correction

Unit 8 Fire Protection Systems

Competency 8.1   Evaluate fire protection systems and their limitations

Competency Builders:
8.1.1   Describe the types and characteristics of systems, standpipe systems and special extinguishing systems
8.1.2   Describe the types, operations, capabilities and the effects of proper application of "special agent" fire extinguishing systems
8.1.3   Identify alarm-initiating devices
8.1.4   Describe the operating characteristics of protective signaling systems and how these systems are used to control and support other fire protection systems
8.1.5   Identify water supply sprinkler pumps

Competency 8.2   Describe Heating Ventilation and Air Conditioning (HVAC) system components and their relation to smoke and fire spread

Competency Builders:
8.2.1   Describe the hazards of smoke
8.2.2   List factors that can influence smoke movement in a building

Competency 8.3   Describe water supply system components and their relation to fire protection systems

Competency Builders:
8.3.1   Describe the basic elements of a public water supply system
8.3.2   Identify sources, distribution networks, piping and hydrants
8.3.3   Identify the principles of forces that affect water at rest and in motion
8.3.4   Analyze community fire flow criteria

8.3.5   Apply mathematics and physics to the movement of water in fire suppression
           activities

Unit 9 Fireground Strategy and Tactics

Competency 9.1   Identify fire development

Competency Builders:
9.1.1   Define fire theory
9.1.2   Identify the process of combustion
9.1.3   Identify heat energy sources
9.1.4   Describe methods of heat transfer
9.1.5   Identify special conditions that occur during a fire's growth
9.1.6   Identify the stages of a compartment fire
9.1.7   Identify the factors affecting structural fire spread
9.1.8   Describe the relationship of flashover to room volume and ceiling height and location
           of fire in the compartment
9.1.9   Identify and describe locations of fire patterns
9.1.10   Identify extinguishment techniques
9.1.11   Identify the effects of fire and fire suppression activities on common burning
           materials

**Competency 9.2   Identify various types of building construction and hazards inherent
                         with each type**

Competency Builders:
9.2.1   Define basic building construction terms and types
9.2.2   Describe lightweight and truss construction hazards
9.2.3   Describe the different methods of frame construction and the fire protection concerns
           associated with each (i.e., balloon, fire stops, etc.)
9.2.4   Describe the basic types of building construction and the general fire behavior
           expected with each type of construction
9.2.5   Identify signs of building collapse

Competency 9.3   Explain fire spread dangers with different types of construction

Competency Builders:
9.3.1   Identify fire spread characteristics of interior finishes
9.3.2   Identify the different types of walls/partitions and their characteristics as related to
           fire spread
9.3.3   Identify the construction assemblies and their characteristics as related to fire spread

Competency 9.4   Implement an Incident Command System (ICS) using NIMS

Competency Builders:
9.4.1   Identify the functional components within the NIMS
9.4.2   Evaluate an emergency scene

9.4.3   Expand ICS system as needed by the incident
9.4.4   Assess situations indicating the necessity for transferring command
9.4.5   Identify necessary communication information required of the incident commander
9.4.6   Identify emergency terminology

Competency 9.5   Implement fire ground strategy and tactics

Competency Builders:
9.5.1   Describe the size up process
9.5.2   Define difference between flashover and backdraft
9.5.3   Utilize risk management techniques
9.5.4   Identify modes of operation
9.5.5   List tactical objectives associated with modes of operation
9.5.6   Identify the various types of apparatus for a specific tactical assignments

Competency 9.6   Implement fire ground safety procedures

Competency Builders:
9.6.1   Comply with two in two out rule (CFR 1910.134, etc.)
9.6.2   Ensure protective equipment is properly utilized
9.6.3   Assign an incident safety officer
9.6.4   Evaluate need for a rapid intervention team(s) (RIT)

Competency 9.7   Practice proper ventilation

Competency Builders:
9.7.1   Assess the need for ventilation
9.7.2   Determine type of ventilation for a given situation
9.7.3   Explain advantages and disadvantages of ventilation methods
9.7.4   Decide where ventilation is needed
9.7.5   Decide how ventilation should be accomplished
9.7.6   Describe the proper use of ventilation tools and equipment

Competency 9.8   Perform rescue operations

Competency Builders:
9.8.1   Describe primary and secondary search procedures under fire conditions
9.8.2   Explain the removal of injured persons from hazardous environments

Competency 9.9   Confine and extinguish fire

Competency Builders:
9.9.1   Explain the principles of fire extinguishment
9.9.2   Describe the methods of fire extinguishment
9.9.3   Identify various hoses, nozzles and other equipment used during fire extinguishment

Competency 9.10   Perform salvage and overhaul operations

Competency Builders:
9.10.1   Explain the principles of salvage and overhaul operations
9.10.2   Describe the methods of salvage and overhaul operations
9.10.3   Identify various equipment used to perform effective salvage and overhaul

