



# United States Office of Personnel Management

## MOSAIC Competencies: Professional & Administrative Occupations 1996-1997

### General Competencies

**Reading** - Understands and interprets written material, including technical material, rules, regulations, instructions, reports, charts, graphs, or tables; applies what is learned from written material to specific situations.

**Writing** - Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized manner; produces written information, which may include technical material, that is appropriate for the intended audience.

**Arithmetic** - Performs computations such as addition, subtraction, multiplication, and division correctly using whole numbers, fractions, decimals, and percentages.

**Mathematical Reasoning** - Solves practical problems by choosing appropriately from a variety of mathematical and statistical techniques.

**Oral Communication** - Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately.

**Creative Thinking** - Uses imagination to develop new insights into situations and applies innovative solutions to problems; designs new methods where established methods and procedures are inapplicable or are unavailable.

**Information Management** - Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.

**Decision Making** - Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.

**Reasoning** - Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.

**Problem Solving** - Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.

**Mental Visualization** - Sees things in the mind by mentally organizing and processing symbols, pictures, graphs, objects, or other information (for example, sees a building from a blueprint, or sees the flow of work activities from reading a work plan).

**Learning** - Uses efficient learning techniques to acquire and apply new knowledge and skills; uses training, feedback, or other opportunities for self-learning and development.

**Self-Esteem** - Believes in own self-worth; maintains a positive view of self and displays a professional image.

**Teamwork** - Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.

**Integrity/Honesty** - Contributes to maintaining the integrity of the organization; displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; is trustworthy.

**Self-Management** - Sets well-defined and realistic personal goals; displays a high level of initiative, effort, and commitment towards completing assignments in a timely manner; works with minimal supervision; is motivated to achieve; demonstrates responsible behavior.

**Interpersonal Skills** - Shows understanding, friendliness, courtesy, tact, empathy, concern, and politeness to others; develops and maintains effective relationships with others; may include effectively dealing with individuals who are difficult, hostile, or distressed; relates well to people from varied backgrounds and different situations; is sensitive to cultural diversity, race, gender, disabilities, and other individual differences.



# United States Office of Personnel Management

## Professional & Administrative General Competencies (continued)

**Planning and Evaluating** - Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes.

**Attention to Detail** - Is thorough when performing work and conscientious about attending to detail.

**Financial Management** - Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies; assesses financial condition of an organization.

**Managing Human Resources** - Plans, distributes, coordinates, and monitors work assignments of others; evaluates work performance and provides feedback to others on their performance; ensures that staff are appropriately selected, utilized, and developed, and that they are treated in a fair and equitable manner.

**Leadership** - Influences, motivates, and challenges others; adapts leadership styles to a variety of situations.

**Teaching Others** - Helps others learn through formal or informal methods; identifies training needs; provides constructive feedback; coaches others on how to perform tasks; acts as a mentor.

**Customer Service** - Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services.

**Organizational Awareness** - Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.

**External Awareness** - Identifies and understands economic, political, and social trends that affect the organization.

**Vision** - Understands where the organization is headed and how to make a contribution; takes a long-term view and recognizes opportunities to help the organization accomplish its objectives or move toward the vision.

**Influencing/Negotiating** - Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions.

**Conflict Management** - Manages and resolves conflicts, grievances, confrontations, or disagreements in a constructive manner to minimize negative personal impact.

**Stress Tolerance** - Deals calmly and effectively with high stress situations (for example, tight deadlines, hostile individuals, emergency situations, dangerous situations).

**Flexibility** - Is open to change and new information; adapts behavior or work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with ambiguity.

**Technology Application** - Uses machines, tools, or equipment effectively; uses computers and computer applications to analyze and communicate information in the appropriate format.

**Technical Competence** - Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform one's job; works with, understands, and evaluates technical information related to the job; advises others on technical issues.

**Memory** - Recalls information that has been presented previously.

**Perceptual Speed** - Quickly and accurately sees detail in words, numbers, pictures, and graphs.

**Agility** - Bends, stretches, twists, or reaches out with the body, arms, or legs

**Stamina** - Exerts oneself physically over long periods of time without tiring (which may include performing repetitive tasks such as data entry or coding).



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## Professional & Administrative General Competencies (continued)

**Physical Strength** - Exerts maximum muscle force to lift, push, pull, or carry objects; performs moderately laboring work.

**Eye-Hand Coordination** - Accurately coordinates one's eyes with one's fingers, wrists, or arms to perform job-related tasks (for example, to move, carry, or manipulate objects).

**Spatial Orientation** - Knows one's location in relation to the environment; determines where other objects are in relation to one's self (for example, when using a map).

**Visual Identification** - Accurately identifies people, animals, or objects based on knowledge of their characteristics.

**Peripheral Vision** - Sees objects or movement of objects to one's side when the eyes are focused forward.

**Depth Perception** - Accurately judges which of several objects is closer or farther away from the observer, or the distance between an object and the observer.

**Visual Color Discrimination** - Accurately matches or detects differences between colors, including shades of color and brightness.



# United States Office of Personnel Management

## MOSAIC Competencies: Professional & Administrative Occupations 1996-1997

### Technical Competencies

**Administration and Management** - Knowledge of planning, coordination, and execution of business functions, resource allocation, and production.

**Clerical** - Knowledge of filing, typing, entering data, maintaining records, taking shorthand, and using and completing forms.

**Economics and Accounting** - Knowledge of economic and accounting principles and practices, tax laws and practices, the financial markets, banking, and the analysis and reporting of financial data.

**Auditing** - Knowledge of generally accepted auditing standards and procedures for conducting financial and compliance, economy and efficiency, and program results audits.

**Insurance** - Knowledge of various types of insurance, insurance regulations, claims processing, examination, adjudication, or adjustment.

**Sales and Marketing** - Knowledge of showing, promoting, and selling products and services.

**Personnel and Human Resources** - Knowledge of hiring, classification, benefits, labor relations, negotiation, and federal, state, and local employment regulations.

**Production and Processing** - Knowledge of inputs, outputs, raw materials, waste, quality control, costs, maintaining inventory, and techniques for maximizing the manufacture and distribution of goods.

**Food Production** - Knowledge of planning, growing, and harvesting of food for consumption using appropriate equipment and techniques.

**Computers and Electronics** - Knowledge of electric circuit boards, processors, chips, and computer hardware and software, including applications and programming.

**Engineering and Technology** - Knowledge of engineering concepts, principles, and practices, and of equipment, tools, mechanical devices, and their uses to produce motion, light, power, technology, and other applications.

**Design** - Knowledge of developing, producing, understanding, and using plans, blueprints, models, and maps, including the use of tools and instruments to produce precision technical drawings.

**Building and Construction** - Knowledge of materials, methods, and the appropriate tools to construct objects, structures, and buildings.

**Mechanical** - Knowledge of machines and tools, including their designs, uses, benefits, repair, and maintenance.

**Physics** - Knowledge and prediction of physical principles, laws, and applications including air, water, material dynamics, light, atomic principles, heat, electric theory, earth formations, and meteorological and related natural phenomena.

**Chemistry** - Knowledge of chemicals, including hazardous materials, and their uses, interactions, dangers, production, and disposal.

**Biology** - Knowledge of the environment, plant and animal living tissue, cells, organisms, and entities, including their functions, interdependencies and interactions with each other and the environment.

**Psychology** - Knowledge of human behavior and performance in various contexts, mental processes, or the assessment and treatment of behavioral and affective disorders.

**Sociology and Anthropology** - Knowledge of group behavior and dynamics, societal trends and influences, cultures, their history, migrations, ethnicity, and origins.

**Geography** - Knowledge of geographical locations, their relationships and characteristics.

**Medicine and Dentistry** - Knowledge of the diagnosis and treatment of injuries, diseases, and deformities, including preventive health-care measures.

**Therapy and Counseling** - Knowledge of diagnosis and treatment of physical and mental ailments, and career guidance.



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## Professional & Administrative Technical Competencies (continued)

**Education and Training** - Knowledge of teaching, training, research, making presentations, lecturing, testing, and other instructional methods.

**Foreign Language** - Knowledge of sign language or of the structure and content of a foreign (non-English) language, including the meaning and spelling of words, rules of composition, and grammar.

