**COMPETENCY MODEL FOR**
**APPLICATIONS PROGRAMMER**
**CLASS CODE 1429**

The following competencies have been identified as those that best separate superior from satisfactory job performance in the class of **APPLICATIONS PROGRAMMER.**

1. Reading Comprehension
2. Mathematics
20. Job Knowledge
29. Fact Finding
33. Interpersonal Skills
47. Written Communication

On the following pages are descriptions of each competency, including a definition, the level of the competency required for the class (italicized and underlined), examples of behavioral indicators, and satisfactory and superior performance levels.

**1. READING COMPREHENSION** – Comprehends and correctly applies information presented in written form. Makes correct inferences; draws accurate conclusions.

Level of Competency Required by Job:

Level 1: *Concrete, specific job-related information (work orders; instructions; material/equipment labels)*

Level 2: General information related to field of work and assignments; (articles in trade publications; technical/instructional manuals; memos; letters; e-mails; reports)

Level 3: Abstract/complex information (highly technical articles/ reports in specialized area; legal or other regulatory material)

Examples of Behavioral Indicators:

- Follows written instructions correctly.
- Learns information presented in writing.
- Identifies relevant written information.
- Interprets written legal regulatory material accurately.

Performance Levels:

| Satisfactory | Superior |
| --- | --- |
| Reads instructions correctly. Learns from manual and other printed material. | Learns from manual and may answer others' questions. Explains information presented in written form to others. |

**2. MATHEMATICS** – Performs arithmetic or higher-level mathematical computations accurately.

Level of Competency Required by Job:

Level 1: Perform arithmetic computations (add, subtract, multiply, divide, ratios, percentages).

Level 2: *Use algebra (substitute numbers for letters in a formula), geometry (angles, distances, area), and/or descriptive statistics (mean/median/mode, standard deviation, range).*

Level 3: Apply and interpret calculus, inferential statistics (t-tests, correlations, ANOVA, multiple regression) or other very high level mathematics.

Examples of Behavioral Indicators:

- Quickly and accurately performs arithmetic computations.
- Appropriately selects and applies formulas for stated purpose.
- Correctly identifies an appropriate analysis for a specific purpose and selects the appropriate computer program for computation.
- Accurately interprets and presents results of mathematical/statistical computations.

Performance Levels:

| Satisfactory | Superior |
| --- | --- |
| Knows mathematical requirements of the job and performs them correctly. Verifies work to ensure accuracy. | Identifies additional opportunities for the application of mathematics in work. Answers questions/trains others to assist them in their use of mathematics. |

**20. JOB KNOWLEDGE** – Knows information required to perform a specific job Includes both widely available courses of study (for example, chemistry, human resources management, graphic arts) and City-specific information (parking regulation and ticketing practices; purchasing procedures; provisions of the City Charter).

Level of Competency Required by Job:

Level 1: Knowledge is concrete, factual, and/or procedural and may be defined by the organization. Situations in which it is applied are quite consistent.

Level 2: *Knowledge is substantive and may be defined by an external trade, field, or profession. Situations in which it is applied vary and, as such, require breadth and depth of understanding.*

Level 3: Knowledge is abstract, conceptual, and/or complex and may be supported by a well-defined academic discipline or authoritative sources (e.g., laws, ordinances, government guidelines/regulations/ codes). Situations in which it is applied may vary greatly or be novel.

Examples of Behavioral Indicators:

- Performs work correctly/avoids technical (job content related) errors.
- Answers technical questions about work accurately.
- Asks few technical questions about the performance of routine work activities.
- Offers advice ("coaching") to new employees regarding their work.
- Develops training programs for other employees.
- Sought out as a source of information by others.

Performance Levels:

Satisfactory

Sufficient job knowledge to perform work correctly independently. Answers technical questions about work correctly.

Superior

Expertise in technical job information sufficient to serve as a resource to others. May develop training manuals/ programs and/or give internal and/or external presentations related to work.

# Job Knowledge Areas

1. Knowledge of structured programming and object oriented techniques such as sequence, selection, iteration, encapsulation and data abstraction sufficient to make debugging easier and lower program maintenance efforts.

2. Knowledge of the terminology necessary to read, understand, and accurately follow program specifications sufficient to adequately develop a well-structured and correctly performing program (i.e., applications, networks, operating systems).

3. Knowledge of standard flowcharting symbols such as process blocks, decision blocks, and storage media, sufficient to correctly prepare flowcharts.

4. Knowledge of operational documentation formats such as job narratives, flowcharts, run instructions, error procedures, and recovery procedures, sufficient to provide production control with complete job run documentation.

5. Knowledge of computer terminology in the area of computer hardware and software, including terms such as, Windows, Microsoft Office, Mac, etc. sufficient to answer users' questions and inquiries presented through trouble calls, and recommend appropriate solutions to problems regarding hardware and software, operating and maintenance procedures and to advise users and/or the supervisor on proper courses of action.