Competency 9.11   Identify water supply, apparatus placement and exposure protection

Competency Builders:
9.11.1   Identify the NFPA hydrant color code
9.11.2   Identify various water sources available in typical communities
9.11.3   Identify the apparatus, equipment, and appliances required to provide water at rural locations by relay pumping or water shuttle
9.11.4   Apply mathematics and physics to the movement of water in fire suppression activities

Competency 9.12   Apply strategies and tactics appropriate to low-rise and high-rise structures

Competency Builders:
9.12.1   Identify the unique hazards to each structure
9.12.2   Identify resource needs for a given structure
9.12.3   Utilize the building systems effectively (elevators, protected stairways, communication systems, etc.)
9.12.4   Identify low/high-rise firefighting tactics

Unit 10 Investigation Techniques

Competency 10.1   Follow laws relating to the reporting of arson statutes

Competency Builders:
10.1.1   Identify general laws related to the criminal prosecution of fire related crimes
10.1.2   Identify the basic reasons for civil litigation as it pertains to fire investigation

Competency 10.2   Secure the general area of origin to protect evidence and restrict access

Competency Builders:
10.2.1   Locate general area of origin
10.2.2   Mark items of potential evidence
10.2.3   Place scene restriction marking devices around the area of origin and/or potential evidence items
10.2.4   Preserve evidence
10.2.5   Prevent unauthorized entry

Competency 10.3   Conduct a 360-degree survey of the scene

Competency Builders:
10.3.1   Identify/Mark entry and or exit points, items of potential evidence, and post fire indicators
10.3.2   Describe the building construction and condition
10.3.3   Document observations of the effects of fire suppression
10.3.4   Document observations of the effects of fire on fire behavior and spread, evidence preservation methods and burn patterns

Competency 10.4   Determine the origin and cause of a fire

Competency Builders:
10.4.1   Examine and remove fire debris from a scene wearing appropriate protective clothing
10.4.2   Check all of the debris and the surrounding area for fire cause evidence, including evidence of an explosion
10.4.3   Identify the ignition source(s)
10.4.4   Preserve all evidence properly

Competency 10.5   Manage physical evidence collection

Competency Builders:
10.5.1   Locate, collect, and package evidence
10.5.2   Maintain proper handling and preservation of evidence
10.5.3   Maintain a chain of custody
10.5.4   Dispose of evidence in a timely and safe manner and document the disposal of evidence
10.5.5   Utilize proper procedures for managing victims and fatalities so that all evidence is discovered and preserved and the protocol procedures are followed
10.5.6   Select evidence for analysis given all information from the investigation, so that items for analysis support specific investigation needs

Competency 10.6   Organize relevant information

Competency Builders:
10.6.1   Collect statements
10.6.2   Develop an interview plan
10.6.3   Conduct a witness interview
10.6.4   Evaluate, analyze, and correlate interview information to determine if the information is corroborative or conflictive in nature, and develop new investigative leads
10.6.5   Gather reports/records so that all gathered documents are appropriate to the investigation, complete and authentic, and the chain of custody is maintained

Competency 10.7   Determine appropriate action

Competency Builders:
10.7.1   Establish motive and/or opportunity of an incendiary fire through the use of prudent and complete investigation files, determining if the evidence meets legal requirements
10.7.2   Formulate an opinion of the person(s) and/or product(s) responsible for the fire, given all investigative findings, so that the opinion regarding responsibility for a fire is supported by the records, reports, documents, and evidence
10.7.3   Prepare a written investigation report so that the report accurately reflects the investigative findings, is concise, expresses the investigator's opinion, and meets the needs or requirements of the intended audience(s)

Competency 10.8   Participate in courtroom presentations

Competency Builders:
10.8.1   Testify and be cross-examined in a courtroom
10.8.2   Review all reports and documentation
10.8.3   Dress professionally
10.8.4   Follow recommended presentation practices during testimony

Unit 11 Hazardous Materials

Competency 11.1   Apply regulations and standards as it relates to hazardous materials

Competency Builders:
11.1.1   Identify the federal, state and local regulations that apply to hazardous materials
11.1.2   Identify national standards that apply to hazardous materials (i.e., NFPA 471, 472, 473, etc.)
11.1.3   Select appropriate personal protective equipment as related to hazardous materials response
11.1.4   Establish an incident command at a hazardous materials incident

Competency 11.2   Recognize and identify hazardous materials labels and placards

Competency Builders:
11.2.1   Identify chemical components of hazardous materials
11.2.2   Identify the DOT hazardous materials classes
11.2.3   Identify typical occupancies in a community or facility where hazardous materials may be manufactured, transported, stored, used, or disposed of
11.2.4   Identify the types of specialized marking systems found at fixed facilities and on modes of transportation that indicate hazardous materials

Competency 11.3   Apply safety principles applicable to hazardous materials response

