ACAP

Austin Competency Analysis Profile

Sterile Processing Technician

Conducted
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What's Inside ?

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Preface
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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.

Introduction
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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
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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: Sterile Processing Technician

Sterile Processing Technician

Medical Equipment Preparers

Procurement Tech/CS Tech/Material Management

Occupational Competencies

The following Occupational Competencies have been identified and verified by a panel of subject matter experts currently employed in the field of Sterile Processing Technician. 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: Sterile Processing Technician

Unit 1   Professional Development

Unit 2   Federal, State and Local Guidelines

Unit 3   Safety

Unit 4   Equipment

Unit 5   Documentation and Reporting

Unit 6   Miscellaneous

Occupational Competencies
ACAP: Sterile Processing Technician

Unit 1 Professional Development

Competency 1.1 **Complete required training testing with passing grades as required by departmental policy**

Competency Builders:
1.1.1   Identify appropriate equipment for specified anatomical parts
1.1.2   Use appropriate medical terminology based on physiological awareness
1.1.3   Identify instrumentation and medical supplies using appropriate medical terminology
1.1.4   Apply standard infection control techniques
1.1.5   Apply universal precautions as indicated in policies and procedures
1.1.6   Apply HIPAA guidelines in all work-related areas

Competency 1.2 **Attend all required continued education training as prescribed by department leadership**

Competency Builders:
1.2.1   Identify required number of continuing education hours
1.2.2   Identify available continuing education resources (books, conferences, vendor specific seminars, etc.)
1.2.3   Maintain documentation of completion of continuing education hours

Competency 1.3 **Maintain IAHCSMM or ASP/CSP certification**

Competency Builders:
1.3.1   Complete required hours on the job
1.3.2   Study required material through self-study or attending classes
1.3.3   Complete required registration
1.3.4   Pass certification test through Association of Healthcare Central Service Materiel Management (IAHCSMM) and/or Associate Safety Professional/Certified Safety Professional (ASP/CSP) within required time limit
1.3.5   Renew certification annually by fulfilling requirements (CCU's and fees) as prescribed by certifying agency

Unit 2 Federal, State and Local Guidelines

Competency 2.1 **Apply HIPAA guidelines in all work-related issues**

Competency Builders:
2.1.1   Maintain confidentiality in conversation
2.1.2   Maintain confidentiality in medical records
2.1.3   Shred all documents that are discarded

2.1.4   Follow restricted access procedures

Competency 2.2   Apply OSHA guidelines and procedures

Competency Builders:
2.2.1   Locate the OSHA guidelines
2.2.2   Follow guidelines pertaining to materials
2.2.3   Follow guidelines related to facilities

Competency 2.3   Apply JCAHO guidelines and procedures

Competency Builders:
2.3.1   Locate the JCAHO guidelines
2.3.2   Follow guidelines for cleanliness
2.3.3   Follow guidelines for storage
2.3.4   Follow guidelines for documentations
2.3.5   Follow guidelines for procedures
2.3.6   Wear appropriate PPE for a given situation
2.3.7   Follow departmental policies and procedures

Unit 3 Safety

Competency 3.1   Follow safety procedures

Competency Builders:
3.1.1   Wear all Personal Protective Equipment (PPE) while in the decontamination area as required by OSHA and departmental policy
3.1.2   Apply proper body mechanics when lifting, pushing or pulling heavy objects
3.1.3   Locate fire extinguisher, escape routes, pull stations, oxygen shut off valve, and other facility specific safety issues
3.1.4   Maintain competencies on safety issues through annual assessment
3.1.5   Locate MSDS Manual
3.1.6   Use MSDS Manual on demand
3.1.7   Follow required actions based on information in the MSDS Manual (including notification of supervisor)
3.1.8   Update MSDS Manual information according to product additions
3.1.9   Take action to control unsafe condition if there is imminent likelihood of injury

