Information Technology Series

VCU Pay Band	VCU Internal Title	Banner Position Class Code
A1	Applications Analyst, CL 1	A9111
A2	Applications Analyst, CL 2	A9112
A3	Applications Analyst, CL 3	A9113

Scope and Department Usage

Typically these titles are reserved for use with positions in central Technology Services that develop applications with University-wide implications; however special issues in schools and departments may result in some of those jobs being allocated to this series. The Applications Analyst CL3 level requires approval by the Chief IT Officer.

Concept/Function

The majority of duties performed in these titles include:

- Translating user systems needs (systems analysis and development) into technical solutions by writing applications software,
- Integrating systems, and/or
- Developing databases.

These positions typically *are not* involved in maintaining operating system software or providing hardware support as a majority function.

Within these titles a full continuum of position complexity and incumbent competency from entry level to expert is represented. There will be positions of varying levels of technical complexity based on department needs. Positions may also function as *working* supervisors with a full range of permanent supervisory responsibilities or may act as team or project leaders. Positions may direct or supervise positions in these titles or in other titles.

Typical Duties

The following are typical activities of positions in the Applications Analyst titles. Actual functions performed will differ from position to position and will be determined by specific work assignment. A position in these titles has the majority of its ongoing work assignments in one or more of the following functions.

Typical **systems analysis and development functions**:

Analyze user system and application needs, determine and evaluate alternative solutions and approaches to meetings those needs, and select the optimal technology solution. Consult with users to identify and document software/system purpose, work flow issues, output needs and to determine overall system requirements and specifications. Conduct feasibility studies. Evaluate the procurement of third party software and troubleshoot new software installations. Develop specifications and requirements for the optimal integration of systems and equipment and evaluate requirements against available systems. Design fully integrated systems which may include applications, databases, networks, and related systems. Develop program specifications and review them with the user to ensure that requirements are met. Design user-friendly interfaces to systems, applications, and databases. Recommend modifications to third party software to meet user needs. Act as a software vendor liaison.

Typical **applications programming functions**:

Develop succinct, timely programming code that is logical and optimizes programming resources and meets user requirements. Work with users to test and debug programs. Write documentation to provide user support for new or

modified programs and production/operations procedures. Maintain and support assigned systems to ensure minimal downtime and loss of productivity and service. Evaluate and enhance the efficiency of existing programs in meeting current and future user needs. Maintain and support associated databases. Install new, modified or third party software releases and/or updates. Evaluate and supplement vendor supplied documentation for third party software.

Typical **database administration functions**:

Structure and implement database to optimize data access and security. Design database systems and programs which include access methods, access time, file structure, device allocation, validation checks, and statistical methods. Work with user community to understand data access and integration needs. Ensure the integration of systems through the database structure. Monitor database standards and procedures, system usage and performance. Troubleshoot and resolve database and data problems. Develop and administer disaster recovery plans. Ensure data and its sources are accurate and easily accessible to the user community. Monitor, analyze, and verify data to ensure data integrity; develop assigned databases to support specific applications. Maintain the database archives by acquiring and installing data sets and documentation. Assist in data transfers or sharing of files. Develop policies and procedures to access or interact with remote resources. Conduct file maintenance.

Qualifications Guide

Specific qualifications including knowledge, skills, abilities and education will differ from position to position as work assignments vary. See the *Competency Level Guidelines* for details. Incumbents in these titles will typically possess:

- Knowledge and/or applied skills and abilities in systems development and analysis;
- Systems integration including operating systems, applications, networks, and databases, as well as knowledge of distributed systems and client-server technologies;
- Formal data structure design, relational database design, and file structure; applications software;
- Operating systems and utilities;
- Communication interfaces;
- Interactive debugging and testing; and
- Identifying and resolving software/hardware interface problems.

Depending on business needs and the specific work assignment, a working knowledge of specific industry standard applications programming languages and report/screen generators, advanced knowledge of systems analysis and design, and/or supervisory or significant project management experience may be required.

Information Technology Series

VCU Pay Band	VCU Internal Title	Banner Position Class Code
S1	Operating Systems Analyst, CL 1	S9111
S2	Operating Systems Analyst, CL 2	S9112
S3	Operating Systems Analyst, CL 3	S9113

Scope and Department Usage

Typically these titles are reserved for use with positions in central Technology Services that has responsibility for internal operating systems or database management systems *and* where the operating system(s) or database management systems are sufficiently complex in terms of technical support and administration required. Use of these titles outside of Technology Services requires approval by the Chief IT Officer.

Concept/Function

The majority of duties performed in these titles include:

- Installing, maintaining, and modifying operating systems, database management systems, utilities, and related software.
- Other key duties include ensuring the availability, integrity, and reliability of assigned systems.
- Positions in these titles are primarily responsible for large-scale operating systems and database management systems that typically serve the entire campus.
- Positions in these titles typically *do not* write applications software as a majority function.

