

Classification and Qualification



STANDARDS

The California State University System

Information Technology Series Introduction

The Information Technology Classification Series is a set of six classification:

Class Title	Class Code	Date Established	Date Revised
Analyst/Programmer	0400-0402	4-1-96	N/A
Operating Systems Analyst	0410-0412	4-1-96	N/A
Information Technology Consultant	0420-0422	4-1-96	N/A
Network Analyst	0430-0432	4-1-96	N/A
Equipment/Systems Specialist	0440-0442	4-1-96	N/A
Operations Specialist	0450-0452	4-1-96	N/A

The information technology classification series includes positions in the computing infrastructure, data and voice communications, media, including instructional development and broadcasting, and academic and department-based technology. Each classification includes the multiple information technology disciplines of data, voice, and video technologies.

Positions classified within the information technology series are directly responsible for developing, providing, integrating, and/or supporting information technology-based solutions and systems. The series is intended for positions whose primary functional purpose and requisite skill sets are information technology-based. In determining whether a position is appropriate for an information technology classification, the following questions are important to consider:

- What is the primary functional purpose of the position? Is it to develop, provide, or support technology-based solutions or systems or does it use these systems as tools to achieve results?
- What are the critical skill sets to perform the position's responsibilities? Are the primary skill sets information technology-based? What is the relative importance of subject matter expertise in other functional areas?

The information technology series is structured to meet continuing changes in technology and organizational structure. Work within each classification is organized into **core functions** with typical activities and **core skills**. Additionally, a position may have **cross functions** and **project/lead functions** assigned to meet specific campus needs. The skill level definitions in this introduction apply to all of the classifications within the information technology series. The key components of the information technology classification series are defined below:

CORE FUNCTION

Each of the six classifications in the series has identified core functions. A core function is a major category of work within a broadly defined classification. Each core function includes descriptions of typical work activities and core technical skills without regard to value or skill level. A position in an information technology classification has the majority of its ongoing work assignments in one or more of the core functions defined for that classification; however, work assignments from a related classification in the information technology series may also be included. *Work examples and core technical skills cited in the classification standard are illustrative to assist in the classification process and are not intended to be prescriptive.*

The six classifications in the information technology series and their core functions are summarized as follows.

Analyst/Programmer:

Analyzes and develops systems and technology-based solutions to meet user needs including applications, databases, and related systems. The core functions for Analyst/Programmer are:

- Systems analysis and development
- Applications programming
- Database analysis

Operating Systems Analyst:

Responsible for operating systems and their interfaces to all other multi-disciplinary systems. The core functions for Operating Systems Analyst are:

- Operating systems analysis
- Operating systems administration

Information Technology Consultant:

Provides consultative support to students, staff, and faculty to enhance the use and access of technology and information systems. The core functions for the Information Technology Consultant are:

- User consultation
- Site administration
- Development

Network Analyst:

Provides engineering, analysis, and support of all networks carrying voice, data, video, or broadcast transmissions. The core functions for the Network Analyst are:

- Network planning and implementation
- Network analysis and management
- Network administration and support

Equipment/Systems Specialist:

Responsible for installation, modification, and maintenance of equipment and systems with a hardware and systems configuration focus. The core functions for the Equipment/Systems Specialist are:

- Equipment services
- Systems integration

Operations Specialist:

Responsible for the effective operation, monitoring, and control of multisystem information systems in data, voice, or video processing. The core functions for the Operations Specialist are:

- Technical operations
- Operations support
- Operations analysis

CROSS FUNCTION

Cross functions are work assignments outside of the classification where the majority of work is performed. They are core functions from another classification within the information technology series that may be used to promote skill development or meet unique department needs.

PROJECT COORDINATION/LEAD FUNCTIONS

Project coordination/lead functions include responsibilities for technical coordination of projects and/or providing work direction to others. These responsibilities are in addition to those included in the core skills and core functions of the individual classification. Assignment of these functions will be based on the following criteria.

Technical Project Coordination:

The project assignment must include the full scope of responsibility and accountability for a technical project including feasibility studies; project design and planning; ongoing resource, materials, and time management; and implementation. The project must have a tangible, measurable outcome, a duration of six months or more, and a scope that is moderately complex to complex involving interdepartmental and multidisciplinary coordination.

