

Engineering Technician Competency Model

U.S. Department of the Interior

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Engineering Technician Competency Model

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Engineering Technician Competency Model Study Summary

The DOI Office of Human Capital (OHC) conducted a comprehensive study to identify the critical competencies and tasks for successful performance of engineering technician work across the Department. OHC worked with engineering technician subject matter experts from across the Department in order to create a thorough and accurate representation of the work performed by DOI engineering technicians and the knowledge, skills, and abilities required to perform that work.

The study involved a variation of OPM's Multipurpose Occupational Systems Analysis Inventory – Closed-Ended (MOSAIC) method for gathering and analyzing information about work. This included a wide-ranging literature review to build lists of tasks and competencies used to describe engineering technician work across the Department. Next, focus groups with DOI engineering technician subject matter experts were held to ensure these lists were complete and accurately represented the job. Trained job analysts also linked competencies to each task to confirm they were required to perform the work. DOI engineering technician employees rated the tasks and competencies to demonstrate the importance and utility of each component of the study. Finally, the resulting competencies were reviewed by subject matter experts to confirm the accuracy of the model.

The results of this study establish a common set of engineering technician tasks and competencies across the Department, which can be used to create assessment and selection techniques and tools and establish common practices and terminology for recruitment, performance management, workforce planning, training, and employee development. This work provides DOI with current, validated information that can be used to ensure its engineering technician workforce has the tools to meet future challenges.

Please reference the Competency Model Interpretive Guidance for assistance in interpreting and applying the results of this study.

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Table 1: Competencies for Assessment and Selection by Grade

The following general competencies are valid for assessment and selection, performance management, and other related human capital functions across the engineering technician occupational series included in this study at the grade levels listed below.

GS-5	GS-6	GS-7	GS-8
<ul style="list-style-type: none"> • <i>Flexibility</i> • <i>Integrity/Honesty</i> • <i>Interpersonal Skills</i> • <i>Learning</i> • <i>Teamwork</i> 	<ul style="list-style-type: none"> • Flexibility • Integrity/Honesty • Interpersonal Skills • Learning • Teamwork 	<ul style="list-style-type: none"> • <i>Accountability</i> • <i>Attention to Detail</i> • <i>Customer Service</i> • Flexibility • Integrity/Honesty • Interpersonal Skills • Learning • <i>Oral Communication</i> • <i>Reasoning</i> • <i>Resilience</i> • Teamwork 	<ul style="list-style-type: none"> • Accountability • Attention to Detail • <i>Compliance</i> • Customer Service • Flexibility • <i>Information Management</i> • Integrity/Honesty • Interpersonal Skills • Learning • Oral Communication • <i>Problem Solving</i> • Reasoning • Resilience • Teamwork • <i>Technical Competence</i> • <i>Writing</i>
GS-9	GS-10	GS-11	GS-12
<ul style="list-style-type: none"> • Accountability • Attention to Detail • Compliance • <i>Conflict Management</i> • <i>Creative Thinking</i> • Customer Service • Flexibility • <i>Influencing and Negotiating</i> • Information Management • Integrity/Honesty • Interpersonal Skills • Learning 	<ul style="list-style-type: none"> • Accountability • Attention to Detail • Compliance • Conflict Management • Creative Thinking • Customer Service • Flexibility • Influencing and Negotiating • Information Management • Integrity/Honesty • Interpersonal Skills • Learning 	<ul style="list-style-type: none"> • Accountability • Attention to Detail • Compliance • Conflict Management • Creative Thinking • Customer Service • Flexibility • Influencing and Negotiating • Information Management • Integrity/Honesty • Interpersonal Skills • Learning 	<ul style="list-style-type: none"> • Accountability • Attention to Detail • Compliance • Conflict Management • Creative Thinking • Customer Service • Flexibility • Influencing and Negotiating • Information Management • Integrity/Honesty • Interpersonal Skills • Learning

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<ul style="list-style-type: none">• Oral Communication• <i>Organizational Awareness</i>• Problem Solving• Reasoning• Resilience• <i>Teaching Others</i>• Teamwork• Technical Competence• Writing	<ul style="list-style-type: none">• Oral Communication• Organizational Awareness• Problem Solving• <i>Project Management</i>• Reasoning• Resilience• Teaching Others• Teamwork• Technical Competence• Writing	<ul style="list-style-type: none">• Oral Communication• Organizational Awareness• Problem Solving• Project Management• Reasoning• Resilience• Teaching Others• Teamwork• Technical Competence• Writing	<ul style="list-style-type: none">• Oral Communication• Organizational Awareness• Problem Solving• Project Management• Reasoning• Resilience• Teaching Others• Teamwork• Technical Competence• Writing
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Table 2: Required Proficiency Levels by Grade Level