**Fine Arts** - Knowledge of theory and techniques required to produce, compose, and perform works of music, dance, visual arts, drama, and sculpture.

**History and Archeology** - Knowledge of historical events and their causes, indicators, and impact on particular civilization and cultures, and of preservation and archival techniques.

**Philosophy** - Knowledge of different philosophical systems, including their basic principles, values, ethics, ways of thinking, customs, religions, and practices, and their impact on human culture.

**Public Safety and Security** - Knowledge of the military, weaponry, and intelligence operations; public safety and security operations; occupational health and safety; investigation and inspection techniques; or rules, regulations, precautions, and prevention techniques for the protection of people, data, and property.

**Legal, Government and Jurisprudence** - Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process.

**Telecommunications** - Knowledge of transmissions, broadcasting, switching, control, and operation of telecommunications systems.

**Communications and Media** - Knowledge of the production, communication and dissemination of information and ideas to inform and entertain via written, oral, and visual media.

**Transportation** - Knowledge of principles and methods for moving people or goods by air, rail, sea, or road, including costs and limits.

**Contracting/Procurement** - Knowledge of various types of contracts, techniques for contracting or procurement, and contract negotiation and administration.

**Real Estate** - Knowledge of real estate principles, practices, markets, and values.

**Public Planning** - Knowledge of functions, principles, practices, and techniques of public planning, including those related to community planning, outdoor recreation planning, and natural resource management, such as demand forecasting, environmental impact analysis, financial forecasting, and land use planning and zoning.



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## MOSAIC Competencies: Clerical/Technical Study 1993-1994

**Reading** - Learns from written material by determining the main idea or essential message. Recognizes correct English grammar, punctuation, and spelling.

**Writing** - Uses correct English grammar, punctuation, and spelling to communicate thoughts, ideas, information, and messages in writing.

**Listening** - Receives, attends to, interprets, and responds to verbal messages and other cues such as body language in ways that are appropriate to listeners and situations.

**Speaking** - Uses correct English grammar to organize and communicate ideas in words that are appropriate to listeners and situations; uses body language appropriately.

**Arithmetic/Mathematical Reasoning** - Performs computations such as addition, subtraction, multiplication, and division correctly; solves practical problems by choosing appropriately from a variety of mathematical techniques such as formulas and percentages.

**Reasoning** - Discovers or selects rules, principles, or relationships between facts and other information.

**Decision Making** - Specifies goals and obstacles to achieving those goals, generates alternatives, considers risks, and evaluates and chooses the best alternative in order to make a determination, draw conclusions or solve a problem.

**Creative Thinking** - Uses imagination to combine ideas or information in new ways.

**Mental Visualization** - Sees things in the mind by mentally organizing and processing symbols, pictures, graphs, objects, or other information. For example, sees a building from a blueprint, or sees the flow of work activities from reading a work plan.

**Memory** - Recalls information that has been presented previously.

**Eye-Hand Coordination** - Accurately coordinates one's eyes with one's fingers, wrist, or arms to move, carry, or manipulate objects, or to perform other job-related tasks.

**Perceptual Speed** - Sees detail in words, numbers, pictures, and graphs, quickly and accurately.

**Physical Strength and Agility** - Ability to bend, lift, climb, stand, and walk for long periods of time; ability to perform moderately heavy laboring work.

**Stamina** - Performs repetitive tasks effectively over a long period of time, for example, data entry and coding.

**Applies Technology to Tasks** - Selects and understands procedures, machines, or tools that will produce the desired results; identifies or solves problems in machines, computers, or other technologies as they are related to performing tasks.

**Technical Competence** - Knowledge of how to perform one's job. Refers to specialized knowledge that is acquired through formal training or extensive on-the-job experience.

**Organizational Awareness** - Knows how social, political, organizational, and technological systems work and operates effectively within them. This includes the policies, procedures, rules, and regulations of the work or organization.

**Manages and Organizes Information** - Identifies a need; gathers, organizes, and maintains information; determines its importance and accuracy, and communicates it by a variety of methods.

**Manages Resources** - Selects, acquires, stores, and distributes resources such as materials, equipment, or money.

**Manages Human Resources** - Plans, distributes, and monitors work assignments; evaluates work performance and provides feedback to others on their performance.

**Conscientiousness** - Displays a high level of effort and commitment towards performing work; demonstrates responsible behavior.

**Integrity/Honesty** - Displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; chooses an ethical course of action; is trustworthy.



# United States Office of Personnel Management

## Clerical/Technical Study MOSAIC Competencies (continued)

**Interpersonal Skills** - Shows understanding, friendliness, courtesy, tact, empathy, cooperation, concern, and politeness to others; relates well to different people from varied backgrounds and different situations.

**Self-Esteem** - Believes in own self-worth, maintains a positive view of self, and displays a professional image.

**Self-Management** - Sets well-defined and realistic personal goals; monitors progress and is motivated to achieve; manages own time and deals with stress effectively.

**Flexibility** - Adapts quickly to changes.

**Leadership** - Interacts with others to influence, motivate, and challenge them.

**Teaches Others** - Helps others learn; identifies training needs; provides constructive reinforcement; coaches others on how to perform tasks; acts as a mentor.

**Teamwork** - Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.

**Negotiation** - Works with others towards an agreement that may involve exchanging specific resources or resolving differences.

**Customer Service** - Works and communicates with clients and customers (e.g., any individuals who use or receive the services or products that your work unit provides, including individuals who work in your agency or in other agencies or organizations outside the Government) to satisfy their expectations. Committed to quality services.



# United States Office of Personnel Management

## MOSAIC Competencies: Leadership Effectiveness Study 1992

**Written Communication** – Expresses facts and ideas in writing in a succinct and organized manner.

**Oral Communication** - Expresses ideas and facts to individuals or groups effectively; makes clear and convincing oral presentations; listens to others; facilitates an open exchange of ideas.

**Problem Solving** - Identifies and analyzes problems; uses sound reasoning to arrive at conclusions; finds alternative solutions to complex problems; distinguishes between relevant and irrelevant information to make logical judgments.

**Interpersonal Skills** - Considers and responds appropriately to the needs, feelings, and capabilities of others; adjusts approaches to suit different people and situations.

**Managing Diverse Workforce** - Is sensitive to cultural diversity, race, gender, and other individual differences in the workforce; manages workforce diversity.

**Vision** - Takes a long-term view and initiates organizational change for the future; builds the vision with others; spots opportunities to move the organization toward the vision.

**Creative Thinking** - Develops new insights into situations and applies innovative solutions to make organizational improvements; designs and implements new or cutting-edge programs/processes.

**Flexibility** - Is open to change and new information; adapts behavior and work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with pressure and ambiguity.

**Decisiveness** - Makes sound and well-informed decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, in order to accomplish organizational goals; causes change.

**Leadership** - Inspires, motivates and guides others toward goal accomplishment; coaches, mentors, and challenges subordinates; adapts leadership styles to a variety of situations; models high standards of honesty, integrity, trust, openness, and respect for the individual by applying these values to daily behaviors.

**Conflict Management** - Manages and resolves conflicts, confrontations, and disagreements in a positive and constructive manner to minimize negative personal impact.

**Self-Direction** - Demonstrates belief in own abilities and ideas; is self-motivated and results-oriented; recognizes own strengths and weaknesses; seeks feedback from others and opportunities for self-learning and development.

**Influencing/Negotiating** - Persuades others; develops networks and coalitions; gains cooperation from others to obtain information and accomplish goals; negotiates to find mutually acceptable solutions; build consensus through give and take.

**Planning and Evaluating** - Determines objectives and strategies; coordinates with other parts of the organization to accomplish goals; monitors and evaluates the progress and outcomes of operational plans; anticipates potential threats or opportunities.

**Financial Management** - Prepares, justifies, and/or administers the budget for program area; plans, administers and monitors expenditures to ensure cost-effective support of programs and policies.

**Human Resources Management** - Empowers people by sharing power and authority; develops lower levels of leadership by pushing authority downward and outward throughout the organization; shares rewards for achievement with employees; ensures that staff are appropriately selected, utilized, appraised, and developed, and that they are treated in a fair and equitable manner.

**Client Orientation** - Anticipates and meets the needs of clients; achieves quality end-products; is committed to improving services.