Competency Builders:
11.3.1   Describe the ways hazardous materials could cause harm
11.3.2   Identify the general routes of entry for human exposure to hazardous materials

11.3.3   Identify the precautions necessary when rendering emergency medical care to victims of hazardous materials incidents
11.3.4   Identify typical ignition sources found at the scene of hazardous materials incidents
11.3.5   Understand chemical reactions of hazardous materials in contact with water and/or other hazardous materials
11.3.6   Estimate community risk when exposed to various hazardous materials
11.3.7   Follow process of emergency decontamination

Unit 12 Instructional Skills

Competency 12.1   Assemble course materials

Competency Builders:
12.1.1   Select a lesson plan appropriate to the topic
12.1.2   Select audiovisual aids and equipment appropriate to the lesson
12.1.3   Utilize correct policy and procedure to obtain teaching materials
12.1.4   Choose a presentation method appropriate to the teaching environment
12.1.5   Assemble prepared materials so they are ready to deliver the lesson

Competency 12.2   Organize learning environment for successful learning

Competency Builders:
12.2.1   Arrange the classroom so that lighting, distractions, climate control or weather, noise control, and seating are considered
12.2.2   Prepare audiovisual equipment and/or teaching aids for use
12.2.3   Test audiovisual equipment and/or teaching aids prior to class
12.2.4   Ensure that recognized safety hazards are addressed

Competency 12.3   Present prepared lessons

Competency Builders:
12.3.1   Utilize presentation methods specified by the lesson plan
12.3.2   Demonstrate effective oral communication techniques
12.3.3   Utilize audiovisual aids and equipment effectively
12.3.4   Complete instruction in the time frame provided
12.3.5   Achieve stated learning objectives

Competency 12.4   Adjust the presentation to changing classroom conditions

Competency Builders:
12.4.1   Demonstrate flexibility and ability to solve problems
12.4.2   Maintain personal composure and professional demeanor
12.4.3   Adjust instruction to the time frame provided
12.4.4   Achieve stated learning objectives

Competency 12.5   **Adjust to differences in learning styles so that lesson objectives are accomplished**

Competency Builders:
12.5.1   Utilize coaching and motivational techniques
12.5.2   Demonstrate flexibility and ability to solve problems
12.5.3   Address disruptive behavior
12.5.4   Maintain personal composure and professional demeanor
12.5.5   Complete instruction in the time frame provided
12.5.6   Achieve stated learning objectives

Competency 12.6   **Operate audiovisual equipment**

Competency Builders:
12.6.1   Use audiovisual equipment effectively
12.6.2   Operate audiovisual equipment so that it functions properly
12.6.3   Follow proper cleaning and field maintenance procedures

Competency 12.7   **Utilize audiovisual materials**

Competency Builders:
12.7.1   Utilize audiovisual equipment
12.7.2   Utilize prepared topical media and equipment
12.7.3   Present intended objectives clearly
12.7.4   Transition within and between media properly
12.7.5   Transition between media and other parts of lesson presentation smoothly
12.7.6   Return media to storage

Competency 12.8   **Administer oral, written, and performance tests**

Competency Builders:
12.8.1   Present all material that will be tested or evaluated
12.8.2   Administer an oral test
12.8.3   Administer a written test
12.8.4   Administer a performance skills evaluation
12.8.5   Follow applicable testing/evaluation procedures
12.8.6   Exercise fairness, confidentiality, and security in the testing process

Competency 12.9   **Grade student oral, written, or performance tests**

Competency Builders:
12.9.1   Grade student tests or skills evaluations based on the lesson plan
12.9.2   Maintain accuracy and consistency in evaluating/grading
12.9.3   Follow applicable evaluation/grading procedures
12.9.4   Utilize appropriate answer key
12.9.5   Ensure testing process is equitable and confidential

Competency 12.10   Report test results

Competency Builders:
12.10.1   Interpret and communicate test results according to procedures
12.10.2   Maintain accuracy and consistency in reporting
12.10.3   Follow applicable test result reporting procedures
12.10.4   Forward report of test results to proper person(s)
12.10.5   Exercise appropriate confidentiality in reporting

Competency 12.11   Provide evaluation feedback to students

Competency Builders:
12.11.1   Provide student feedback based upon testing/evaluation results
12.11.2   Provide feedback and coaching that is specific to each student
12.11.3   Provide feedback that is timely and objective
12.11.4   Provide feedback that is clear and relevant
12.11.5   Include suggestions to improve future performance
12.11.6   Maintain security of test results and privacy of individual feedback

Competency 12.12   Schedule instructional sessions

Competency Builders:
12.12.1   Use appropriate scheduling form or calendar
12.12.2   Follow department policy with regard to scheduling resources
12.12.3   Avoid conflicting courses, staff, other resources
12.12.4   Provide for course delivery according to given timelines
12.12.5   Use of available resources effectively