Proficiency Level Scale Definitions		
Proficiency Level	General Competencies	Technical Competencies
5 = Expert	<ul style="list-style-type: none"> • Applies the competency in exceptionally difficult situations • Serves as a key resource and advises others 	<ul style="list-style-type: none"> • Applies the competency in exceptionally difficult situations • Serves as a key resource and advises others • Demonstrates comprehensive expert understanding of concepts and processes
4 = Advanced	<ul style="list-style-type: none"> • Applies the competency in considerably difficult situations • Generally requires little or no guidance 	<ul style="list-style-type: none"> • Applies the competency in considerably difficult situations • Generally requires little or no guidance • Demonstrates understanding of concepts and processes
3 = Intermediate	<ul style="list-style-type: none"> • Applies the competency in difficult situations • Requires occasional guidance 	<ul style="list-style-type: none"> • Applies the competency in difficult situations • Requires occasional guidance • Demonstrates understanding of concepts and processes
2 = Basic	<ul style="list-style-type: none"> • Applies the competency in somewhat difficult situations • Requires frequent guidance 	<ul style="list-style-type: none"> • Applies the competency in somewhat difficult situations • Requires frequent guidance • Demonstrates familiarity with concepts and processes
1 = Awareness	<ul style="list-style-type: none"> • Applies the competency in simplest situations • Requires close and extensive guidance 	<ul style="list-style-type: none"> • Applies the competency in simplest situations • Requires close and extensive guidance • Demonstrates awareness of concepts and processes

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Required Proficiency Level Ratings by Grade Level - General								
Competency	GS-5	GS-6	GS-7	GS-8	GS-9	GS-10	GS-11	GS-12
Accountability	2	2	3	3	4	4	5	5
Attention to Detail	2	2	3	3	4	4	5	5
Compliance	1	2	2	3	3	4	4	5
Conflict Management	1	1	2	2	3	3	4	4
Creative Thinking	1	1	2	2	3	3	4	4
Customer Service	2	2	3	3	4	4	5	5
Flexibility	3	3	4	4	4	5	5	5
Influencing/Negotiating	1	1	2	2	3	3	4	4
Information Management	1	2	2	3	3	4	4	5
Integrity/Honesty	4	4	4	5	5	5	5	5
Interpersonal Skills	3	3	4	4	4	5	5	5
Learning	3	3	4	4	4	5	5	5
Oral Communication	2	2	3	3	4	4	5	5
Organizational Awareness	1	1	2	2	3	3	4	4
Problem Solving	1	2	2	3	3	4	4	5
Project Management	1	1	1	2	2	3	4	4
Reasoning	2	2	3	3	4	4	5	5
Resilience	2	2	3	3	4	4	5	5
Teaching Others	1	1	2	2	3	3	4	4
Teamwork	3	3	4	4	4	5	5	5
Technical Competence	1	2	2	3	3	4	5	5
Writing	1	2	2	3	3	4	4	5

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Table 3: Behavioral Examples for Competencies