**External Awareness** - Identifies and keeps up-to-date on key agency policies/priorities and economic, political, and social trends which affect the organization; understands where the organization is headed and how to make a contribution.

**Team Building** - Manages group processes; encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.





# United States Office of Personnel Management

## Leadership Effectiveness Study MOSAIC Competencies (continued)

**Technology Management** - Integrates technology into the workplace; develops strategies using new technology to manage and improve program effectiveness; understands the impact of technological changes on the organization.

**Internal Controls/Integrity** - Assures that effective internal controls are developed and maintained to ensure the integrity of the organization.

**Technical Competence** - Understands and appropriately applies procedures, requirements, regulations and policies related to specialized expertise, e.g., engineering, physical science, law, or accounting; maintains credibility with others on technical issues.



# United States Office of Personnel Management

## MOSAIC Competencies: Leadership Update Study 1998

### LEADING CHANGE

**Vision** - Takes a long-term view and acts as a catalyst for organizational change; builds a shared vision with others. Influences others to translate vision into action.

**External Awareness** - Identifies and keeps up-to-date on key international policies and economic, political, and social trends that affect the organization. Understands near-term and long range plans and determines how to best be positioned to achieve a competitive business advantage in a global economy.

**Creativity and Innovation** - Develops new insights into situations and applies innovative solutions to make organizational improvements; creates a work environment that encourages creative thinking and innovation; designs and implements new or cutting-edge programs/processes.

**Strategic Thinking** - Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy. Examines policy issues and strategic planning with a long term perspective. Determines objectives and sets priorities; anticipates potential threats or opportunities.

**Continual Learning** - Grasps the essence of new information; masters new technical and business knowledge; recognizes own strengths and weaknesses; pursues self-development; seeks feedback from others and opportunities to master new knowledge.

**Resilience** - Deals effectively with pressure; maintains focus and intensity and remains optimistic and persistent, even under adversity. Recovers quickly from setbacks. Effectively balances personal life and work.

**Flexibility** - Is open to change and new information; adapts behavior and work methods in response to new information, changing conditions, or unexpected obstacles. Adjusts rapidly to new situations warranting attention and resolution.

**Service Motivation** - Creates and sustains an organizational culture which permits others to provide the quality of service essential to high performance. Enables others to acquire the tools and support they need to perform well. Shows a commitment to public service. Influences others toward a spirit of service and meaningful contributions.

### LEADING PEOPLE

**Conflict Management** - Identifies and takes steps to prevent potential situations that could result in unpleasant confrontations. Manages and resolves conflicts, and disagreements in a positive and constructive manner to minimize negative impact.

**Leveraging Diversity** – Recruits, develops, and retains a diverse high quality workforce in an equitable manner. Leads and manages an inclusive workplace that maximizes the talents of each person to achieve sound business results. Respects, understands, values and seeks out individual differences to achieve the vision and mission of the organization. Develops and uses measures and rewards to hold self and others accountable for achieving results that embody the principles of diversity.

**Team Building** - Inspires, motivates, and guides others toward goal accomplishments. Consistently develops and sustains cooperative working relationships. Encourages and facilitates cooperation within the organization and with customer groups; fosters commitment, team spirit, pride, trust. Develops leadership in others through coaching, mentoring, rewarding and guiding employees.

**Integrity/Honesty** - Instills mutual trust and confidence; creates a culture that fosters high standards of ethics; behaves in a fair and ethical manner toward others, and demonstrates a sense of corporate responsibility and commitment to public service.



# United States Office of Personnel Management

## Leadership Update Study MOSAIC Competencies (continued)

### **BUILDING COALITIONS/COMMUNICATION**

**Oral Communication** - Makes clear and convincing oral presentations to individuals or groups; listens effectively and clarifies information as needed; facilitates an open exchange of ideas and fosters atmosphere of open communication.

**Written Communication** - Expresses facts and ideas in writing in a clear, convincing and organized manner.

**Influencing/Negotiating** - Persuades others; builds consensus through give and take; gains cooperation from others to obtain information and accomplish goals; facilitates "win-win" situations.

**Partnering** - Develops networks and builds alliances, engages in cross-functional activities; collaborates across boundaries, and finds common ground with a widening range of stakeholders. Utilizes contacts to build and strengthen internal support bases.

**Political Savvy** - Identifies the internal and external politics that impact the work of the organization. Approaches each problem situation with a clear perception of organizational and political reality, recognizes the impact of alternative courses of action.

**Interpersonal Skills** - Considers and responds appropriately to the needs, feelings, and capabilities of different people in different situations; is tactful, compassionate and sensitive, and treats others with respect.

### **RESULTS DRIVEN**

**Accountability** - Assures that effective controls are developed and maintained to ensure the integrity of the organization. Holds self and others accountable for rules and responsibilities. Can be relied upon to ensure that projects within areas of specific responsibility are completed in a timely manner and within budget. Monitors and evaluates plans, focuses on results and measuring attainment of outcomes.

**Problem Solving** - Identifies and analyzes problems; distinguishes between relevant and irrelevant information to make logical decisions; provides solutions to individual and organizational problems.

**Decisiveness** - Exercises good judgment by making sound and well-informed decisions; perceives the impact and implications of decisions; makes effective and timely decisions, even when data are limited or solutions produce unpleasant consequences; is proactive and achievement oriented.

**Customer Service** - Balancing interests of a variety of clients; readily readjusts priorities to respond to pressing and changing client demands. Anticipates and meets the need of clients; achieves quality end-products; is committed to continuous improvement of services.

**Entrepreneurship** - Identifies opportunities to develop and market new products and services within or outside of the organization. Is willing to take risks; initiates actions that involve a deliberate risk to achieve a recognized benefit or advantage.

**Technical Credibility** - Understands and appropriately applies procedures, requirements, regulations, and policies related to specialized expertise. Is able to make sound hiring and capital resource decisions and to address training and development needs. Understands linkages between administrative competencies and mission needs.

### **BUSINESS ACUMEN**

**Financial Management** - Demonstrates broad understanding of principles of financial management and marketing expertise necessary to ensure appropriate funding levels. Prepares, justifies, and/or administers the budget for the program area; uses cost-benefit thinking to set priorities; monitors expenditures in support of programs and policies. Identifies cost-effective approaches. Manages procurement and contracting.

**Human Resources Management** - Assesses current and future staffing needs based on organizational goals and budget realities. Using merit principles, ensures staff is appropriately selected, developed, utilized, appraised and rewarded; takes corrective action.

**Technology Management** - Uses efficient and cost-effective approaches to integrate technology into the workplace and improve program effectiveness. Develop strategies using new technology to enhance decision making. Understands the impact of technological change on the organization.



# United States Office of Personnel Management

## MOSAIC Competencies: Information Technology Study 2000-2001

### General Competencies

**Administration and Management** - Knowledge of planning, coordination, and execution of business functions, resource allocation, and production.

**Arithmetic** - Performs computations such as addition, subtraction, multiplication, and division correctly using whole numbers, fractions, decimals, and percentages.

**Attention to Detail** - Is thorough when performing work and conscientious about attending to detail.

**Computers and Electronics** – Knowledge of electric circuit boards, processors, chips, and computer hardware and software, including applications and programming.

**Conflict Management** - Manages and resolves conflicts, grievances, confrontations, or disagreements in a constructive manner to minimize negative personal impact.

**Contracting/Procurement** - Knowledge of various types of contracts, techniques for contracting or procurement, and contract negotiation and administration.

**Creative Thinking** - Uses imagination to develop new insights into situations and applies innovative solutions to problems; designs new methods where established methods and procedures are inapplicable or are unavailable.

**Customer Service** - Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services.

**Decision Making** - Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.

**Economics and Accounting** - Knowledge of economic and accounting principles and practices, tax law and practices, the financial markets, banking, and the analysis and reporting of financial data.

**Education and Training** - Knowledge of teaching, training, research, making presentations, lecturing, testing, and other instructional methods.

**Engineering and Technology** - Knowledge of engineering concepts, principles, and practices, and of equipment, tools, mechanical devices, and their uses to produce motion, light, power, technology, and other applications.

**External Awareness** - Identifies and understands economic, political, and social trends that affect the organization.

**Financial Management** - Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies; assesses financial condition of an organization.

**Flexibility** - Is open to change and new information; adapts behavior or work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with ambiguity.