Competency 12.13   Acquire training resources according to agency policy

Competency Builders:
12.13.1   Follow agency acquisition/purchasing policy
12.13.2   Adhere to the established budget
12.13.3   Meet established timelines for implementation of purchases
12.13.4   Make recommendations for purchases that support training goals

Competency 12.14   Coordinate training record keeping so that all agency and legal requirements are met

Competency Builders:
12.14.1   Document training activity
12.14.2   Utilize appropriate record keeping forms
12.14.3   Adhere to agency record keeping policy
12.14.4   Adhere to professional record keeping standards
12.14.5   Adhere to all legal requirements for record keeping
12.14.6   Properly utilize applicable record keeping database

Competency 12.15   Evaluate instructors

Competency Builders:
12.15.1   Observe the teaching presentation of the Instructor being evaluated
12.15.2   Evaluate in a manner so as not to disrupt the learning environment
12.15.3   Complete necessary forms or other documents
12.15.4   Identify strengths and weaknesses of the Instructor
12.15.5   Make written recommendations for changes in instructional style or method through coaching
12.15.6   Allow for feedback from the Instructor being evaluated

Competency 12.16   Create a lesson plan

Competency Builders:
12.16.1   Conduct a needs analysis to include basic research, student and resource needs assessments
12.16.2   Create a lesson plan
12.16.3   Meet requirements for topic and target audience
12.16.4   Write learning objectives, lesson outline, course materials
12.16.5   Include instructional aids and evaluation plan
12.16.6   Utilize standard lesson plan format
12.16.7   Develop behavior objectives based on job performance requirements

Competency 12.17   Modify an existing lesson plan

Competency Builders:
12.17.1   Meet requirements for topic and target audience
12.17.2   Include learning objectives, lesson outline, course materials
12.17.3   Include instructional aids and evaluation plan
12.17.4   Utilize appropriate lesson plan format
12.17.5   Ensure the job performance requirements are achieved

Competency 12.18   Supervise other instructors and students during training

Competency Builders:
12.18.1   Identify applicable safety guidelines for the training scenario
12.18.2   Supervise an increased hazard exposure training scenario
12.18.3   Implement the Incident Command System (NIMS)
12.18.4   Adhere to safety standards and practices
12.18.5   Meet instructional goals
12.18.6   Provide positive safety control over training scenarios
12.18.7   Respond to safety issues and address them as they occur

Competency 12.19   Develop student evaluation instruments

Competency Builders:
12.19.1   Create and assemble a student evaluation instrument
12.19.2   Create an instrument that determines if the student has achieved the learning objectives
12.19.3   Create an instrument that evaluates performance in an objective manner
12.19.4   Create an instrument that evaluates performance in a reliable manner
12.19.5   Create an instrument that evaluates performance in a verifiable manner
12.19.6   Create an instrument that evaluates performance in a valid manner
12.19.7   Include instructions
12.19.8   Include a question example with a sample response
12.19.9   Include an answer key
12.19.10   Create an instrument that is bias free

Competency 12.20   Develop a class evaluation instrument

Competency Builders:
12.20.1   Develop an instrument that allows feedback from students to the Instructor
12.20.2   Include opportunity for feedback on instructional methods
12.20.3   Include opportunity for feedback on communication techniques
12.20.4   Include opportunity for feedback on learning environment
12.20.5   Include opportunity for feedback on course content, student materials

Competency 12.21   Analyze student evaluation instruments

Competency Builders:
12.21.1   Conduct analysis using learning objectives
12.21.2   Conduct analysis using test data
12.21.3   Conduct analysis in compliance with agency policies
12.21.4   Determine instrument validity
12.21.5   Recommend necessary changes to create a valid evaluation instrument

Competency 12.22   Develop a public education program

Competency Builders:
12.22.1   Deliver contents of the public education program related to the target audience
12.22.2   Communicate to the target audience

Employability Competencies
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Employability Competencies are underlying skills, including work habits and ethics, essential to the workplace and personal growth. SCANS (Secretary's Commission on Achieving Necessary Skills) are the basis for these competencies and are included in all programs based on an ACAP (Austin Competency Analysis Profile). These skills are taught with the intention of providing the student with a well-rounded understanding of workplace expectations in areas not specific to a particular occupation, in an attempt to develop a valuable employee.