Lead:

Lead work assignments must include direction to ongoing regular administrative, technical, or professional staff (this excludes student assistants). Lead work direction must include the full scope of responsibilities: evaluating and setting work priorities; scheduling and assigning work; reviewing work against standards and providing performance feedback; and determining training needs and training staff.

SKILL LEVEL DEFINITIONS

Three broad skill levels are defined for the information technology series: Foundation, Career, and Expert. The factors used to determine different skill levels include technical know-how, critical thinking skills, and interaction capabilities.

A position is placed at a skill level based on the skill requirements of the position. An individual may be working at different skill levels in various work assignments or skill dimensions; however, the overall skill level determination is based on where the majority of the skill requirements fall in the skill level continuum.

The following skill level definitions apply to all six classifications within the series. It is important to note these definitions do not delineate entry requirements at each level, but are composites of the typical incumbent at each level. Entry qualifications are identified within each standard for initial entry into each classification at the foundation level.

Foundation:

Incumbents at this level meet the entry qualifications as defined by the individual classification. The incumbent may be inexperienced or have limited experience in the specific technical field, but usually possesses the general education, training, license or certification pertinent to the body of knowledge encompassed by the technical specialty. Typically, the incumbent works under direct supervision and is able to demonstrate a basic understanding of the standard principles and terminology associated with the technical specialty, address common problems of limited scope, and demonstrate work-ready communication skills.

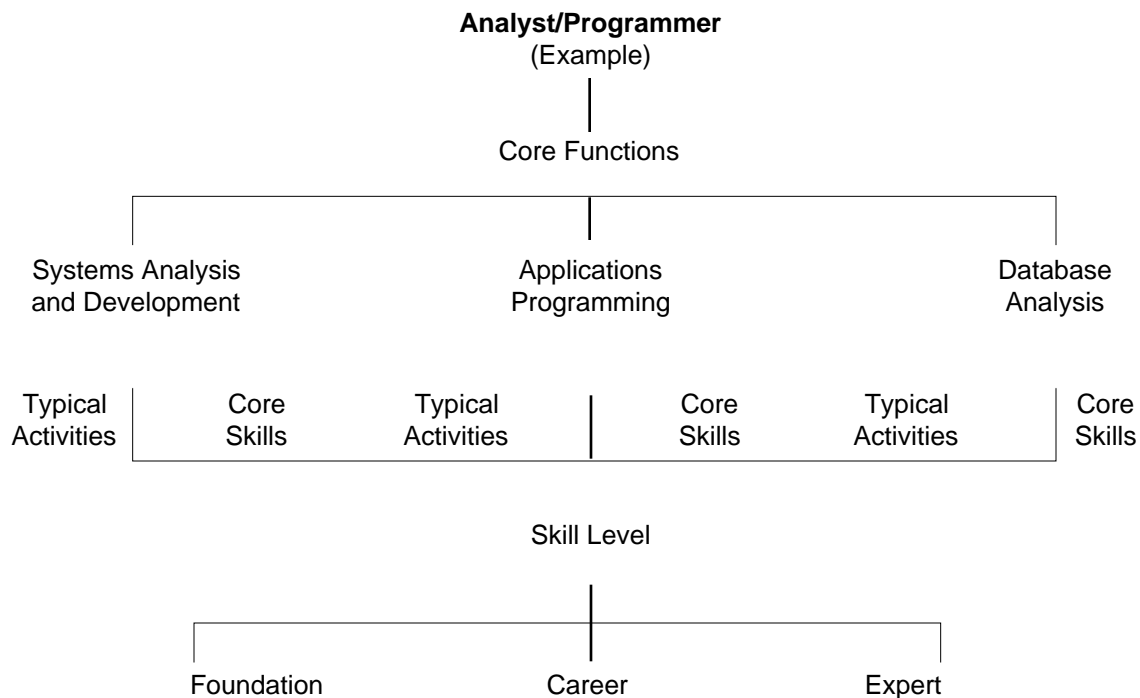
Career:

The career level is broad and includes intermediate through senior level positions. Incumbents at this level work relatively independently and possess the experience to be fully proficient in performing most or all of the work assignments defined for their position. Typically, incumbents have acquired the requisite skills and knowledge through a combination of education, training, and progressive work experience to be able to demonstrate competence in independently applying technical judgment to standard and nonstandard applications and systems, solving a wide range of problems and developing practicable and thorough solutions, and using effective communication and listening skills.