Within these titles a full continuum of position complexity and incumbent competency from entry level to expert is represented. Within these titles there will be positions of varying levels of technical complexity based on department need. Positions may also function as *working* supervisors with a full range of permanent supervisory responsibilities or may act as team or project leaders. Positions may direct or supervise positions in these titles or in other titles.

Typical Duties

The following are typical activities of positions in the Operating Systems Analyst titles. Actual functions performed will differ from position to position and will be determined by specific work assignment. A position in these titles has the majority of its ongoing work assignments in one or more of the following functions.

Typical **operating systems analysis functions**:

Ensure operating systems software is properly installed, tested, and tuned to maximize operating efficiency. 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 system software for optimal performance. Integrate operating systems with other systems. Evaluate and recommend hardware and system software procurement. Assess the impact of new software on existing systems and users and develop modification plans as needed. Plan and implement modifications and upgrades to system configurations 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. Evaluate level of systems operations and recommend measures to improve overall performance. 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. Monitor and maintain operating and related systems to ensure minimal interruption of production systems and to maintain system availability. Diagnose and resolve operating systems failures. Develop and execute test schemes and diagnostic procedures. Work with maintenance vendor to develop and implement solutions specific to the campus needs. Provide technical support to computer operations and applications programming staff to ensure availability of production and on-line systems. Analyze application failures and work with computer operations and applications programming staff to develop solutions. Provide guidelines for applications development structure and security. Develop, implement and execute disaster recovery plans. Develop rules for system restoration. Evaluate the adequacy of controls and security measures. Provide procedures training and support. Assist in resolving production problems.

Typical **database management system administration functions:**

Ensure that database systems are well managed. Install, structure, tune, and maintain database management systems and software on mainframe and/or mini-computers. Manage database organization and data storage. Monitor database system usage and performance. Troubleshoot and resolve database problems. Create database and/or migrate database 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. Run checks on data integrity. Develop system backup and archival methodology. Maintain data security and integrity by developing system access standards and procedures. Work with users to understand their security needs and evaluate level of security required. Conduct virus avoidance procedures. Design data storage capacity to provide for efficient and timely response and operating time. Calculate data storage media and cost alternatives. Specify sources and methods of data storage. Plan for efficient allocation of system storage capacity.

Qualifications Guide

Specific qualifications including knowledge, skills, abilities and education will differ from position to position as work assignments vary. See the *Competency Level Guidelines* for details. Incumbents in these titles will typically possess knowledge and/or applied skills and abilities in internal operating system technology, computer operations and hardware, systems analysis, systems level programming in a distributed networked environment, job control and production procedures, network operating system and architecture, client-server technologies, and database design. Depending on department needs and the specific work assignment, supervisory experience or advanced project management, systems analysis and design, programming, and/or database design and management experience may be required.

Information Technology Series

VCU Pay Band	VCU Internal Title	Banner Position Class Code
T1	Information Technology Analyst, CL 1	T9111
T2	Information Technology Analyst, CL 2	T9112
T3	Information Technology Analyst, CL 3	T9113

Scope and Department Usage

These titles are found in departments/schools and are typically not used in Technology Services where jobs are more specialized. Tasks will generally be related to a combination of local user support and local applications analysis and a mixture of assignments supporting local needs. The IT Analyst CL3 level requires approval by the Chief IT Officer.

Concept/Function

The majority of duties performed in these titles are in one or more of the following technical areas:

- Consultative support of hardware and/or software;
- Multimedia development; and
- Sole or lead positions in departments with responsibility for independently developing and maintaining their own integrated, diverse and complex information technology systems.
- Positions in these titles may perform applications programming to accomplish some duties.

Within these titles a full continuum of position complexity and incumbent competency from entry level to expert is represented, and positions typically assume varying levels of technical complexity based on department needs. Positions may also function as *working* supervisors with a full range of permanent supervisory responsibilities or may act as team or project leaders. Positions may direct or supervise positions in these titles or in other titles.

Typical Duties

The following are typical activities of positions in the Information Technology Consultant titles. Actual functions performed will differ from position to position and will be determined by specific work assignment. A position in these titles has the majority of its ongoing work assignments in one or more of the following functions.

Typical **user consultation functions:**

Provide consultative, technical and training support and services to the user community to ensure problem resolution, system/data access, and optimal system performance. Assist users to develop or use applications and software packages and their features. Install, configure, and modify applications, networks, databases, and other systems. Act as a liaison between faculty, staff, students and information systems resources and staff. Provide technical advice and expertise to faculty, staff, and students in the evaluation, selection, purchase, upgrading, and maintenance of software, hardware, and/or database system resources to meet user needs. Prepare requests for proposals, cost estimates, and justifications. Provide training and communication materials to users that maximize their ability to utilize system capabilities, features, and other resources. Develop and/or conduct training programs, lab/equipment orientations and demonstrations, and self-guided tutorials on equipment, applications, databases, and related systems. Write user documentation, user guides, instructor guides, training outlines, and technical training publications.