**Information Management** - Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.

**Influencing/Negotiating** - Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions.

**Integrity/Honesty** - Contributes to maintaining the integrity of the organization; displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; is trustworthy.



# United States Office of Personnel Management

## Information Technology Study General Competencies (continued)

**Interpersonal Skills** - Shows understanding, friendliness, courtesy, tact, empathy, concern, and politeness to others; develops and maintains effective relationships with others; may include effectively dealing with individuals who are difficult, hostile, or distressed; relates well to people from varied backgrounds and different situations; is sensitive to cultural diversity, race, gender, disabilities, and other individual differences.

**Leadership** - Influences, motivates, and challenges others; adapts leadership styles to a variety of situations.

**Learning** - Uses efficient learning techniques to acquire and apply new knowledge and skills; uses training, feedback, or other opportunities for self-learning and development.

**Legal, Government and Jurisprudence** - Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process.

**Managing Human Resources** - Plans, distributes, coordinates, and monitors work assignments of others; evaluates work performance and provides feedback to others on their performance; ensures that staff are appropriately selected, utilized, and developed, and that they are treated in a fair and equitable manner.

**Mathematical Reasoning** - Solves practical problems by choosing appropriately from a variety of mathematical and statistical techniques.

**Memory** - Recalls information that has been presented previously.

**Mental Visualization** - Sees things in the mind by mentally organizing and processing symbols, pictures, graphs, objects, or other information (for example, sees a building from a blueprint, or sees the flow of work activities from reading a work plan).

**Oral Communication** - Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately.

**Organizational Awareness** - Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.

**Perceptual Speed** - Quickly and accurately sees detail in words, numbers, pictures, and graphs.

**Planning and Evaluating** - Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes.

**Problem Solving** - Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.

**Public Safety and Security** - Knowledge of the military, weaponry, and intelligence operations; public safety and security operations; occupational health and safety; investigation and inspection techniques; or rules, regulations, precautions, and prevention techniques for the protection of people, data, and property.

**Reading** - Understands and interprets written material, including technical material, rules, regulations, instructions, reports, charts, graphs, or tables; applies what is learned from written material to specific situations.

**Reasoning** - Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.

**Self-Esteem** - Believes in own self-worth; maintains a positive view of staff and displays a professional image.

**Self-Management** - Sets well-defined and realistic personal goals; displays a high level of initiative, effort, and commitment towards completing assignments in a timely manner; works with minimal supervision; is motivated to achieve; demonstrates responsible behavior.



# United States Office of Personnel Management

## Information Technology Study General Competencies (continued)

**Strategic Thinking** - Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy. Examines policy issues and strategic planning with a long-term perspective. Determines objectives and sets priorities; anticipates potential threats or opportunities.

**Stress Tolerance** - Deals calmly and effectively with high stress situations (for example, tight deadlines, hostile individuals, emergency situations, dangerous situations).

**Teaching Others** - Helps others learn through formal or informal methods; identifies training needs; provides constructive feedback; coaches others on how to perform tasks; acts as a mentor.

**Teamwork** - Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.

**Technical Competence** - Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform one's job; works with, understands, and evaluates technical information related to the job; advises others on technical issues.

**Technology Application** - Uses machines, tools, or equipment effectively; uses computers and computer applications to analyze and communicate information in the appropriate format.

**Vision** - Understands where the organization is headed and how to make a contribution; takes a long-term view and recognizes opportunities to help the organization accomplish its objectives or move toward the vision.

**Writing** - Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized manner; produces written information, which may include technical material, that is appropriate for the intended audience.



# United States Office of Personnel Management

## MOSAIC Competencies: Information Technology Study 2000-2001

### Technical Competencies

**Accessibility** - Knowledge of tools, equipment, and technologies used to help individuals with disabilities use computer equipment and software.

**Artificial Intelligence** - Knowledge of the principles, methods, and tools used to design systems that perform human intelligence functions.

**Business Process Reengineering** - Knowledge of methods, metrics, tools, and techniques of Business Process Reengineering.

**Capacity Management** - Knowledge of the principles and methods for monitoring, estimating, or reporting actual performance or the performance capability of information systems or components.

**Capital Planning and Investment Assessment** - Knowledge of the principles and methods of capital investment analysis or business case analysis, including return on investment analysis.

**Computer Languages** - Knowledge of computer languages and their applications to enable a system to perform specific functions.

**Computer Forensics** - Knowledge of tools and techniques used in data recovery and preservation of electronic evidence.

**Configuration Management** - Knowledge of the principles and methods for planning or managing the implementation, update, or integration of information systems components.

**Cost-Benefit Analysis** - Knowledge of the principles and methods of cost-benefit analysis, including the time value of money, present value concepts, and quantifying tangible and intangible benefits.

**Data Management** - Knowledge of the principles, procedures, and tools of data management, such as modeling techniques, data backup, data recovery, data dictionaries, data warehousing, data mining, data disposal, and data standardization processes.

**Database Administration** - Knowledge of the principles, methods, and tools for automating, developing, implementing, or administering database systems.

**Database Management Systems** - Knowledge of the uses of database management systems and software to control the organization, storage, retrieval, security, and integrity of data.

**Distributed Systems** - Knowledge of the principles, theoretical concepts, and tools underlying distributed computing systems, including their associated components and communication standards.

**Electronic Commerce (e-Commerce)** - Knowledge of the principles, methods, and tools for conducting business online, including electronic data interchange.

**Embedded Computers** - Knowledge of specifications and uses of specialized computer systems used to control devices (for example, automobiles, helicopters), including the appropriate programming languages.

**Encryption** - Knowledge of procedures, tools, and applications used to keep data or information secure, including public key infrastructure, point-to-point encryption, and smart cards.

**Hardware** - Knowledge of specifications, uses, and types of computer or computer-related equipment.

**Hardware Engineering** - Knowledge of the principles, methods, and tools for designing, developing, and testing computer or computer-related equipment.

**Human Factors** - Knowledge of the principles, methods, and tools used to identify and apply information about human behavior, abilities, limitations, and other characteristics to the design of tools, machines, systems, tasks, jobs, and environments for effective human use.

**Information Assurance** - Knowledge of methods and procedures to protect information systems and data by ensuring their availability, authentication, confidentiality, and integrity.



# United States Office of Personnel Management

## Information Technology Study Technical Competencies (continued)

### **Information Resources Strategy and Planning** -

Knowledge of the principles, methods, and techniques of information technology (IT) assessment, planning, management, monitoring, and evaluation, such as IT baseline assessment, interagency functional analysis, contingency planning, and disaster recovery.

**Information Systems Security Certification** - Knowledge of the principles, methods, and tools for evaluating information systems security features against a set of specified security requirements. Includes developing security certification and accreditation plans and procedures, documenting deficiencies, reporting corrective actions, and recommending changes to improve the security of information systems.

**Information Systems/Network Security** - Knowledge of methods, tools, and procedures, including development of information security plans, to prevent information systems vulnerabilities, and provide or restore security of information systems and network services.

**Information Technology Architecture** - Knowledge of architectural methodologies used in the design and development of information systems, including the physical structure of a system's internal operations and interactions with other systems.

**Information Technology Performance Assessment** - Knowledge of the principles, methods, and tools (for example, surveys, system performance measures) to assess the effectiveness and practicality of information technology systems.

**Information Technology Research and Development** - Knowledge of scientific principles, methods, and tools of basic and applied research used to conduct a systematic inquiry into a subject matter area.

**Infrastructure Design** - Knowledge of the architecture and typology of software, hardware, and networks, including LANS, WANS, and telecommunications systems, their components and associated protocols and standards, and how they operate and integrate with one another and with associated controlling software.

**Knowledge Management** - Knowledge of the value of collected information and the methods of sharing that information throughout an organization.

**Logical Systems Design** - Knowledge of the principles and methods for designing business logic components, system processes and outputs, user interfaces, data inputs, and productivity tools (for example, CASE).

**Modeling and Simulation** - Knowledge of mathematical modeling and simulation tools and techniques to plan and conduct test and evaluation programs, characterize systems support decisions involving requirements, evaluate design alternatives, or support operational preparation.

**Multimedia Technologies** - Knowledge of the principles, methods, tools, and techniques of developing or applying technology using text, audio, graphics, or other media.

