STATE OF COLORADO

CLASS SERIES DESCRIPTION
JULY 2015

ENGINEERING/PHYSICAL SCIENCE TECHNICIAN

I5D1** TO I5D3**
Specialty Areas
A. Engineering B. Physical Sciences

DESCRIPTION OF OCCUPATIONAL WORK

This class series uses three levels in the Physical Sciences and Engineering Occupational Group and describes work in the practical application of the methods, techniques, practices, and principles of engineering or the physical sciences. This class describes work related to agency's engineering or physical sciences fields or programs and may include such things as testing, inspecting, construction planning and oversight, drafting or designing, or waste or water management. The work may also include regulatory compliance activities such as inspecting, permitting, or reporting on hazardous materials or other programs related to engineering or a physical science.

This class series differs from the Engineering/Physical Science Assistant series as those classes describe work of a physical or manual labor nature compared to this series work, which describes work more intellectual or analytical in nature related to the principles or practices of engineering or a physical science. This class differs from the Laboratory Coordinator in the physical sciences group as that class describes work typically conducted in a laboratory environment in support of education or research projects or programs. This class series differs from the Civil Engineering Project Management class series as that class describes work in administering and overseeing pre-construction and construction projects on a continuing, long-term basis.

ENGINEERING/PHYSICAL SCIENCES TECHNICIAN I I5D1**

CONCEPT OF CLASS

This class describes the first-level technician. Positions in this level provide basic support to engineers or scientists by following standard, pre-established procedures, tests, or formulas. The work includes running standard tests, measurements, or quantitative analyses on samples; operating equipment or instruments as instructed; recording and comparing results with established standards or specifications; collecting field data or samples; and recording information on tests, samples, or activities. Positions also maintain equipment and supplies and may initiate orders to replenish such. Although this is a non-supervisory class, some positions may give work direction or check the work of other positions.

FACTORS

Allocation must be based on meeting all of the three factors as described below.

Decision Making -- The decisions regularly made are at the defined level, as described here. Within limits prescribed by the operation, choices involve selecting alternatives that affect the manner and speed with which tasks are carried out. These choices do not affect the standards or results of the operation itself because there is typically only one correct way to carry out the operation. These alternatives include independent choice of such things as priority and personal preference for organizing and processing the work, proper tools or equipment, speed, and appropriate steps in the operation to apply. By nature, the data needed to make decisions can be numerous but are clear and understandable so logic is needed to apply the prescribed alternative. Positions can be taught what to do to carry out assignments and any deviation in the manner in which the work is performed does not change the end result of the operation. For example, positions operate surveying equipment in accordance with established steps and procedures of the agency or at the direction of the survey party chief.

Complexity -- The nature of, and need for, analysis and judgment is patterned, as described here. Positions study design, test, or construction information to determine what it means and how it fits together in order to get practical solutions in the form of data and information for reports. Guidelines in the form of standards, procedures, drawings, specifications, or manuals exist for most situations. Judgment is needed in locating and selecting the most appropriate of these guidelines which may change for varying circumstances as the task is repeated. This selection and interpretation of guidelines involves choosing from alternatives where all are correct but one is better than another depending on the given circumstances of the situation. For example, in inspecting mines, positions select the appropriate category of safety regulation to identify corrective actions needed.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as an individual contributor. The individual contributor may explain work processes and train others. The individual contributor may serve as a resource or guide by advising others on how to use processes within a system or as a member of a collaborative problem-solving team.

ENGINEERING/PHYSICAL SCIENCES TECHNICIAN II I5D2**

CONCEPT OF CLASS

This class describes the second-level technician. In addition to work described by the Technician I class, positions in this level have responsibility for decisions on the operations needed to complete the work. Positions decide how and what work is accomplished in an engineering or physical sciences work area. This class differs from the Engineering/Physical Sciences Technician I class in the Decision Making factor.

FACTORS

Allocation must be based on meeting all of the three factors as described below.

Decision Making -- The decisions regularly made are at the operational level, as described here. Within limits set by the specific process, choices involve deciding what operation is required to carry out the process. This includes determining how the operation will be completed. By nature, data needed to make decisions are numerous and variable so reasoning is needed to develop the practical course of action within the established process. Choices are within a range of specified, acceptable standards, alternatives, and technical practices. For example, positions decide how individual bridge inspections will be completed and which types of tests to run based on measurements and visual inspections.

Positions review design, study, or plan information to determine what it means and how it fits together in order to get practical solutions in the form of validation or verification of compliance. Guidelines in the form of rules, standards, contracts, regulations, or specifications exist for most situations. Judgment is needed in locating and selecting the most appropriate of these guidelines which may change for varying circumstances as the task is repeated. This selection and interpretation of guidelines involves choosing from alternatives where all are correct but one is better than another depending on the given circumstances of the situation. For example, positions choose the appropriate amounts, sequences, and methods of water releases based on measurements obtained.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as an individual contributor or as a work leader. The individual contributor may explain work processes and train others. The individual contributor may serve as a resource or guide by advising others on how to use processes within a system or as a member of a collaborative problem-solving team.

OR

The work leader is partially accountable for the work product of two or more full-time equivalent positions, including timeliness, correctness, and soundness. At least one of the subordinate positions must be in the same series or at a comparable conceptual level. Typical elements of direct control over other positions by a work leader include assigning tasks, monitoring progress and work flow, checking the product, scheduling work, and establishing work standards. The work leader provides input into supervisory decisions made at higher levels, including signing leave requests and approving work hours. This level may include positions performing supervisory elements that do not fully meet the criteria for the next level in this factor.