Competency 3.2   Comply with relevant safety standards and regulations

Competency Builders:
3.2.1   Report any unsafe condition to supervisor using required facility form when imminent injury or facility damage is not likely to occur before form is received and acted on
3.2.2   Clean all department surface area, racks, shelves, storage cabinets and areas as required by CDC, OSHA, JCAHO and departmental policy on prescribed schedule

Competency 3.3   Apply specific medical safety practices

Competency Builders:
3.3.1   Perform appropriate required actions in the case of exposure to potential body fluid pathogen
3.3.2   Report to supervisor
3.3.3   File an incident report
3.3.4   Assess coworkers for adherence to principles of asepsis
3.3.5   Maintain current Basic Life Support (BLS)/Cardio Pulmonary Resuscitation (CPR) Healthcare Provider certificate

Unit 4 Equipment and Supplies

Competency 4.1   Decontaminate patient care equipment

Competency Builders:
4.1.1   Retrieve equipment and instruments from operating rooms and other utilization areas at designated times or when called to do so
4.1.2   Transport contaminated material to the decontamination room using appropriate means of transportation (closed case cart, covered cart, etc.)
4.1.3   Perform decontamination based on established policy and procedure
4.1.4   Perform manual washing and cleaning of instruments requiring this protocol below the water surface
4.1.5   Change water frequently as appropriate
4.1.6   Rinse or dispose of towels, brushes, pipe cleaners, etc., as needed
4.1.7   Dispose of sharps according to departmental policy
4.1.8   Change needle boxes when half-full as required by departmental policy
4.1.9   Dispose of biohazard waste in the appropriate container according to departmental policy
4.1.10   Confine biohazard spills according to departmental policy
4.1.11   Report biohazard spills according to departmental policy
4.1.12   Contain biohazard spills until they can be cleaned by department personnel or a haz-mat team as required
4.1.13   Utilize cleaning agents as specified in manufacturer's instructions
4.1.14   Notify appropriate unit supervisor and/or buyer of any malfunctioning equipment
4.1.15   Operate ultrasonic cleaner in accordance with manufacturer's instruction and departmental policy
4.1.16   Operate washer sterilizer in accordance with manufacturer's instruction and departmental policy
4.1.17   Replenish enzyme cleaner and other liquids when alarm on the washer sterilizer sound
4.1.18   Remove instruments from washer sterilizer draining as much water from trays as possible

Competency 4.2   Operate sterilization equipment properly

Competency Builders:
4.2.1   Identify equipment and the purpose of each
4.2.2   Operate steam autoclave according to manufacturer's directions and departmental policy to achieve sterility of surgical and other packs (including gravity and pre vac)
4.2.3   Operate ethylene oxide sterilization equipment according to manufacturer's directions and departmental policy to achieve sterility of instruments that can only be sterilized using this equipment
4.2.4   Operate washer sterilizer according to manufacturer's directions and departmental policy to clean contaminated instruments
4.2.5   Operate Sterrad equipment according to manufacture's directions and departmental policy to achieve sterility of load
4.2.6   Operate Steris according to manufacturer's directions and departmental policy to clean contaminated instruments

Competency 4.3   Maintain cleaning and sterilization equipment

Competency Builders:
4.3.1   Perform sterilization validation tests as required for each sterilizer according to established policy, procedures and manufacturer's recommendations
4.3.2   Operate all cleaning equipment as prescribed by manufacturer and departmental procedure
4.3.3   Monitor all equipment during the entire operations phase
4.3.4   Report any suspected equipment malfunction following departmental protocol and forms
4.3.5   Initiate equipment repair if previously cleared to do so by department head or facility equipment repair staff