ACAP: Fire Protection Technology

Unit 1:	Resources
Unit 2:	Interpersonal
Unit 3:	Information
Unit 4:	Systems
Unit 5:	Technology
Unit 6:	Basic Skills
Unit 7:	Thinking Skills
Unit 8:	Personal Qualities

Unit 1:   Resources

Competency 1.1   Manage time effectively

Competency Builders:
1.1.1   Select relevant, goal-related activities
1.1.2   Rank activities in order of importance
1.1.3   Allocate time to activities
1.1.4   Identify tasks to be completed
1.1.5   Develop and follow an effective, workable schedule based on accurate estimates of such things as importance of tasks, time to complete tasks, time available for completion, and task deadlines, without wasting time
1.1.6   Identify possible impact of schedules on other activities
1.1.7   Evaluate and adjust a schedule

Competency 1.2　　Manage money effectively

Competency Builders:
1.2.1　Prepare or use budgets including making cost and revenue forecasts
1.2.2　Record details to track budget performance
1.2.3　Adjust budget appropriately when needed
1.2.4　Allocate money to include accurately preparing and using a budget according to a consistent and orderly accounting method
1.2.5　Calculate future budgetary needs based on projected costs and revenues
1.2.6　Track the extent to which actual costs and revenues differ from the estimated budget, and take appropriate and effective action

Competency 1.3　　Manage material and facility resources effectively

Competency Builders:
1.3.1　Store resources such as materials, supplies, parts, equipment, space or final products in an order that makes the best use of them
1.3.2　Allocate materials and facility resources to include carefully planning the steps involved in the acquisition, storage, and distribution of resources
1.3.3　Acquire, transport, and store material and facility resources safely and efficiently
1.3.4　Maintain material and facility resources in good condition
1.3.5　Distribute material and resources to the end user

Competency 1.4　　Manage human resources efficiently

Competency Builders:
1.4.1　Assess people's knowledge, skills and potential
1.4.2　Identify present and future work load
1.4.3　Match individual talents and workload effectively
1.4.4　Monitor performance and provide feedback actively

Unit 2:　　Interpersonal Skills

Competency 2.1　　Participate as a member of a team

Competency Builders:
2.1.1　Work cooperatively with others
2.1.2　Contribute to group with ideas, suggestions, and efforts
2.1.3　Complete personal share of tasks necessary to complete a project
2.1.4　Encourage team members by listening and responding appropriately to their contributions
2.1.5　Build on individual team members' strengths
2.1.6　Resolve differences for the benefit of the team
2.1.7　Take personal responsibility for accomplishing goals
2.1.8　Challenge existing procedures, policies, or authorities responsibly

Competency 2.2   Teach others

Competency Builders:
2.2.1   Coach or otherwise teach others to apply related concepts and theories to tasks
2.2.2   Convey job information to allow others to see its applicability and relevance to tasks
2.2.3   Identify training needs of others
2.2.4   Assess performance of others
2.2.3   Provide feedback on others' performance in a constructive manner
2.2.4   Provide solutions to observed problems

Competency 2.3   Serve clients/customers

Competency Builders:
2.3.1   Identify customers/clients expectations through surveys, questions, body language, or expressions
2.3.2   Communicate and work with clients/customers to satisfy their expectations
2.3.3   Listen actively to customers to avoid misunderstanding and to identify needs
2.3.4   Provide alternatives to clients/customers to satisfy their expectations
2.3.5   Provide services and goods in a timely, positive manner
2.3.6   Obtain additional resources to satisfy client needs efficiently

Competency 2.4   Exercise leadership

Competency Builders:
2.4.1   Communicate thoughts, feelings, and ideas to justify a position
2.4.2   Motivate and/or convince individuals or groups through encouragement or persuasion
2.4.3   Challenge existing procedures, policies or authorities responsibly
2.4.4   Use rules/values followed by others
2.4.5   Justify a position logically and appropriately
2.4.6   Consider minority viewpoints in making decisions or taking action

Competency 2.5   Negotiate to arrive at a decision

Competency Builders:
2.5.1   Achieve agreement through exchanging specific resources or resolving divergent interests
2.5.2   Research opposition and the history of the conflict
2.5.3   Set realistic, obtainable goals
2.5.4   Present facts and arguments
2.5.5   Listen to and reflect upon what has been said
2.5.6   Clarify problems and resolve conflicts
2.5.7   Propose and examine possible options
2.5.8   Make reasonable compromises

Competency 2.6   Work with cultural diversity

Competency Builders:
2.6.1   Work with men and women, and a variety of ethnic, social and educational backgrounds
2.6.2   Compare one's own culture and that of others
2.6.3   Respect the rights of others while helping them make cultural adjustments when necessary
2.6.4   Base impression upon individual performance, not stereotypes
2.6.5   Understand concerns of members of other ethnic and gender groups

Unit 3:   Information

Competency 3.1   Acquire and evaluate information

Competency Builders:
3.1.1   Pose analytic questions to determine specific information needs
3.1.2   Select appropriate information sources
3.1.3   Determine when new information must be created and do so
3.1.4   Evaluate data for relevance and accuracy

Competency 3.2   Organize and maintain information

Competency Builders:
3.2.1   Organize a variety of information forms or sources in a systemic fashion
3.2.2   Maintain written or other forms of information to keep up-to-date information available in a systemic fashion
3.2.3   Organize information from computer, visual, oral and physical sources in readily accessible formats, such as computerized data bases, spreadsheets, microfiche, video disks, paper files, etc.
3.2.4   Transform data into different formats in order to organize them by the application of various methods such as sorting, classifying, or more formal methods