Expert:

Incumbents at the expert level work almost completely independently on the most complex problems and work assignments. They possess an advanced and comprehensive knowledge of the technical specialty and a working knowledge of related specialties and are able to apply this extensive expertise as a generalist or specialist. Experts are proactive and understand problems from broad, interactive perspective and are able to develop solutions that combine information and ideas in new, unprecedented ways. Incumbents at this level are capable of leading teams and implementation efforts for assigned projects using advanced communication and listening skills.

CLASSIFICATION SERIES OVERVIEW



CLASSIFICATION PROCESS

The classification process requires an analysis of both a position's work assignments and the skills required to perform the work. Following is a summary of the classification and skill level determination process.

- (1) Review the position's primary work assignments and categorize them into appropriate core functions. The position is then assigned to one of the six classifications in the information technology series based on where the majority of work assignments fall.
- (2) Identify work assignments that fall outside of the designated classification. If appropriate, these work assignments may be categorized as cross functions and/or project coordination/lead functions.
- (3) Identify the skills necessary to perform all work assignments and determine the appropriate skill level based on the total set of skills required for the position compared against the skill level definitions.

Classification and Qualification



STANDARDS

The California State University System

Information Technology Series Operating Systems Analyst

CLASSIFICATION OVERVIEW

Positions in this classification are primarily responsible at varying levels for the analysis, modification, maintenance, and installation of operating systems, utilities, and related software and systems, including physical databases, to meet campus needs. Responsibilities include ensuring the availability, integrity, and reliability of assigned systems.

Positions in this classification typically support systems that serve the entire campus. Operating System Analyst positions may also exist in large administrative departments or academic schools that have responsibility for their own configuration(s) of mainframes, mini-computers, file servers, and/or workstations. Common working titles include Software Systems Analyst/Programmer, Operating Systems Analyst/Programmer, Systems Programmer, Software Systems Specialist, Database Administrator, Systems Administrator, etc.

ENTRY QUALIFICATIONS

To enter this classification, a basic foundation of knowledge and skills in operating systems programs, maintenance, and systems administration features is a prerequisite. This foundation would normally be obtained through a bachelor's degree, preferably in computer science, mathematics, or a related technical field, or equivalent technical training and/or experience. Foundation knowledge and skills for the Operating Systems Analyst include a working knowledge of the assigned computer operating systems, systems analysis, and systems-level programming.

Further progress within this classification is based on department need and work assignments requiring higher levels of skills and knowledge. *Reference the Information Technology Series Introduction for level definitions.*

CORE FUNCTIONS

The core functions of the Operating Systems Analyst are:

- Operating Systems Analysis
- Operating Systems Administration

These core functions represent major categories of work within the Operating Systems Analyst classification. Typical activities and core skills for each core function cited below are illustrative; campus assignments may vary.

CORE FUNCTION

Operating Systems Analysis

Examples of Typical Activities:

Operating System Development/Installation:

Ensure operating system software is properly installed, tested, and tuned to maximize operating efficiency.

Examples of typical work activities include:

- Develop and implement plans for fully Integrated systems, including operating systems, network systems, database systems and applications;
- Develop plans, schedules, and requirements for the installation and maintenance of new and/or revised software;
- Install, configure, and tune operating systems software for optimal performance;
- Integrate operating systems with other systems;
- Evaluate and recommend hardware and system software procurements;
- Assess the impact of new software on existing systems and users and develop modification plans as needed.

Operating System Programming/Modification:

Customize and upgrade operating and related systems to meet ongoing user needs. Examples of typical work activities include:

- Plan and implement modifications and upgrades to system configuration to improve utilization based on analysis of application and production requirements;
- Plan system capacity and develop expansion plans;
- Allocate and organize data storage;
- Write and develop efficient software and code for operating systems;
- Develop system utility programs and procedures to enhance operations, applications, and general system usage;
- Document operations procedures and installation methodologies and modifications.