**Network Management** - Knowledge of the operation, management, and maintenance of network and telecommunication systems and linked systems and peripherals.

**Object Technology** - Knowledge of the principles, methods, tools, and techniques that use object-oriented languages, analysis, and design methodologies.

**Operating Systems** - Knowledge of computer network, desktop, and mainframe operating systems and their applications.

**Operations Support** - Knowledge of procedures to ensure production or delivery of products and services, including tools and mechanisms for distributing new or enhanced software.

**Organizational Development** - Knowledge of the principles of organizational development and change management theories, and their applications.

**Process Control** - Knowledge of the principles, methods, and procedures used for the automated control of a process, including the design, development, and maintenance of associated software, hardware, and systems.





# United States Office of Personnel Management

## Information Technology Study Technical Competencies (continued)

**Product Evaluation** - Knowledge of methods for researching and analyzing external products to determine their potential for meeting organizational standards and business needs.

**Project Management**- Knowledge of the principles, methods, or tools for developing, scheduling, coordinating, and managing projects and resources, including monitoring and inspecting costs, work, and contractor performance.

**Quality Assurance** - Knowledge of the principles, methods, and tools of quality assurance and quality control used to ensure a product fulfills functional requirements and standards.

**Requirements Analysis** - Knowledge of the principles and methods to identify, analyze, specify, design, and manage functional and infrastructure requirements; includes translating functional requirements into technical requirements used for logical design or presenting alternative technologies or approaches.

**Risk Management** - Knowledge of methods and tools used for risk assessment and mitigation of risk.

**Software Development** - Knowledge of the principles, methods, and tools for designing, developing, and testing software in a given environment.

**Software Engineering** - Knowledge of software engineering design and development methodologies, paradigms, and tools; the software life cycle; software reusability; and software reliability metrics.

**Software Testing and Evaluation** - Knowledge of the principles, methods, and tools for analyzing and developing software test and evaluation procedures.

**Standards** - Knowledge of standards that either are compliant with or derived from established standards or guidelines.

**Systems Integration** - Knowledge of the principles, methods, and procedures for installing, integrating, and optimizing information systems components.

**Systems Life Cycle** - Knowledge of systems life cycle management concepts used to plan, develop, implement, operate, and maintain information systems.

**Systems Testing and Evaluation** - Knowledge of the principles, methods, and tools for analyzing and developing systems test and evaluation procedures and technical characteristics of IT systems, including identifying critical operational issues.

**Technical Documentation** - Knowledge of procedures for developing technical and operational support documentation.

**Technology Awareness** - Knowledge of developments and new applications of information technology (hardware, software, telecommunications), emerging technologies and their applications to business processes, and applications and implementation of information systems to meet organizational requirements.

**Telecommunications** - Knowledge of transmissions, broadcasting, switching, control, and operation of telecommunications systems.

**Web Technology** - Knowledge of the principles and methods of web technologies, tools, and delivery systems, including web security, privacy policy practices, and user interface issues.



# United States Office of Personnel Management

## MOSAIC Competencies: Trades & Labor Occupational Study (TLOS) 2000-2002

### General Competencies

**Reading** - Understands and interprets written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables; applies what is learned from written material to specific situations.

**Writing** - Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a brief, clear, and organized manner; produces written information, which may include technical material, that is appropriate for the intended audience.

**Arithmetic** - Performs computations such as addition, subtraction, multiplication, and division correctly using whole numbers, fractions, decimals, and percentages.

**Mathematical Reasoning** - Solves practical problems by choosing appropriately from a variety of mathematical and statistical techniques.

**Oral Communication** - Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately.

**Creative Thinking** - Uses imagination to develop new insights into situations and applies new solutions to problems; designs new methods where established methods and procedures are not suitable or are unavailable.

**Information Management** - Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.

**Decision Making** - Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.

**Reasoning** - Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.

**Problem Solving** - Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.

**Mental Visualization** - Sees things in the mind by mentally organizing and processing symbols, pictures, graphs, objects, or other information (for example, sees a building from a blueprint, or sees the flow of work activities from reading a work plan).

**Learning** - Uses efficient learning techniques to acquire and apply new knowledge and skills; uses training, feedback, or other opportunities for self-learning and development.

**Self-Esteem** - Believes in own self-worth; maintains a positive view of self and displays a confident, capable image.

**Teamwork** - Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.

**Integrity/Honesty** - Contributes to maintaining the integrity of the organization; displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; is trustworthy.

**Self-Management** - Sets well-defined and realistic personal goals; displays a high level of initiative, effort, and commitment towards completing assignments in a timely manner; works with minimal supervision; is motivated to achieve; demonstrates responsible behavior.



# United States Office of Personnel Management

## Trades & Labor Occupational Study (TLOS) General Competencies (continued)

**Interpersonal Skills** - Shows understanding, friendliness, courtesy, tact, empathy, concern, and politeness to others; develops and maintains effective relationships with others; may include effectively dealing with individuals who are difficult, hostile, or distressed; relates well to people from varied backgrounds and different situations; is sensitive to cultural diversity, race, gender, disabilities, and other individual differences.

**Planning and Evaluating** - Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes.

**Attention To Detail** - Is thorough when performing work and conscientious about attending to detail.

**Financial Management** - Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies; assesses financial condition of an organization.

**Managing Human Resources** - Plans, distributes, coordinates, and monitors work assignments of others; evaluates work performance and provides feedback to others on their performance; ensures that staff are appropriately selected, utilized, and developed, and that they are treated in a fair and equitable manner.

**Leadership** - Influences, motivates, and challenges others; adapts leadership styles to a variety of situations.

**Teaching Others** - Helps others learn through formal or informal methods; identifies training needs; provides constructive feedback; coaches others on how to perform tasks; acts as a mentor.

**Customer Service** - Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services.

**Organizational Awareness** - Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.

**External Awareness** - Identifies and understands economic, political, and social trends that affect the organization.

**Vision** - Understands where the organization is headed and how to make a contribution; takes a long-term view and recognizes opportunities to help the organization accomplish its objectives or move toward the vision.

**Influencing/Negotiating** - Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions.

**Conflict Management** - Manages and resolves conflicts, grievances, confrontations, or disagreements in a constructive manner to minimize negative personal impact.

**Stress Tolerance** - Deals calmly and effectively with high stress situations (for example, tight deadlines, hostile individuals, emergency situations, dangerous situations).

**Flexibility** - Is open to change and new information; adapts behavior or work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with uncertainty.

**Technology Application** - Uses machines, tools, or equipment effectively; uses computers and computer applications to analyze and communicate information in the appropriate format.

**Technical Competence** - Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform one's job; works with, understands, and evaluates technical information related to the job; advises others on technical issues.

**Technical Problem Solving** - Troubleshoots, diagnoses, analyzes, and identifies system malfunctions to determine the source and cause of the problem.

**Memory** - Recalls information that has been presented previously.



# United States Office of Personnel Management

## Trades & Labor Occupational Study (TLOS) General Competencies (continued)

**Perceptual Speed** - Quickly and accurately sees detail in words, numbers, pictures, and graphs.

**Agility** - Bends, stretches, twists, or reaches out with the body, arms, or legs.

**Stamina** - Exerts oneself physically over long periods of time without tiring (which may include performing repetitive tasks such as hammering or lifting objects).

**Physical Strength** - Exerts maximum muscle force to lift, push, pull, or carry objects; performs moderately laboring work.

**Eye-Hand Coordination** - Accurately coordinates one's eyes with one's fingers, wrists, or arms to perform job-related tasks (for example, to move, carry, or manipulate objects).

**Spatial Orientation** - Knows one's location in relation to the environment; determines where other objects are in relation to one's self (for example, when using a map).

**Visual Identification** - Accurately identifies people, animals, or objects based on knowledge of their characteristics.

**Peripheral Vision** - Sees objects or movement of objects to one's side when the eyes are focused forward.

**Depth Perception** - Accurately judges which of several objects is closer or farther away from the observer, or the distance between an object and the observer.

**Visual Color Discrimination** - Accurately matches or detects differences among colors, including shades of color and brightness.



# United States Office of Personnel Management

## MOSAIC Competencies: Trades & Labor Occupational Study (TLOS) 2000-2002

### Technical Competencies

**Animal Husbandry** - Knowledge of the care and handling of animals, including feeding, controlling, restraint, health, and reproduction.