Competency 3.3   Interpret and communicate information

Competency Builders:
3.3.1   Select information to be communicated
3.3.2   Identify best methods to present information (e.g., overheads, handouts, etc.)
3.3.3   Communicate results to others in desired format
3.3.4   Convey information to others through a variety of means including oral, written, graphic, pictorial or multi-media methods

Competency 3.4   Process information using computer

Competency Builders:
3.4.1   Acquire information from the internet and other computer based resources
3.4.2   Organize information, using spreadsheets, word processor, and data bases effectively
3.4.3   Analyze information to identify trends, make projections, etc.
3.4.4   Enter, modify, retrieve, store and verify data and other information in a computer
3.4.5   Choose format for display (e.g., line graphs, bar graphs, tables, pie charts, narrative)
3.4.6   Convey information into the chosen format
3.4.7   Communicate information using e-mail, list serves, word processor, or other computer based communication functions

Unit 4:   Systems

Competency 4.1   Apply appropriate techniques to function within social, organizational, and technological systems to attain goals effectively and ethically

Competency Builders:
4.1.1   Identify dynamics and components of social, organizational and technological systems
4.1.2   Recognize acceptable behavior and attitudes within social, organizational and technological systems
4.1.3   Communicate through acceptable methods to interact with social, organizational, and technological systems effectively, efficiently, and ethically
4.1.4   Recognize how a system's structures relate to goals
4.1.5   Recognize the right of people to ask for information and where to get resources

Competency 4.2   Monitor and correct performance of a system

Competency Builders:
4.2.1   Distinguish trends
4.2.2   Predict impact of actions on system operations
4.2.3   Diagnose deviations in the function of a system/organization
4.2.4   Correct performance through necessary action
4.2.5   Detect deviations from systems intended purpose
4.2.6   Troubleshoot the system
4.2.7   Make changes to the system to rectify system function and to ensure quality of product

Competency 4.3 Improve and design systems

Competency Builders:
4.3.1 Make suggestions to modify or improve existing products or services
4.3.2 Implement approved improvements in systems
4.3.3 Evaluate the benefits of the improvements
4.3.4 Develop/recommend new or alternative system designs based on relevant feedback
4.3.5 Communicate the results of the evaluations

Unit 5: Technology

Competency 5.1 Select appropriate technology

Competency Builders:
5.1.1 Determine the desired results or outcomes and applicable restraints
5.1.2 Visualize the necessary methods and applicable technology
5.1.3 Evaluate specifications
5.1.2 Judge which procedures, tools, machines or programs will produce the desired results

Competency 5.2 Apply technology to task

Competency Builders:
5.2.1 Set up tools such as machines, computers, and programming systems, using proper procedures, to get desired results
5.2.2 Analyze how different parts of machines interact and how machines interact with broader production systems
5.2.3 Install machines including computers
5.2.4 Interpret machine output accurately
5.2.5 Detect errors from program output

Competency 5.3 Maintain and troubleshoot technology

Competency Builders:
5.3.1 Prevent problems in machines, computers, and other technologies
5.3.2 Identify problems in machines, computers and other technologies
5.3.3 Perform routine maintenance and service of machines, computers, and other technologies
5.3.4 Detect more serious problems
5.3.5 Generate workable solutions to correct deviations
5.3.6 Recognize need for additional help

Unit 6: Basic Skills

Competency 6.1   **Read written information in prose and documents, such as manuals, graphs, and schedules with understanding**

Competency Builders:
6.1.1   Determine the main idea or essential message
6.1.2   Identify relevant details, facts, and specifications
6.1.3   Infer or locate the meaning of unknown or technical vocabulary
6.1.4   Judge the accuracy, appropriateness, style, and plausibility of reports, proposals, or theories of other writers

Competency 6.2   **Communicate thoughts, ideas, information, and messages in writing**

Competency Builders:
6.2.1   Record information completely and accurately
6.2.2   Compose and create documents such as letters, directions, manuals, reports, proposals, graphs, and flow charts
6.2.3   Use language, style, organization and format appropriate to the subject matter, purpose, and audience
6.2.3   Include supporting documentation where appropriate
6.2.4   Attend to level of detail
6.2.5   Check, edit, and revise for correct information, appropriate emphasis, form, grammar, spelling, and punctuation

Competency 6.3   **Perform arithmetic computations and concepts with appropriate technology and/or paper and pencil to solve simple work problems**

Competency Builders:
6.3.1   Perform basic computations
6.3.2   Use basic numerical concepts such as whole numbers and percentages in practical situations
6.3.3   Make reasonable estimates of arithmetic results without a calculator
6.3.4   Use tables, graphs, diagrams, and charts to obtain or convey quantitative information