Operating Systems Performance Analysis:

Evaluate level of systems operation and recommend measures to improve overall performance. Examples of typical work activities include:

- Conduct analytical studies of system processing time and resource capacity, measuring system performance against predetermined or standard benchmarks (e.g., operating time, error rates, and types);
- Determine system compatibility and performance, and impact of integration with new systems or upgrades;
- Perform analysis, testing, and/or simulation of equipment and software configurations;
- Research and identify system expansions to meet anticipated future workload.

Operating Systems Maintenance:

Monitor and maintain operating and related systems to ensure minimal interruption of production systems and to maintain maximum system availability. Examples of typical work activities include:

- Diagnose and resolve operating systems and program failures;
- Develop and execute test schemes and diagnostic procedures;
- Monitor and analyze system performance and capacity and install corrections as necessary;
- Review all systems software and hardware to ensure system integrity;
- Work with maintenance vendor to develop and implement solutions specific to the campus needs.

Operations Support:

Provide technical support to computer operations and applications programming staff to ensure availability of production and on-line systems. Examples of typical work activities include:

- Analyze application failures and work with computer operations and applications programming staff to develop solutions;
- Provide guidelines for applications development structure and security;
- Provide procedures training and support;
- Assist in resolving production problems.

CORE SKILLS**Operating Systems Analysis**

- Knowledge of internal operating system technology, computer operations and hardware, and network communications theory.
- Ability to use operating system languages as defined by the campus and ability to perform systems level programming in a distributed, networked environment.
- Ability to use performance monitoring software and interpret results.
- Ability to perform preventative and remedial maintenance to operating system(s).
- Ability to interface/integrate campus defined operating system(s) with software and other systems.
- Ability to evaluate existing and proposed systems and recommend upgrades and/or modifications.
- Knowledge of applications programming techniques and procedures.
- Understanding of job control and production procedures with an ability to troubleshoot and isolate production problems and applications code.
- Ability to research and survey new products and/or releases, such as productivity tools.
- Ability to establish and document operations procedures.
- Knowledge of network operating system and network architecture, configuration, and protocols.
- Knowledge of client server technologies.

CORE FUNCTION**Operating Systems Administration****Examples of Typical Activities:****Database Maintenance/Management:**

Design, create, manage and maintain physical databases including database storage management, procedures and tools for access, database security, and monitoring and tuning the database to ensure ongoing operation and access. Examples of typical work activities include:

- Install, structure, tune, and maintain database operating systems and software on mainframe or mini-computers;
- Manage database organization and data storage;
- Monitor database system usage and performance;
- Troubleshoot and resolve database problems;
- Create databases and/or migrate databases between machines;
- Support client/server database access tools;
- Develop benchmarks for testing new software releases;
- Provide consultation to programmers on relational database design;
- Oversee vendor software fault resolution.

Security Management:

Ensure safety and security of information system assets and protect systems from inappropriate access or destruction. Examples of typical work activities include:

- Run checks on data integrity; plan and execute disaster recovery plans;
- Develop system backup and archival methodology;
- Maintain data security and integrity by developing system access standards and procedures;
- Evaluate the adequacy of controls and security measures;
- Conduct virus avoidance procedures;
- Work with users to understand security needs and evaluate level of security required.

Storage Administration:

Design system storage capacity to provide for efficient and timely response and operating time. Examples of typical work activities include:

- Calculate data storage media and cost alternatives;
- Specify sources and methods of data storage;
- Plan for efficient allocation of system storage capacity.

CORE SKILLS**Operating Systems Administration**

- Knowledge of system management and security/control procedures.
- Knowledge of database design, structure development, features, operations, programming, and data access principles.
- Knowledge of data communication network architecture, configuration, protocols, and interfaces.
- Knowledge of operating systems and storage capacity, including ability to perform capacity planning.
- Ability to identify and implement critical maintenance fixes and to isolate and correct malfunctions, including interface problems.
- Ability to develop and execute disaster recovery plans.
- Ability to establish data security standards and procedures.
- Ability to tune database systems and maintain database software.