**Horticulture** - Knowledge of cultivating flowers, plants, and trees.

**Food Production** - Knowledge of planning, growing, and harvesting of food for consumption using appropriate equipment and techniques.

**Food Service** - Knowledge of preparing and serving food for consumption.

**Cutting** - Knowledge of meat cutting, including the grades and structure of meat, fish, or poultry.

**Electronics** - Knowledge of electronic theory, circuits, components, and material properties (excluding computers).

**Computers** - Knowledge of circuit boards, processors, chips, and computer hardware and software, including applications and programming.

**Mechanical** - Knowledge of machines and tools, including their designs, installation, uses, repair, and maintenance.

**Building and Construction** - Knowledge of materials, methods, and the appropriate tools to construct objects, structures, and buildings.

**Carpentry/Woodworking** - Knowledge of materials, methods, and the appropriate tools to construct, install, finish, or repair wooden objects or structures.

**Plumbing and Pipefitting** - Knowledge of materials, methods, and the appropriate tools to install, maintain, or repair pipelines, pipe systems, and fixtures, including water, air, steam, gas, chemicals, or sewage.

**Electrical** - Knowledge of electrical equipment, components, instruments, and systems, including their design, installation, testing, uses, repair, or maintenance.

**Painting** - Knowledge of materials, methods, and appropriate tools to apply paint and other protective coating materials on drywall, wood, metal, glass, and other surfaces.

**Pest Control** - Knowledge of pest species and the methods and materials, including chemicals, for control or prevention.

**Road Work and Pavement** - Knowledge of materials, methods, and appropriate tools to construct, maintain, or repair road surfaces, including sidewalks, parking lots, runways, etc.

**Toolmaking** - Knowledge of materials, methods, and appropriate tools to make or repair metal parts, tools, gauges, models, patterns, and machines.

**Metal Processing and Metalworking** - Knowledge of materials, methods, and appropriate tools to process, treat, form, or shape metal.

**Industrial Equipment Operation** - Knowledge of principles and methods for operating industrial equipment.

**Ammunition and Explosives** - Knowledge of ammunition and explosives and their uses, interactions, dangers, production, handling, storage, and disposal.

**Hazardous Materials** - Knowledge of hazardous materials and waste and their uses, interactions, dangers, production, handling, storage, and disposal.

**Transportation** - Knowledge of principles and methods for moving people or goods by air, rail, sea, or road, including costs and limits.

**Vehicle Operation** - Knowledge of procedures for operating motor vehicles, including cars, trucks, or watercraft.

**Vehicle Maintenance** - Knowledge of motor vehicle engines, parts, and systems, including their designs, uses, repair, and maintenance.

**Aircraft Maintenance** - Knowledge of aircraft engines, parts, and systems, including their designs, uses, repair, and maintenance.



# United States Office of Personnel Management

## Trades & Labor Occupational Study (TLOS) Technical Competencies (continued)

**Textiles** - Knowledge of materials, methods, and appropriate tools to make and repair items made of fabric or leather.

**Public Safety and Security** - Knowledge of the military, weaponry, and intelligence operations; public safety and security operations; occupational health and safety; investigation and inspection techniques; or rules, regulations, precautions, and prevention techniques for the protection of people, data, and property.

**Legal, Government and Jurisprudence** - Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process.

**Foreign Language** - Knowledge of sign language or of the structure and content of a foreign (non-English) language, including the meaning and spelling of words, rules of composition, and grammar.

**Administration and Management** - Knowledge of planning, coordination, and execution of business functions, resource allocation, and production.

**Contracting/Procurement** - Knowledge of various types of contracts, techniques for contracting or procurement, and contract negotiation and administration.

**Sales and Marketing** - Knowledge of showing, promoting, and selling products and services.

**Production and Processing** - Knowledge of inputs, outputs, raw materials, waste, quality control, costs, maintaining inventory, and techniques for maximizing the manufacture and distribution of goods.

**Biology** - Knowledge of the environment, plant and animal living tissue, cells, organisms, and entities, including their functions, interdependencies and interactions with each other and the environment.

**Chemistry** - Knowledge of chemicals, including hazardous materials, and their uses, interactions, dangers, production, storage, and disposal.

**Physics** - Knowledge and prediction of physical principles, laws, and applications including air, water, material dynamics, light, atomic principles, heat, electric theory, earth formations, and meteorological and related natural phenomena.

**Telecommunications** - Knowledge of transmissions, broadcasting, switching, control, and operation of telecommunications systems.

**Communications and Media** - Knowledge of the production, communication and dissemination of information and ideas to inform and entertain via written, oral, and visual media.

**Engineering and Technology** - Knowledge of engineering concepts, principles, and practices, and of equipment, tools, mechanical devices, and their uses to produce motion, light, power, technology, and other applications.

**Design** - Knowledge of developing, producing, understanding, and using plans, blueprints, models, and maps, including the use of tools and instruments to produce precision technical drawings.



# United States Office of Personnel Management

## MOSAIC Competencies: Science and Engineering Occupational Study 2000 - 2002

### General Competencies

**Reading** - Understands and interprets written material, including technical material, rules, regulations, instructions, reports, charts, graphs, or tables; applies what is learned from written material to specific situations.

**Writing** - Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized manner; produces written information, which may include technical material, that is appropriate for the intended audience.

**Mathematical Reasoning** - Solves practical problems by choosing appropriately from a variety of mathematical and statistical techniques.

**Oral Communication** - Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately.

**Creative Thinking** - Uses imagination to develop new insights into situations and applies innovative solutions to problems; designs new methods where established methods and procedures are inapplicable or are unavailable.

**Information Management** - Identifies a need for and knows where or how to gather information, organizes and maintains information or information management systems.

**Decision Making** - Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.

**Interpersonal Skills** - Shows understanding, friendliness, courtesy, tact, empathy, concern, and politeness to others; develops and maintains effective relationships with others; may include effectively dealing with individuals who are difficult, hostile, or distressed; relates well to people from varied backgrounds and different situations; is sensitive to cultural diversity, race, gender, disabilities, and other individual differences.

**Reasoning** - Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.

**Problem Solving** - Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.

**Mental Visualization** - Sees things in the mind by mentally organizing and processing symbols, pictures, graphs, objects, or other information (for example, sees a building from a blueprint, or sees the flow of work activities from reading a work plan).

**Learning** - Uses efficient learning techniques to acquire and apply new knowledge and skills; uses training, feedback, or other opportunities for self-learning and development.

**Self-Esteem** - Believes in own self-worth; maintains a positive view of self and displays a professional image.

**Teamwork** - Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.

**Integrity/Honesty** - Contributes to maintaining the integrity of the organization; displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; is trustworthy.

**Self-Management** - Sets well-defined and realistic personal goals; displays a high level of initiative, effort, and commitment towards completing assignments in a timely manner; works with minimal supervision; is motivated to achieve; demonstrates responsible behavior.

**Planning and Evaluating** - Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes.

**Attention to Detail** - Is thorough when performing work and conscientious about attending to detail.



# United States Office of Personnel Management

## Science and Engineering Study General Competencies (continued)

**Financial Management** - Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies; assesses financial condition of an organization.

**Managing Human Resources** - Plans, distributes, coordinates, and monitors work assignments of others; evaluates work performance and provides feedback to others on their performance; ensures that staff are appropriately selected, utilized, and developed, and that they are treated in a fair and equitable manner.

**Leadership** - Influences, motivates, and challenges others; adapts leadership styles to a variety of situations.

**Strategic Thinking** - Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy; examines policy issues and strategic planning with a long term perspective; determines objectives and sets priorities; anticipates potential threats or opportunities.

**Teaching Others** - Helps others learn through formal and informal methods; identifies training needs; provides constructive feedback; coaches others on how to perform tasks; acts as a mentor.

**Customer Service** - Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services.

**Organizational Awareness** - Knows the organization's mission and functions, and how its social, political, and technological systems work and operate effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.

**External Awareness** - Identifies and understands economic, political, and social trends that affect the organization.

**Vision** - Understands where the organization is headed and how to make a contribution; takes a long-term view and recognizes opportunities to help the organization accomplish its objectives or move toward the vision.