Competency Name	Definitions
Accountability	<p>Holds self and others accountable for measurable high-quality, timely, and cost-effective results. Determines objectives, sets priorities, and delegates work. Accepts responsibility for mistakes. Complies with established control systems and rules.</p> <ul style="list-style-type: none"> • <i>Takes responsibility for results and work products</i> • <i>Ensures work is completed on time and at the level of quality required</i> • <i>Understands the rules and regulations of the work performed and ensures compliance with them</i> • <i>Demonstrates responsibility with important materials, critical processes, or confidential information</i>
Attention to Detail	<p>Is thorough when performing work and conscientious about attention to detail. Recalls information that has been presented previously.</p> <ul style="list-style-type: none"> • <i>Sets the standards for the quality of the work completed for the organization</i> • <i>Leads others in attending to detail in difficult and/or high-pressure circumstances</i> • <i>Reviews and edits work completed by others to ensure that the quality of work meets acceptable work standards</i> • <i>Independently completes thorough and accurate work</i>
Compliance	<p>Knowledge of procedures for assessing, evaluating, and monitoring programs or projects for compliance with Federal laws, regulations, and guidance.</p> <ul style="list-style-type: none"> • <i>Shows familiarity with the structure and terminology of various rules and regulations of the Federal Government</i> • <i>Demonstrates the ability to search for and find appropriate rules or regulations</i> • <i>Understands how to apply appropriate rules and regulations to guide direction of work or make decisions</i>
Conflict Management	<p>Manages and resolves conflicts, grievances, confrontations, or disagreements in a constructive manner to minimize negative personal impact.</p> <ul style="list-style-type: none"> • <i>Ensures disagreements between two or more parties remain civil</i> • <i>Effectively uses conflict resolution techniques to allow for productive discussion of potential solutions between disagreeing parties.</i> • <i>Addresses grievances or disagreements and brokers accord and respect</i>
Creative Thinking	<p>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.</p> <ul style="list-style-type: none"> • <i>Creates a work environment that encourages creative thinking and innovation</i> • <i>Explores new ideas, methodologies, and alternatives to reach outcomes</i> • <i>Introduces new concepts or strategies that significantly improve or revise the way work is performed</i> • <i>Suggests or proposes alternative ways to view or define problems; is not constrained by conventional thinking and established approaches</i> • <i>Combines ideas in unique ways or makes connections between disparate ideas</i>

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<p>Customer Service</p>	<p>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.</p> <ul style="list-style-type: none"> • <i>Commits to serving the public and understands their advisory role</i> • <i>Utilizes outreach, needs assessment, evaluation, and other marketing skills to identify and anticipate customer needs and provide exemplary customer service</i> • <i>Understands diverse customer groups, their perspectives, issues and needs</i> • <i>Works to ensure customers' needs are met, even when those needs are outside of the typical role of the position</i> • <i>Identifies and develops metrics to assess customer service satisfaction</i> • <i>Continuously improves products and services</i> • <i>Works and plans strategically, using a systems perspective to anticipate developing customer issues and needs and to provide timely solutions that focus on long-term benefits</i>
<p>Flexibility</p>	<p>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.</p> <ul style="list-style-type: none"> • <i>Effectively adjusts strategies or courses of action in response to changing conditions</i> • <i>Makes quality decisions when faced with ambiguous situations</i> • <i>Is willing to incorporate new information into decision making process</i> • <i>Adapts behavior to overcome challenges</i>
<p>Influencing/Negotiating</p>	<p>Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions.</p> <ul style="list-style-type: none"> • <i>Persuades and influences parties to cooperate and accept recommendations</i> • <i>Explains and clarifies perspectives of an issue and its impact on all parties</i> • <i>Negotiates to achieve consensus through changed opinion, attitude or behavior</i> • <i>Demonstrates logic, communicates and persuades others to see benefits of recommendations within and across groups</i> • <i>Understands all sides of an issue and its impact on all parties involved</i> • <i>Negotiates with individuals or groups, including those that are resistant, to consider cooperating in order to achieve an acceptable solution</i>
<p>Information Management</p>	<p>Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems.</p> <ul style="list-style-type: none"> • <i>Demonstrates an understanding of where and how data or other information are maintained</i> • <i>Shows familiarity with the information management systems of the organization</i> • <i>Effectively searches for and finds appropriate information to address the needs of a project</i> • <i>Uses discretion when handling sensitive content</i>