Competency 4.4   Maintain other equipment

Competency Builders:
4.4.1   Perform preventative maintenance on all equipment as described by the manufacturer and department policy to keep it operational
4.4.2   Clean air powered equipment according to manufacturer's instruction and department procedure
4.4.3   Clean endoscopic equipment according to manufacturer's instruction and department procedure
4.4.4   Evaluate instruments for proper function before sterilizing
4.4.5   Pull instruments that are non-functional and replace with functional instruments
4.4.6   Pull equipment that is non-functional and replace with functional equipment
4.4.7   Report non-functional instruments and equipment to supervisor for evaluation prior to repair or reorder
4.4.8   Lubricate hinged instruments that are not working correctly
4.4.9   Sharpen instruments as needed
4.4.10   Repair instruments when possible
4.4.11   Request repairs to medical equipment following departmental policy

4.4.12   Request performance testing of systems

Competency 4.5   Prepare supplies

Competency Builders:
4.5.1   Identify the instruments that are going in the trays
4.5.2   Prepare instruments and supplies to be sterilized using proper sterilization techniques according to departmental procedures
4.5.3   Separate instruments so that all the same instruments are together to determine whether all the instruments are present
4.5.4   Load instruments into the trays in a specified order to facilitate use in the operating room
4.5.5   Assemble surgical trays as required by current component lists
4.5.6   Prepare required documentation for filing for each sterilizer load
4.5.7   Set up trays using only the quantity of supplies established by departmental leadership to assist with budget control
4.5.8   Choose appropriate tray/container for items to be sterilized
4.5.9   Pack delicate items on top of heavy items on the tray to be sterilized
4.5.10   Treat lumen of instruments by rinsing and/or drying appropriate to the method of storage and/or sterilization
4.5.11   Separate nested items with appropriate material
4.5.12   Point all nested items in the same direction
4.5.13   Include sterilization process indicators in each tray to be sterilized according to departmental policy
4.5.14   Put locks on trays that are self contained in their own case to enable staff to recognize a compromised case if the lock is broken
4.5.15   Select appropriate wrapping material for tray depending on the type of sterilization that will be used according to departmental policy
4.5.16   Position filters and/or valve stem of rigid containers in proper working order
4.5.17   Carefully examine all instruments for cleanliness, damage, rust, sharpness and functionality before they are wrapped for sterilization
4.5.18   Clear the lumen of suction instruments using a pipe cleaner or compressed air
4.5.19   Return instruments that are not clean or are damaged to dirty side of sterile processing for correction of problem
4.5.20   Place hinged instruments in the tray in a slightly opened, not closed, position
4.5.21   Label packed and wrapped tray with contents and date of processing to allow for recall if necessary
4.5.22   Insert biological integrators, and heat/steam/chemical indicators in each tray being sterilized
4.5.23   Wrap small instruments and instruments used initially during a procedure in a separate pack inside of the instrument tray
4.5.24   Restock working area with drapes, sponges, towels, etc. before next shift starts
4.5.25   Fold linen as prescribed by department policy
4.5.26   Load instruments in the tray so they are not near the edges where they could be contaminated while lifting the tray from the case
4.5.27   Confirm that a specific tray goes into the appropriate case
4.5.28   Run Attest pack in sterilized loads as prescribed by departmental policy

4.5.29   Place Attest cylinders in Auto Reader to determine the killing of all biological organisms
4.5.30   Log results of Attest as required by departmental policy
4.5.31   Load enclosed cart with all tray systems that will be needed for a specific procedure using the case cart inventory slip
4.5.32   Mark case cart inventory slip with the number of trays going into the cart including count, signature, date and cart number on the slip

Competency 4.6   Sterilize supplies

Competency Builders:
4.6.1   Select the appropriate equipment to sterilize instruments and trays based on the type of items to be sterilized as described in departmental policy
4.6.2   Select appropriate sterilization protocol
4.6.3   Clean instruments and equipment following manufacturer's instruction and departmental policy to insure proper sterilization and to extend the life of those items
4.6.4   Load sterilizers with trays as required by departmental procedure to insure sterility
4.6.5   Operate sterilizer according to manufacturer's instruction and department procedure to insure sterility of trays
4.6.6   Confirm sterility of trays through the use of hospital approved biological and chemical control test as described in departmental procedure
4.6.7   Inspect for damage to the covering materials or breakage of seals to identify trays that must be go through the sterilization process again
4.6.8   Determine sterilizer is functioning correctly by reading the paper printout created at the end of a sterilization cycle
4.6.9   Log results of status of each load of instruments sterilized as required by departmental policy
4.6.10   File results of paper print out