Competency 6.4   **Perform mathematics in a variety of techniques to approach practical problems appropriately**

Competency Builders:
6.4.1   Choose appropriate technique to solve problem
6.4.2   Use quantitative data to construct logical explanations for real world situations

6.4.3   Express mathematical ideas and concepts orally and in writing
6.4.4   Predict an event considering the role of chance in the occurrence

Competency 6.5   Listen and react appropriately to verbal messages

Competency Builders:
6.5.1   Receive, attend to, interpret, and respond to verbal messages appropriately
6.5.2   Receive, attend to, interpret, and respond to other cues such as body language appropriately
6.5.3   Listen to comprehend, learn, critically evaluate, appreciate, or support the speaker

Competency 6.6   Deliver oral messages appropriately to listeners

Competency Builders:
6.6.1   Organize ideas and communicates orally as appropriate for the situation and listeners
6.6.2   Participate in conversation, discussion, and group presentations
6.6.3   Select an appropriate medium for conveying a message
6.6.4   Use verbal language and other cues, such as body language, in a way appropriate in style, tone, and level of complexity to the audience and the occasion
6.6.5   Speak clearly and communicate a message
6.6.6   Respond to listener feedback in a way that indicates understanding
6.6.7   Ask questions when needed

Unit 7:   Thinking Skills

Competency 7.1   Generate new ideas using creative thinking

Competency Builders:
7.1.1   Change or reshapes goals using nonlinear or unusual connections
7.1.2   Imagine new ideas by combining ideas or information in new ways
7.1.3   Connects seemingly unrelated ideas
7.1.4   Reshape goals in ways that reveal new possibilities

Competency 7.2   Make decisions

Competency Builders:
7.2.1   Specify goals and constraints
7.2.2   Generate alternatives
7.2.3   Consider risks
7.2.4   Evaluate and choose best alternatives

7.2.5   Analyze how personal, family, and social factors influence decisions, behaviors, and lifestyles
7.2.6   Utilize a decision-making process to develop future career goals

Competency 7.3   Apply problem solving skills appropriate to situation

Competency Builders:
7.3.1   Recognize a problem exists (i.e., that there is a discrepancy between what is and what should be)
7.3.2   Identify possible reasons for the problem
7.3.3   Devise and implement a plan of action to resolve the problem
7.3.4   Evaluate and monitor progress
7.3.5   Revise the plan as indicated by the findings
7.3.6   Communicate in both oral and written language while working with others to identify/resolve problems
7.3.7   Reason inductively and deductively to solve problems
7.3.8   Select and apply problem-solving methods

Competency 7.4   See things in the mind's eye

Competency Builders:
7.4.1   Organize and process symbols, pictures, graphs, objects or other information to visualize actual representation (such as a building from blueprints)
7.4.2   Visualize possible options
7.4.3   Communicate visualized options verbally

Competency 7.5   Apply learning strategies to support life-long learning

Competency Builders:
7.5.1   Apply and adapt existing and new knowledge and skills, using learning techniques, in both familiar and changing situations
7.5.2   Evaluate learning style (visual, aural, etc.) to make proper selection of learning techniques
7.5.3   Identify various learning techniques including formal learning strategies (note taking or clustering items that share some characteristics) and informal learning strategies (awareness of unidentified false assumptions that may lead to faulty conclusions)
7.5.4   Make decisions/plans concerning school to work training and future educational needs using relevant resources

Competency 7.6   Apply reasoning to finding solutions or draw conclusions

Competency Builders:
7.6.1   Discover a rule or principle underlying the relationship between two or more objects
7.6.2   Extract rules or principles from a set of objects or a written text
7.6.3   Apply principles to solve problems

7.6.4   Draw conclusion from available information using logic
7.6.5   Apply rules and principles to a new situation
7.6.6   Determine which conclusion is correct when given a set of facts and conclusions
7.6.7   Evaluate alternatives and assess consequences to achieve personal and social goals

Unit 8:   Personal Qualities

Competency 8.1   Act responsibly

Competency Builders:
8.1.1   Persevere toward goal attainment with a high level of effort
8.1.2   Set high standards in order to become excellent at doing tasks by setting high standards, paying attention to details, working well and displaying a high level of concentration even when assigned an unpleasant task
8.1.3   Display a high standard of attendance, punctuality, enthusiasm, vitality, and optimism in approaching and completing tasks

Competency 8.2   Exhibit effective self-esteem

Competency Builders:
8.2.1   Maintain a positive view of self and believes in own self-worth
8.2.2   Identify won skill and abilities possessed
8.2.3   Recognize own emotional capacity and needs
8.2.4   Identify/Apply effective ways to handle emotional capacity and needs
8.2.5   Recognize own impression on others