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Integrity/Honesty	<p>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.</p> <ul style="list-style-type: none"> • <i>Takes pride in exhibiting personal and organizational integrity and honesty</i> • <i>Acts in a just, fair, and ethical manner and encourages ethical behavior among others, even when risky to do so</i> • <i>Inspires trust and confidence among stakeholders through reliability, authenticity, and accountability</i>
Interpersonal Skills	<p>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.</p> <ul style="list-style-type: none"> • <i>Shows respect for the values and ideas of others, even when not agreeing with them</i> • <i>Empathizes with the concerns of others</i> • <i>Demonstrates tact and courtesy when interacting with associates</i> • <i>Is proactive in defusing arguments among peers</i> • <i>Seeks feedback from others to avoid blind-spots that can cause misunderstandings</i> • <i>Explores issues with the team; shares information; solicits ideas' uses participative decision-making processes</i>
Learning	<p>Uses efficient learning techniques to acquire and apply new knowledge and skills; uses training, feedback, or other opportunities for self-learning and development.</p> <ul style="list-style-type: none"> • <i>Is proactive in seeking out new knowledge</i> • <i>Devotes time to building new skillsets or further developing existing skillsets</i> • <i>Understands instructions or assignments without much need for additional explanation or clarification</i> • <i>Is open to constructive feedback on performance</i> • <i>Rarely makes the same mistake more than once</i> • <i>Effectively applies new knowledge or skills in applied environments</i>
Oral Communication	<p>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.</p> <ul style="list-style-type: none"> • <i>Speaks honestly, effectively and with integrity</i> • <i>Makes convincing, articulate, and accurate oral presentations using non-verbal and vocal qualities that support the verbal spoken message</i> • <i>Effectively uses various communication channels, including meetings, presentations and briefings</i> • <i>Actively considers, plans for, and reacts appropriately to the audience and the contextual environment in order to minimize barriers to understanding</i> • <i>Explains complex information clearly and accurately, and seeks feedback to determine that understanding has occurred</i> • <i>Acts as an effective facilitator in group or team settings</i>

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Organizational Awareness	<p>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.</p> <ul style="list-style-type: none"> • <i>Demonstrates awareness of the mission, functions, and various levels of the organization</i> • <i>Understands how decisions or actions of one organizational component may affect other components</i> • <i>Leverages knowledge of organizational components, programs, and directions to improve products, actions, or decisions</i> • <i>Shows familiarity with the rules and regulations of the organization</i>
Problem Solving	<p>Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations.</p> <ul style="list-style-type: none"> • <i>Examines problems and solutions with a long-term perspective</i> • <i>Effectively leads others in the effort of developing, identifying, and formulating problem solving strategies consistent with organizational goals</i> • <i>Uses logic to develop and implement innovative tools and techniques to resolve complex problems and issues</i> • <i>Uses logic to resolve complex, unique, or unusual problems</i> • <i>Consistently anticipates challenges that are not obvious to others</i> • <i>Determines the relevance of information in reaching effective conclusions</i> • <i>Formulates recommendations for the best course of action to address problems</i>
Project Management	<p>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.</p> <ul style="list-style-type: none"> • <i>Schedules and keeps track of major project milestones and persons responsible</i> • <i>Communicates with various stakeholders to ensure that projects stay on time and on budget</i> • <i>Identifies and plans for external and internal barriers to project delivery</i> • <i>Delegates work to team members as necessary and ensures completion of work</i>
Reasoning	<p>Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions.</p> <ul style="list-style-type: none"> • <i>Determines the relevance of information in reaching effective conclusions</i> • <i>Uses logic to determine relationships among information in order to reach conclusions</i> • <i>Makes appropriate inferences from data, rules, or other information</i>
Resilience	<p>Deals effectively with pressure; remains optimistic and persistent, even under adversity. Recovers quickly from setbacks.</p> <ul style="list-style-type: none"> • <i>Achieves desired results in face of adversity</i> • <i>Overcomes barriers to accomplish goals</i> • <i>Stays positive despite setbacks</i> • <i>Works successfully in high pressure environments</i>

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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. <ul style="list-style-type: none">• <i>Provides instruction and feedback to others</i>• <i>Acts as a mentor to others</i>• <i>Determines areas for improvement and training for others</i>• <i>Tutors others in the performance of tasks</i>
Teamwork	Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals. <ul style="list-style-type: none">• <i>Volunteers to assist associates with projects</i>• <i>Commits to working toward team or group goals</i>• <i>Displays team pride and empowers team pride among other group members</i>• <i>Works effectively in group settings in order to achieve team objectives</i>
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. <ul style="list-style-type: none">• <i>Composes clear, concise, and logical documents or correspondence involving complex technical information</i>• <i>Consistently and effectively tailors written products to a wide range of audiences and for diverse purposes in order to achieve a desired outcome</i>• <i>Proofreads and edits the writing of others</i>• <i>Effectively explains complex technical material to a non-technical audience</i>• <i>Uses correct grammar, punctuation, and spelling</i>• <i>Writes in an organized fashion that is easy to understand</i>

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Table 4: General Competencies by Assessment Tool