**Influencing/Negotiating** - Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions.

**Conflict Management** - Manages and resolves conflicts, grievances, confrontations, or disagreements in a constructive manner to minimize negative personal impact.

**Stress Tolerance** - Deals calmly and effectively with high stress situations (for example, tight deadlines, hostile individuals, emergency situations, dangerous situations).

**Flexibility** - Is open to change and new information; adapts behavior or work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with ambiguity.

**Technology Application** - Uses machines, tools, instruments, or equipment effectively; uses computers and computer applications to analyze and communicate information in the appropriate format.

**Technical Competence** - Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform one's job; works with, understands, and evaluates technical information related to the job; advises others on technical issues.

**Administration and Management** - Knowledge of planning, coordination, and execution of business functions, resource allocation, and production.

**Project Management** - Applies principles, methods, or tools for developing, scheduling, coordinating, monitoring, evaluating, and managing projects and resources, including technical performance.

**Contracting/Procurement** - Knowledge of various types of contracts, techniques or requirements (for example, Federal Acquisitions Regulations) for contracting or procurement, and contract negotiation and administration.





# United States Office of Personnel Management

## Science and Engineering Study General Competencies (continued)

**Memory** - Recalls information that has been presented previously.

**Perceptual Speed** - Quickly and accurately sees detail in words, numbers, pictures, and graphs.

**Agility** - Bends, stretches, twists, or reaches out with the body, arms, or legs.

**Stamina** - Exerts oneself physically over long periods of time without tiring (which may include performing repetitive tasks such as data entry or coding).

**Physical Strength** - Exerts maximum muscle force to lift, push, pull, or carry objects; performs moderately laboring work.

**Eye-Hand Coordination** - Accurately coordinates one's eyes with one's fingers, wrists, or arms to perform job-related tasks (for example, to move, carry, or manipulate objects).

**Spatial Orientation** - Knows one's location in relation to the environment; determines where other objects are in relation to one's self (for example, when using a map).

**Visual Identification** - Accurately identifies people, animals, or objects based on knowledge of their characteristics.

**Peripheral Vision** - Sees objects or movement of objects to one's side when the eyes are focused forward.

**Depth Perception** - Accurately judges which of several objects is closer or farther away from the observer, or the distance between an object and the observer.

**Visual Color Discrimination** - Accurately matches or detects differences between colors, including shades of color and brightness.



# United States Office of Personnel Management

## MOSAIC Competencies: Science and Engineering Occupational Study 2000 - 2002

### Technical Competencies

**Accounting** – Knowledge of traditional accounting practices including accrual, obligations, and costs methods.

**Aerospace Engineering** – Knowledge of the concepts, principles, and theories of aerodynamics or space environments related to the design, development, testing, analysis, application, and utilization of aerospace and aeronautical devices, vehicles, systems, and equipment.

**Architecture** - Knowledge of the concepts, principles, theories, and practices used in the planning, design, construction, and maintenance of buildings or other structures, taking into consideration aesthetic and functional concerns.

**Astronomy** - Knowledge of the concepts, principles, and theories of the physical processes leading to the emission of electromagnetic radiation or particles from celestial bodies, the measurement and physical characteristics of celestial bodies, including cosmic microwave background, submillimeter technology, galaxies, star formations, and planetary science.

**Biology** - Knowledge of plant and animal living tissue, cells, organisms, and entities, including their functions, interdependencies, and interactions with each other.

**Botany** - Knowledge of the concepts, principles, and theories of plants, including structures and functions, classification, taxonomy, plant communities, distribution, habitat requirements, life histories, reproduction, conservation, and care of plant species.

**Building and Construction** - Knowledge of the materials, methods, systems, and the tools used to construct objects, structures, and buildings.

**Cartography** - Knowledge of the concepts, principles, theories, and methods related to the research, design, development, or revision of maps, charts, and related cartographic products, and photogrammetric and cartographic processing.

**Chemical Engineering:** Knowledge of the concepts, principles, and theories related to the chemical composition or physical characteristics of materials for the design, construction, operation, and improvement of processes or systems.

**Chemistry** - Knowledge of the concepts, principles, and theories of the composition, structure, and properties of substances, and of the chemical processes and transformations, including uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.

**Civil Engineering** - Knowledge of the concepts, principles, theories, and methods required to plan, design, construct, operate, and maintain facilities such as buildings, transportation systems, water and sanitary systems, and other public works systems.

**Computers and Electronics** - Knowledge of the design and operation of electric circuit boards, processors, chips, and computer hardware or software systems, including applications and programming.

**Cost-Benefit Analysis** - Knowledge of the principles and methods of cost-benefit analysis, including the time value of money, present value concepts, and quantifying tangible and intangible benefits.

**Data Systems** – Knowledge of computer hardware and software development and systems as they apply to the conception, specification, analysis, planning, development, installation, test, modification and use of data handling and computing systems in support of aerospace flight and ground systems.

**Design** – Knowledge of conceptualizing, developing, producing, understanding, and using plans, models, blueprints, and maps, including the use of tools and instruments to produce precision technical drawings, working prototypes, components, or systems.

**Earth Science** – Knowledge of interdisciplinary disciplines associated with the earth's composition, structure, or other physical aspects, including atmosphere.



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## Science and Engineering Study Technical Competencies (continued)

**Ecology** - Knowledge of the concepts, principles, and theories of the interrelationships among organisms and their environment, including competition and predation, evolution and natural selection, population dynamics, and the impact of natural phenomena or human actions on natural systems, processes, and biota.

**Economics** - Knowledge of economic policy, principles, and practices, market and non-market values, and the analysis and reporting of economic data.

**Education and Training** - Knowledge of the concepts, principles, and theories of instructional methods such as teaching, training, research, making presentations, lecturing, and testing.

**Electrical Engineering** - Knowledge of the concepts, principles, theories, and methods related to the design, analysis, test, and integration of electrical systems; energy conversion; electrical power generation; and energy transmission, control, distribution or use.

**Electronics Engineering** - Knowledge of the concepts, principles, theories, and methods related to the design, analysis, test, fabrication, or verification of analog or digital electronic systems.

**Entomology** - Knowledge of the concepts, principles, and theories of insects, including taxonomy, morphology, behavior, life cycles, population dynamics, host-insect interactions, the role of insects in natural and managed ecosystems, and the regulation, prevention, and control of pest-related problems.

**Environmental Engineering** - Knowledge of the concepts, principles, theories, and methods to protect and improve the quality of the environment and its resources; and to monitor, control, abate, and prevent pollutants.

**Facilities** – Knowledge of the physical, engineering, and experimental equipment and operational characteristics of facilities, and safety and equipment development designed to support aerospace activities.

**Fire Management** - Knowledge of the concepts, principles, and theories of fire management, including the characteristics, behavior, and ecology of fire; methodologies, strategies, and equipment used in prescribed fires; fire detection, prevention, and suppression strategies; and integration of fire with natural resource management.

**Fishery Biology** - Knowledge of the concepts, principles, and theories of aquatic life, including classification, taxonomy, population dynamics, distribution, habitat requirements, life histories, reproduction, behaviors, conservation, and care of aquatic species.

**Flight Systems** - Knowledge of the concepts, principles, and theories related to the development, design, test, and evaluation of aerospace flight vehicles and their component subsystems, or their related external systems.

**Fluid Dynamics and Mechanics** – Knowledge of the concepts, principles, and theories of computational fluid dynamics, fluid mechanics, flight dynamics, flight structures, the force and motion mechanics of vehicles in various atmospheric and celestial environments, aerothermodynamics, and the characteristics of electrically conducting fluids under the action of magnetic and electric fields.

**Forensics** - Knowledge of procedures of civil, criminal, or administrative hearings, evidence collection, including the delivery and receipt of evidence, classes of evidence, and rules of evidence and legal procedures.

**Forest Management** - Knowledge of the concepts, principles, and theories of silviculture and forest ecology, forest use, management, harvesting, conducting inventories, regeneration, sustainability, and conservation; and the role of disturbances in timberland resources.

**General Engineering** - Knowledge of the concepts, principles, and theories of engineering and their practical applications.

**Genetics** - Knowledge of the concepts, principles, and theories of genetics, including the biochemistry of DNA, gene interaction, gene expression, gene inheritance, population genetics, adaptation, and evolution.