6. Knowledge of how to access and understand instructions on software installation as provided by internal IT staff or vendors, in order to correctly install and upgrade software.

7. Knowledge of software standard products such as data bases, spread sheets, utility programs, and graphics, sufficient to create and maintain databases, graphs, and spread sheets.

8. Knowledge of how to program and maintain code in an object oriented language such as Java, C++, .NET, JavaScript, PHP, or C# in order to produce complete and correct programs using these languages.

9. Knowledge of database concepts and design requirements such as database structure for programming purposes, data relationships, and access techniques, sufficient to create, and access databases.

10. Knowledge of data base management system software (e.g., Microsoft SQL Server, MySQL software; Oracle, DB2) sufficient to support and maintain data and/or to run queries.

11. Knowledge of the factors to consider in determining users' requirements including performance availability and scalability to design an application that meets the users' needs.

12. Knowledge of reusable applications logic to ensure efficiency and optimal performance in the system (i.e., Windows, Mac OS, DOS, etc.).

13. Knowledge of the phases (i.e., gathering requirements, process flow, pseudo coding, programming and testing) of the entire system development life cycle in order to understand the phases involved in developing and implementing an effective application.

14. Knowledge of the interrelationships between applications and networking components to ensure efficiency and optimal performance in the system.

15. Knowledge of problem tracking and/or debugging software tools and techniques to assess problems and troubleshoot within an application.

16. Knowledge of the concepts of systems analysis and design as related to the development of operating and networking systems to ensure business requirements are met.

**29. FACT FINDING** – Obtains required information through questioning, review of existing materials, or securing new materials to answer a question or address a problem.

Level of Competency Required by Job:

Level 1: *Look up information available in the workplace (including use of the internet) or by asking questions of co-workers or supervisor.*

Level 2: Interview individuals and/or obtain necessary information from files, the library, and/or the internet.

Level 3: Conduct in-depth interviews/interrogations or depositions. Locate obscure reference material containing germane information by correctly identifying needed information, making logical inferences regarding where it might be available, and discerning from newly acquired information relevant additional materials.

Examples of Behavioral Indicators:

- Asks a series of insightful questions in a logical order.
- Correctly identifies persons most likely to have the needed information.
- Listens carefully to responses from others to discern all relevant information stated.
- Makes logical assumptions about where certain types of information might be found; or asks others who are likely to know.
- Persists in locating relevant information until a sufficient amount is available to permit answering question or addressing the problem fully.

Performance Levels:

Satisfactory

Obtains necessary information through scrutiny of existing files and other resources, correctly identifying and obtaining other sources of information, and/or asking questions.

Superior

Exhibits great insight in identifying who would have certain information, or in what materials it might be located. Carefully crafts questions to extract needed information. Persists until sufficient information is gathered to formulate a logical conclusion.

**33. INTERPERSONAL SKILLS** – Interacts effectively and courteously with others.

Level of Competency Required by Job:

Level 1: *Interact with members of the workgroup, supervision, and/or the public in a cordial, service-oriented manner.*

Level 2: Interact across department lines and with appointed City officials, and/or members of the public, at times under adversarial circumstances, in a cordial, respectful manner.

Level 3: Interact with appointed and elected City officials, department heads, representatives of external organizations, and/or the media in a cordial, effective manner.

Examples of Behavioral Indicators:

- Works well with others toward mutual objectives.
- Does not arouse hostility in others.
- "Disagrees without being disagreeable."
- Elicits acceptance/cooperation from others.
- Affords all individuals respect, regardless of their role or status.
- Effectively addresses concerns of politicians or others who may have their "own agenda."

Performance Levels:

Satisfactory

Behaves in a courteous, respectful, cooperative manner toward co-workers, other City employees, and members of the public.

Superior

Facilitates positive interpersonal relations within/among workgroups and toward members of the public. Adept at finding similarities and grounds for cooperation/mutual benefit.

**47. WRITTEN COMMUNICATION** – Communicates effectively in writing.

Level of Competency Required by Job:

Level 1: *Write notes/e-mails. Completes forms with some open-ended responses (sentences).*

Level 2: Write letters, articles/reports, and/or detailed descriptions of activities/occurrences.

Level 3: Write lengthy reports, instruction manuals, in-depth analyses/ reviews of complex issues and/or articles for publication. Reviews the written work of others.

Examples of Behavioral Indicators:

- Writing includes the necessary information to convey the intended message.
- Sufficiently few errors in spelling, punctuation, grammar to not interfere with the intended message or distract the reader.
- Little editing or re-writing needed to produce a final product.
- Composes materials efficiently.
- Information is presented in a well organized manner.
- Tone and degree of formality are appropriate to the purpose and audience.

Performance Levels:

| Satisfactory | Superior |
| --- | --- |
| Writes material that clearly communicates the necessary information; needs little editing. | Precisely uses words and organizes information in a way that enhances presentation of the message. Virtually no editing needed. |