Competency	Occupational Questionnaire	Structured Interview	Biodata	Cognitive Ability Test
Accountability	Low	High	High	Low
Attention to Detail	Low	Medium	Low	High
Compliance	Low	High	Low	Low
Conflict Management	Low	High	Medium	Low
Creative Thinking	Low	High	Medium	Medium
Customer Service	Low	High	Low	Low
Flexibility	Low	High	Medium	Low
Influencing and Negotiating	Low	High	Low	Low
Information Management	Low	Medium	Medium	Medium
Integrity/Honesty	Low	High	Medium	Low
Interpersonal Skills	Low	High	Low	Low

Competency	Job Knowledge Test	Personality Inventory	Situational Judgment Test	Work Sample
Accountability	Low	Medium	Medium	Low
Attention to Detail	Low	Low	Low	High
Compliance	High	Low	Medium	Medium
Conflict Management	Low	Medium	High	Medium
Creative Thinking	Low	Medium	Low	High
Customer Service	Low	Low	High	High
Flexibility	Low	High	Medium	High
Influencing and Negotiating	Low	Medium	Medium	Medium
Information Management	Medium	Low	Medium	High
Integrity/Honesty	Low	Medium	High	Low
Interpersonal Skills	Low	Medium	Medium	Medium

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Competency	Occupational Questionnaire	Structured Interview	Biodata	Cognitive Ability Test
Learning	Low	Medium	Medium	High
Oral Communication	Medium	High	Medium	Low
Organizational Awareness	Low	High	Low	Low
Problem Solving	Low	High	Medium	High
Project Management	Medium	High	Medium	Low
Reasoning	Low	Low	Low	High
Resilience	Low	High	Medium	Low
Teaching Others	Low	High	Medium	Low
Teamwork	Low	High	Medium	Low
Technical Competence	High	High	Low	Low
Writing	Low	Low	Medium	Low

Competency	Job Knowledge Test	Personality Inventory	Situational Judgment Test	Work Sample
Learning	Low	Low	Low	Medium
Oral Communication	Low	Low	Low	High
Organizational Awareness	Medium	Low	Low	Low
Problem Solving	Low	Low	Medium	High
Project Management	Low	Low	High	High
Reasoning	Low	Low	High	Medium
Resilience	Low	Medium	Low	Low
Teaching Others	Low	Medium	Medium	High
Teamwork	Low	Medium	Medium	Medium
Technical Competence	High	Low	Medium	High
Writing	Low	Low	Low	High

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Table 5: Technical Competencies for Assessment and Selection

The following technical competencies are valid for assessment and selection, performance management, and other related human capital functions for the engineering technician occupational series at grade 8 and above¹. (NOTE: While the technical competencies below have been validated for assessment and selection for the series listed below, they are not REQUIRED to be used for assessment and selection for those series. Further, other technical competencies not listed below may be required depending on the position. Rely on the results of a job analysis and feedback from the hiring manager and subject matter experts to determine the exact technical competencies needed for a particular hire). Definitions for these and all technical competencies included in the study are located in Appendix A.

Civil Engineering
Data Interpretation
Design
Field Data Collection
General Engineering
Measurement and Instrumentation
Petroleum Engineering

¹ Per the ratings for the competency of “technical competence,” which met the criteria to use for assessment and selection purposes at grade 8 and above for the GS-0802 series.

Appendix A: Competency Definitions

General Competencies

Accountability – Holds self and others accountable for measurable high-quality, timely, and cost-effective results. Determines objectives, sets priorities, and delegates work. Accepts responsibility for mistakes. Complies with established control systems and rules.

Attention to Detail – Is thorough when performing work and conscientious about attention to detail. Recalls information that has been presented previously.

Compliance – Knowledge of procedures for assessing, evaluating, and monitoring programs or projects for compliance with Federal laws, regulations, and guidance.

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

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.

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.

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

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

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.

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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.

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

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.

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

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 principles.

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

Resilience – Deals effectively with pressure; remains optimistic and persistent, even under adversity. Recovers quickly from setbacks.

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.

Writing – Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized

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manner; produces written information, which may include technical material that is appropriate for the intended audience.

Technical Competencies

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.

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.

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

Data Accessibility - Knowledge of policies, procedures, and tools that support data accessibility, including but not limited to open data standards, machine readable formats, and Section 508 of the Americans with Disabilities Act compliance.

Data Interpretation - Skill in collecting, analyzing, and interpreting data and policies, to determine actions and develop and propose guidance.

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 archiving, data disposal, and data standardization processes.

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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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.

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.

Field Data Collection - Ability to collect, record, and ensure accuracy of field data (for example, stream and river discharge measurements).