Competency 8.3   Employ appropriate social skills

Competency Builders:
8.3.1   Demonstrate understanding, friendliness, adaptability, empathy and politeness in new and on-going group settings
8.3.2   Assert self in familiar and unfamiliar social situations
8.3.3   Relate well to others
8.3.4   Respond appropriately as the situation requires
8.3.5   Take an interest in what others say and do

Competency 8.4   **Manage self**

Competency Builders:
8.4.1   Assess own knowledge, skills, and abilities accurately
8.4.2   Set well-defined and realistic personal goals
8.4.3   Monitor progress toward goal attainment
8.4.4   Motivate self through goal achievement
8.4.5   Exhibit self-control and respond to feedback unemotionally and nondefensively
8.4.6   Initiate action

Competency 8.5   **Apply integrity and honesty to all matters**

Competency Builders:
8.5.1   Recognize situations when faced with making a decision or exhibiting behavior that may break with commonly held personal or societal values
8.5.2   Understand the impact of violating these beliefs and codes on an organization, self, and others
8.5.3   Choose an ethical course of action

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 component, developed by ACT, measures students' applied academic skills. These academic skills include Applied Mathematics, Locating Information, Reading for Information, Listening, Writing, Teamwork, Observation, and Applied Technology. It is determined during the profile which skills apply to the specific job or occupational area.

The ACAP (Austin Competency Analysis Profile) typically includes one or more of the skills described below. A fourth skill may be identified and included if the subject matter experts agree that it is necessary for entry into the position.

- *Applied Mathematics* measures students' ability to analyze, set-up, and solve math problems typically found in the workplace.

- *Locating Information* measures students' ability to use graphic documents to insert, extract, and apply information (includes charts, graphs, tables, forms, blueprints, maps, and instrument gauges).

- *Reading for Information* measures students' ability to read and understand work-related reading materials (text only—does not include charts, graphs, tables, forms, blueprints, maps, or instrument gauges).

Each WorkKeys 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 as identified by subject matter experts.

A CT WorkKeys® Skill Levels

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

Entry Level

Refers to the requirements necessary for someone entering into the occupation (without previous on the job experience).

Performance Level

Refers to the level at which an employee would need to function effectively having gained on-the-job knowledge.

Skill Ranking

Refers to the criticality of the skill to the performance of the occupation with the most critical skill indicated with one (1) and higher numbers indicating lower criticality.

Levels of WorkKeys® Defined

The skills needed to achieve each level for WorkKeys academic skills identified in this profile are as follows:

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.

Level 7

- Recognize the definitions of difficult, uncommon jargon or technical terms from context.
- Generalize from a passage to situations neither described in nor completely similar to those in a passage.

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).

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.

Level 7

- Solve problems requiring multiple steps of logic and calculation.
- Solve problems involving more than one unknown, nonlinear functions (e.g., rate of change), and applications of basic statistical concepts (e.g., error of measurement).
- Locate errors in multiple-step calculations.
- Solve problems with unusual content or format, or with incomplete or implicit information.

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ACAP–*Austin Competency Analysis* Profile–a well-established job analysis process unique to Austin Community College involving business, industry, labor, and community agency representatives from throughout the Austin area.

Advanced Competencies–the occupation and academic competencies needed to advance in a given occupation.

Competency–an observable and measurable behavior that has a definite beginning and end; can be performed within a limited amount of time; consists of two or more competency builders; and leads to a product, service, or decision.

Competency Builders–the skills, knowledge, and attitudes (written in measurable terms) needed to perform a given competency.

Core Competencies–the essential occupational and academic competencies needed to enter and remain in a given occupation.

Employability Competencies–underlying skills, abilities, and knowledge as they relate to work ethics, work habits, and personal growth and development.

Entry Level–refers to the requirements necessary for someone entering into the occupation (without previous on the job experience).

Performance Level–refers to the level at which an employee would need to function effectively having gained on-the-job knowledge.

Skill Ranking–refers to the criticality of the WorkKeys skill to the performance of the occupation with one (1) indicating the most critical skill.

SME–*Subject Matter Expert*–incumbent worker in a given occupation that is knowledgeable about the job.

Target Job Titles–titles that may be assigned to the types of jobs aligned with an ACAP. Possible titles of jobs for which students would qualify with certificates or degrees in the programs based on an ACAP.

WorkKeys Skills–Eight skills, defined by ACT, referring to underlying, academic skills as they relate to the workplace. The skills include *Applied Mathematics, Applied Technology, Locating Information, Reading for Information, Observation, Teamwork, Listening, and Writing*. Each skill has a very specific definition and levels of each skill can be aligned with specific abilities defined at each level. WorkKeys skills are the basis for an occupational analysis system developed by ACT. The WorkKeys analysis is the final part of the overall ACAP report. All ACAPs include *Reading for Information, Locating Information, and Applied Mathematics*. A fourth skill may be included in the profile if the subject matter experts identify a need for it.