Competency 4.7   Receive and store supplies

Competency Builders:
4.7.1   Examine all received supplies for expiration date, package integrity, or any visible damage that might compromise sterility
4.7.2   Report to supervisor any supplies received with expired dates or package damage that would compromise sterility
4.7.3   Store stock to achieve "first in, first out" distribution to avoid sterilization limits of supplies or trays
4.7.4   Report shortage of supplies and instruments to supervisor when reorder amounts are recognized
4.7.5   Transfer sterilized trays of instruments in the instrument room as required by departmental policy and procedure
4.7.6   Store supplies in proper areas
4.7.7   Store supplies according to AAMI regulated temperatures

Unit 5 Documentation and Communication

Competency 5.1   Record documentation

Competency Builders:
5.1.1   Run Bowie Dick test to determine working status of autoclave as required by departmental policy
5.1.2   Provide senior technician with any information that should be documented in department logs
5.1.3   Document spore, chemical testing as required by departmental policy and procedure
5.1.4   Inform Material Management of needed instruments and supplies
5.1.5   Document orientation of new personnel
5.1.6   Maintain central sterilization records of load sterilized as required by departmental policy and procedure
5.1.7   Place charge sticker on required items as prescribed by departmental policy and procedures
5.1.8   Place log control number on packages as required by department policy and procedure
5.1.9   Maintain the paper print out results created after each sterilization cycle for the required 30 years

Competency 5.2   Communicate information clearly and concisely to appropriate personnel through proper channels

Competency Builders:
5.2.1   Send/respond to e-mail
5.2.2   Distribute memos to other areas using appropriate methods
5.2.3   Attend and/or facilitate in-service workshops concerning updated information
5.2.4   Follow proper phone etiquette
5.2.5   Communicate effectively in English both written and spoken
5.2.6   Interact with public in a professional and pleasant manner

Unit 6 Miscellaneous

Competency 6.1   Track inventory of instruments and supplies to facilitate ordering at the appropriate time using Meditech or other tracking system

Competency Builders:
6.1.1   Track what type of packs will need to be delivered to specific locations on time using appropriate software
6.1.2   Initiate ordering instruments and supplies using tracking system
6.1.3   Track location of instruments at all times using tracking system
6.1.4   Track productivity of employee using tracking system
6.1.5   Scan bar code on tray
6.1.6   Print out a list of instruments that are required to be in the final tray
6.1.7   Mark instrument list to show that all instruments are actually in the tray to be sterilized

6.1.8   Put print out of instruments in the tray so the surgical/operating room can confirm that all instruments are in the tray
6.1.9   Note missing instruments using tracking system
6.1.10   Print report to be inserted into tray going into sterilization
6.1.11   Charge missing instruments using tracking system to the department that did not return the instrument
6.1.12   Contact department when an instrument is missing so they can look for it in the operating room and confirm that it was not left in a patient
6.1.13   Pull contaminated instrument trays as determined by the spore test
6.1.14   Track sterilized packs or instruments inventory so they are rotated, "first in, first out"
6.1.15   Watch computer screen for trays in use that need to be expedited in order to be ready for the next procedure
6.1.16   Process trays that are to be expedited as soon as they are brought into the dirty side
6.1.17   Process trays that are to be expedited as soon as they have been through the washer sterilizer

Competency 6.2   Apply appropriate techniques required on both the dirty and clean side of the sterile processing area

Competency Builders:
6.2.1   Use appropriate PPE for decontamination
6.2.2   Follow policies and procedures for decontamination work area exchange

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: Sterile Processing Technician

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.

ACT WorkKeys® Skill Levels

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

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., $8X = 20 => X = 20/8$).
- 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.

Glossary

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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.