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## Science and Engineering Study Technical Competencies (continued)

**Geography** – Knowledge of the concepts, principles, theories, and methods for describing the location and distribution of land, sea, and air masses, including their physical locations, relationships, characteristics, and what the land supports.

**Geology** - Knowledge of the concepts, principles, and theories of the origins and structure of the earth, including the physical forces that have shaped it and its physical and organic history.

**Geophysics** - Knowledge of the concepts, principles, and theories related to solid earth structure, global seismic patterns, lithosphere, atmosphere, and the behavior of the earth's gravitational, magnetic, and electrical fields, and other forces affecting the earth and its environment.

**Geotechnical Engineering**- Knowledge of the concepts, principles, theories, and methods related to the investigation and evaluation of subsurface soil or geologic conditions and properties for the purpose of designing stable foundation systems, earthen structures, or the remediation of subsurface conditions.

**Health Physics** - Knowledge of the concepts, principles, theories, and methods pertaining to the protection of people, their environment, and equipment from hazards (for example, radiation or hazardous chemicals) and the control of radioactive material.

**Horticulture** – Knowledge of the concepts, principles, theories, and practices of cultivation or crop management, physiological processes in plant growth and crop yield.

**Hydraulic Engineering** - Knowledge of the concepts, principles, theories, and methods applicable to analysis of the flow of fluids (open channel and pressure flow), estimation of river stages, and design of hydraulic structures, drainage structures, pipes, navigation facilities, reservoirs, locks, and dams.

**Hydrology** - Knowledge of the concepts, principles, theories, and methods related to the magnitude, distribution, and quality of water resources including watershed management, climatology, geomorphology, groundwater hydrology, water quality, water resource management, and groundwater/surface water interactions.

**Landscape Architecture** - Knowledge of the concepts, theories, and practices used in the planning, designing, construction, and adaptation of outdoor features, taking into consideration recreation planning, requirements, aesthetic value, and compatibility with other developments and resources.

**Legal, Government and Jurisprudence** - Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process.

**Life Sciences and Systems** – Knowledge of life sciences that involve the theoretical and experimental research of life systems.

**Manufacturing** - Knowledge of the specifications, tools, inputs, raw materials, outputs, and waste related to the manufacture of prototypes, models, systems, or other products.

**Materials Engineering** - Knowledge of the concepts, principles, theories, and methods related to the composition, structures, and properties of materials, their use, behavior and performance under environmental influences, and the identification, processing, and manufacture of optimal materials for various applications.

**Measurement and Instrumentation** – Knowledge of electronics and related electrical engineering disciplines necessary for the research and development of sensors, electronic measurement devices, and instrumentation systems for aerospace systems and components.

**Mechanical Engineering** - Knowledge of the concepts, principles, theories, and methods related to planning, designing, developing, testing, or evaluating thermodynamic, mechanical, electro-mechanical, pneumatic, hydraulic, or structural equipment, systems, models, tools, or specialized mechanical devices.

**Mechanics** - Knowledge of machines and tools, including their design, use, benefits, repair, operation, and maintenance.



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## Science and Engineering Study Technical Competencies (continued)

**Metallurgy** - Knowledge of the concepts, principles, and theories related to the study of extracting, refining, alloying, and preparing metals for use; and their properties and behavior as affected by the composition, treatment in manufacture, and conditions of use.

**Mining Engineering** – Knowledge of the concepts, principles, theories, and methods related to rock mechanics; the exploration, excavation, extraction, processing and transporting of mineral resources; and the conservation and development of mineral lands, materials, and deposits.

**Modeling and Simulation** - Knowledge of the tools and techniques used to develop functional, physical, or prototype models and simulations for test and evaluation programs, the prediction of behavior and phenomena, and to visually communicate concepts.

**Nuclear Engineering** – Knowledge of the concepts, principles, theories, and application of nuclear technologies including research, development, construction, operation, testing, and maintenance of nuclear reactors, radiation generating devices, and associated systems and equipment.

**Nuclear Physics** - Knowledge of the concepts, principles, theories, and methods related to the prediction of nuclear interactions and reactions, including practices and methods used to produce, measure, use, or observe such reactions in stars, nuclear weapons systems, and radiation shielding.

**Operations** – Knowledge of engineering or physical science disciplines to support space flight operations, training or planning; serving as an astronaut or mission specialist.

**Pathology** - Knowledge of the concepts, principles, and theories of plant, insect, or animal diseases and host/pathogen relationships, including effects on natural and managed ecosystems.

**Petroleum Engineering** – Knowledge of the concepts, principles, theories, and methods related to the exploration, development, extraction, recovery, processing, and conservation of fluid minerals, geothermal resources, organic compounds, or natural gas resources.

**Physics** - Knowledge of the concepts, principles, theories, and methods to investigate and apply the relations between space, time, matter, and energy in the areas of gravity, atomic principles, mechanics, heat, light, sound, electricity, magnetism, and related natural phenomena.

**Propulsion and Power** - Knowledge of the concepts, principles, and theories of liquid, solid, electrical, chemical, electrochemical, or nuclear propulsion and power generation systems, their component parts and subsystems, and the direct and indirect conversion of energy into power for various applications.

**Psychology** – Knowledge of the concepts, principles, and theories of human behavior and performance in various contexts, mental processes, or the assessment and treatment of behavioral and affective disorders.

**Public Planning** - Knowledge of functions, principles, methods, and techniques of public planning, including those related to community planning, outdoor recreation planning, and natural resource management, such as demand forecasting, environmental impact analysis, financial forecasting, and land use planning and zoning.

**Public Safety and Security** - Knowledge of intelligence operations; public safety and security operations; occupational health and safety; investigation and inspection techniques; or rules, regulations, precautions, and prevention techniques for the protection of people, data, and property.

**Quality Management** - Knowledge of the principles, methods, and tools of quality assurance, quality control, and reliability used to ensure that a project, system, or product fulfills requirements and standards.

**Rangeland Management** - Knowledge of the concepts, principles, and theories of non-forested or forested land ecosystems, including rangeland use, management, and monitoring; conducting inventories; and the role of disturbances in rangeland ecosystems.

**Remote Sensing** - Knowledge of the concepts, principles, theories, and methods necessary to obtain, use, and interpret data from remote sensing sources, including aircrafts and satellites.



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## Science and Engineering Study Technical Competencies (continued)

**Research** - Knowledge of the scientific principles, methods, and processes used to conduct a systematic and objective inquiry; including study design, collection, analysis, and interpretation of data; and the reporting of results.

**Risk Management** - Knowledge of the principles, methods, and tools used for risk assessment and mitigation, including assessment of failures and their consequences.

**Safety Engineering** - Knowledge of the concepts, principles, theories, and methods to identify, control, mitigate, and eliminate safety hazards in the design and use of facilities, equipment, operations, and work processes.

**Sociology and Anthropology** – Knowledge of the concepts, principles, and theories of group behavior and dynamics; societal trends and influences; and cultures, their history, migrations, ethnicity, and origins.

**Soil Science** - Knowledge of the concepts, principles, or theories of soil composition, formation, classification, mapping, testing, and management, including erosion, pollution, conservation, and watershed management.

**Space Science** – Knowledge of physical science and engineering necessary to conduct research or study the solar system and beyond.

**Structural Engineering** - Knowledge of the concepts, principles, theories, and methods related to the design and analysis of complex structures using a variety of materials. Structures may include aerospace systems or structures, and other determinate or indeterminate systems.

**Surveying** – Knowledge of the concepts, principles, theories, and methods used in the measurement or determination of land boundaries, distances, elevations, areas, angles, and other features of the earth's surface.

**Telecommunications** - Knowledge of the concepts, principles, and theories of transmissions, broadcasting, switching, control, construction, or operation of telecommunications systems.

**Transportation Engineering**- Knowledge of the concepts, principles, theories, and methods applicable to planning, designing, and constructing of transportation systems including traffic analysis, signal analysis, highway capacity, pavement design, bridge construction, planning of transportation projects, environmental analysis of transportation facilities, and transportation network analysis.

**Wildlife Biology** - Knowledge of the concepts, principles, and theories of wildlife, including classification, taxonomy, population dynamics, distribution, habitat requirements, life histories, reproduction, behaviors, conservation, and care of wildlife.

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