ENGINEERING/PHYSICAL SCIENCES TECHNICIAN III I5D3**

CONCEPT OF CLASS

This class describes the first-level supervisor or staff authority. In addition to work described in previous levels, positions in this level have responsibility for decisions that affect the pay, status, or tenure of others. This class differs from the Engineering/Physical Sciences Technician II class in Line/Staff Authority factor and possibly in the Decision Making or Purpose of Contact factors.

FACTORS

Allocation must be based on meeting all of the three factors as described below.

Decision Making -- The decisions regularly made are at the operational level, as described here. Within

limits set by the specific process, choices involve deciding what operation is required to carry out the process. This includes determining how the operation will be completed. By nature, data needed to make decisions are numerous and variable so reasoning is needed to develop the practical course of action within the established process. Choices are within a range of specified, acceptable standards, alternatives, and technical practices. For example, positions decide how to monitor cleanup actions at hazardous waste sites.

OR

The decisions regularly made are at the process level, as described here. Within limits set by professional standards, the agency's available technology and resources, and program objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations. For example, positions set the process for determining and adjusting water releases during changing availabilities and amount of "calls". The general pattern, program, or system exists but must be individualized. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. For example, positions apply scientific test concepts to evaluating data collected by air sampling equipment. New processes or objectives require approval of higher management or the agency with authority and accountability for the program or system.

Complexity -- The nature of, and need for, analysis and judgment is patterned, as described here. Positions study engineering or scientific data and information to determine what it means and how it fits together in order to get practical solutions in the form of reports, test data, or work processes. Guidelines in the form of contracts, rules, standards, regulations, or program guides exist for most situations. Judgment is needed in locating and selecting the most appropriate of these guidelines which may change for varying circumstances as the task is repeated. This selection and interpretation of guidelines involves choosing from alternatives where all are correct but one is better than another depending on the given circumstances of the situation. For example, positions select the appropriate design standards and specifications to use in designing remodeling projects for buildings and facilities.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as a unit supervisor, a staff authority, or as an individual contributor. The unit supervisor is accountable, including signature authority, for actions and decisions that directly impact the pay, status, and tenure of three or more full-time equivalent positions. At least one of the subordinate positions must be in the same series or at a comparable conceptual level. The elements of formal supervision must include providing documentation to support recommended corrective and disciplinary actions, signing performance plans and appraisals, and resolving informal grievances. Positions start the hiring process, interview applicants, and recommend hire, promotion, or transfer.

OR

The staff authority is a pacesetter who has a unique level of technical expertise in a field or profession that, as part of the assignment, is critical to the success of an agency. It is an essential component of the work assignment that has been delegated by management to the position. This authority directly influences management decisions within an agency. For example, management relies on such a position when making decisions regarding the direction that policy

or a program should take in the staff authority's field of expertise. Managers and peers recognize and seek this level of technical guidance and direction regarding the application of a program or system within the agency or to its clients.

OR

The direct field of influence the work of a position has on the organization is as an individual contributor. The individual contributor may explain work processes and train others. The individual contributor may serve as a resource or guide by advising others on how to use processes within a system or as a member of a collaborative problem-solving team. This level may include positions performing supervisory elements that do not fully meet the criteria for the next level in this factor.

NOTE: As a tradeoff, positions allocated to this class under the this individual contributor concept must have Decision Making evaluated at the Process level, and must have Purpose of Contact evaluated at the Clarifying or Negotiating level for one of the two degrees required for this factor.

DEFINITIONS

Engineering - concerned with the practical application of physical and mathematical laws and principles for the development and utilization of machines, instruments, structures, processes, and services.

Physical Sciences - those sciences related to physical matter or energy, such as chemistry, physics, geology, meteorology, hydrology, astronomy, and mathematics.

Technical/Technological - Work in support of professional levels by applying basic technical practices to solve practical problems not involving the application of theories; having to do with the practical or applied sciences.

ENTRANCE REQUIREMENTS

Minimum entry requirements and general competencies for classes in this series are contained in the State of Colorado Department of Personnel & Administration web site.

For purposes of the Americans with Disabilities Act, the essential functions of specific positions are identified in the position description questionnaires and job analyses.

CLASS SERIES HISTORY

Updated and removed the purpose of contact 6.30.2015
Effective 7/1/02 (DLF). PSE System Maintenance Study. No changes. Published as proposed 5/15/02.
Effective 9/1/93 (DLF). Job Evaluation System Revision project. Published as proposed 6/11/93.
Revised 1/15/91. Changed class codes, titles, options, and entrance requirements, E/PS Tech IA - III (A3140-43).
Revised 12/1/86. Changed title, relationship, nature and examples of work, and entrance requirements, Supervising Drill Operator (A4566); Utilities Inspector (A4594).
Revised 7/1/83. Changed relationship, Utilities Inspector (A4594).
Created 7/1/82. E/PS Tech I - III (A3140-43).

Revised 11/1/78. Changed entrance requirements, Senior and Principal Water Commissioners (A6405-06)
Revised 1/1/78. Changed entrance requirements, Senior Water Commissioner (A6405).
Created 1/1/75. Supervising Drill Operator (A4566), Utilities Inspector (A4594), Senior and Principal Water Commissioners (A6405-06), Coal Mine Inspector (A7222), and District Metal Mine Inspector (A7234).

SUMMARY OF FACTOR RATINGS

Class Level	Decision Making	Complexity	Line/Staff Authority
Engin/Phy Science Tech I	Defined	Patterned	Indiv. Contributor
Engin/Phy Science Tech II	Operational	Patterned	Indiv. Contributor or Work Leader
Engin/Phy Science Tech III	Operational or Process	Patterned	Unit Supervisor, Staff Authority, or Indiv. Contributor

ISSUING AUTHORITY: Colorado Department of Personnel & Administration