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

Geographical Sciences - 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 and other planetary bodies, 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, solid earth processes, atmosphere, and the behavior of the earth's gravitational, magnetic, and electrical fields, and other forces affecting the earth and its environment.

Geospatial Information Systems - Knowledge of and skill in manipulating computer systems designed for capturing, storing, analyzing, and displaying data related to positions on the surface of the earth and other planetary bodies in order to better understand spatial patterns and relationships.

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.

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,

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climatology, geomorphology, groundwater hydrology, water quality, water resource management, and groundwater/surface water interactions.

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

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.

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.

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

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.

Mine Safety and Health - Knowledge of mine safety and health principles and practices, techniques and procedures, regulations, and standards as they apply to conducting inspections/investigations, identifying and evaluating unsafe conditions, and recommending methods to correct unsafe conditions.

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.

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

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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.

Remote Sensing - Knowledge of the concepts, principles, theories, and methods necessary to obtain, use, and interpret data from remote sensing sources, including ground and aerospace-based sensors.

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.

Research and Statistics - Knowledge of scientific principles, methods, and tools of basic and applied research (for example, statistics and data analysis) used to conduct a systematic inquiry into a subject matter area.

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.

Appendix B: Engineering Technician Tasks by Duty

Duty 1 – Communicates with others.

Associated Tasks:

Develops and implements solutions for conflicts with stakeholders.

Drafts technical reports, scopes of work, National Environmental Protection Act documentation, or other correspondence.

Reports on findings of inspections or investigations.

Delivers presentations or briefings.

Duty 2 – Performs inspections or ensures compliance with applicable standards, regulations, laws, or procedures.

Associated Tasks:

Documents findings of inspections and reports violations to supervisor or senior technicians.

Acquires and maintains a working knowledge of relevant laws, regulations, policies, standards, or procedures.

Conducts on-site inspections of operations (e.g., oil and gas drilling).

Conducts existing conditions evaluations of physical structures.

Performs safety inspections.

Directs operator to correct deficiencies noted in safety inspections.

Ensures that operations are conducted in accordance with approved plans, regulations, or procedures.

Writes fines for violations of laws, regulations, and policies.

Performs inspections of equipment to ensure it is properly installed, adequate for operations, and functioning appropriately.

Verifies that production is measured properly, adequate site security is present, and systems are proper and approved.

Conducts production verification inspections.

Investigates minor incidents.

Duty 3 – Collects data or conducts analyses.

Associated Tasks:

Conducts environmental impact, health, or safety analyses.

Conducts field site visits to collect samples, photos, or measurements.

Collects data, such as physical characteristics, facility condition assessment data, or geospatial data.

Processes or analyzes data using computer systems or applications.

Develops models or theoretical approaches.

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Duty 4 – Compiles, organizes, or conveys information.

Associated Tasks:

Conducts evaluations, examinations, or other fact-finding studies to obtain or verify information.
Compiles project-related design specifications and materials data.
Enters data into databases or systems.
Prepares graphs, tables, or charts.
Prepares or provides input on project plans.
Prepares agreements, permits, or other documentation.
Maintains records.

Duty 5 – Constructs, installs, inspects, or maintains technical equipment.

Associated Tasks:

Calibrates or installs technical equipment.
Constructs, operates, and maintains technical equipment.
Maintains, designs, tests, calibrates, installs, troubleshoots, or repairs instrumentation systems.

Duty 6 – Makes decisions or resolves problems.

Associated Tasks:

Makes determinations based on data analysis.
Provides feedback or recommendations on projects, processes, or plans.

Duty 7 – Ensures adequate resources are available.

Associated Tasks:

Performs inventory assessments.
Determines resources needed for projects, such as instrumentation or borrow sources.
Orders, procures, and coordinates materials, equipment, and labor in support of projects.
Conducts costs estimates.
Prepares and assists in the administration of contracts.

Duty 8 – Collaborates or consults with others.

Associated Tasks:

Instructs classes or conducts training sessions, workshops, or seminars.
Works with stakeholders to determine the accuracy and adequacy of plans, materials, and methods for work.
Coordinates with others to determine studies or evaluations necessary at sites.
Mentors staff members.

Duty 9 – Performs other technical duties.

Associated Tasks:

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Assists with the design of structures.

Conducts field mapping of complex types of terrain, unique topographic features, or rugged topography.

Performs surveys of structures, roads, or landscapes.