Typical **multimedia development functions:**

Develop instructional and/or research techniques using technology to enhance and facilitate academic and educational objectives. Devise methods for integrating technical tools and applications into faculty instructional delivery and student projects. Develop models and prototypes for research projects using appropriate software

packages, utilities, and product features. Develop coursework and curriculum software tools. Aid faculty in researching computing and media software materials. Conduct needs analysis and monitor instructional/research needs on campus. Create multimedia programs that meet academic and administrative goals. Develop and execute multimedia presentation proposals that incorporate appropriate technical and media elements. Develop detailed production plans for multimedia projects including staff, budget, facility, contracted services and production schedules. Develop multimedia and/or computer-based interactive instructional applications and materials that include such elements as moving video, sound, computer animation, and text for faculty use in classrooms and teleclassrooms. Function as a producer and director for multimedia projects ensuring coordination of all media and technical elements including narration, computer graphics, audio and visual effects, recording, mixing, and transmission as appropriate to the project.

Typical **sole or lead department consultation functions:**

Work as the sole or lead information technology position in departments whose function or mission requires a full array of integrated, diverse and complex information technology, developed and supported independently of a central computer center. Such departments assume complete responsibility for on-going systems development, integration, maintenance and support and require their own dedicated technical staff. Position functions typically include support of operating systems, applications, databases, networks, hardware and/or software. Develop and implement plans for fully integrated systems. May write, test and debug programming code, including applications to permit or enhance systems integration. Determine impact of integration with new systems, upgrades, or software. Assist users to develop or use applications, software packages, networks, databases, and systems; provide technical advice and expertise. Act as department liaison to central information technology department. Troubleshoot system failures, referring to vendor or technician as appropriate. Maintain network and database security.

Typical **Web Developer functions** (typically CL1):

Design, develop, maintain, and troubleshoot software packages and applications for the web sites. Responsible for development, maintenance, and documentation of program code and security of Internet-based applications. Design and construct web pages/sites incorporating graphic user interface (GUI) features and other techniques. Provide design elements, templates, and finished solutions. Resolve basic technical issues through debugging, research, and investigation. Contribute to the web design group's efforts to specify, improve, and implement the look, feel, and function of online projects.

Typically requires a Bachelor's degree in MIS, Computer Science, Computer Engineering, or related field. Experience developing website applications and graphic projects. Experience programming/coding in languages such as: HTML, XHTML, DHTML, XML, XSLT, JSP, Velocity, CSS, Ajax, PHP, and JavaScript. Experience with server technologies such as: Servlets, SQL, and Web Services. In-depth knowledge of software application and graphic design tools such as Adobe GoLive, Photoshop, Illustrator, PageMaker, InDesign, Macromedia suite, Dreamweaver, BBEdit, Microsoft FrontPage, Quark Xpress.

Typical **Senior Web Developer functions** (typically CL2):

Design, develop, maintain, and troubleshoot software packages and applications for the web sites. Responsible for development, maintenance, and documentation of program code and security of Internet-based applications. Design and construct web pages/sites incorporating graphic user interface (GUI) features and other techniques. Provide design elements, templates, and finished solutions, and define project scope and deliverables to meet client's needs. Resolve technical issues through debugging, research, and investigation. Lead the web design group's efforts to specify, improve, and implement the look, feel, and function of online projects. Analyze existing processes and recommend necessary improvements. May supervise, direct, instruct, and monitor the work of project staff.

Typically requires a Bachelor's degree in MIS, Computer Science, Computer Engineering, or related field. Experience developing and supporting high-availability web sites with a large number of users and/or a large amount of content. Experience initiating and managing mission-critical projects. Experience programming/coding in languages such as: HTML, XHTML, DHTML, XML, XSLT, JSP, Velocity, CSS, Ajax, JavaScript, PHP, Perl, C#.NET, ASP.NET, ASP, Java, or server-side scripting languages. Knowledge of Middleware technologies such as Tomcat, Apache, LDAP, IIS J2EE and Web Services. In-depth knowledge of software application and graphic

design tools such as Adobe GoLive, Photoshop, Illustrator, PageMaker, InDesign, Macromedia suite, Dreamweaver, BBEdit, Microsoft FrontPage, or Quark Xpress.

Qualifications Guide

Specific qualifications including knowledge, skills, abilities and education will differ from position to position as work assignments vary. See the *Competency Level Guidelines* for details. Incumbents in these titles will typically possess working knowledge and/or applied skills and abilities in common software application packages, equipment platforms, database systems, training methods, network data communication, multimedia systems and applications, operating systems and hardware, instructional design theories and methodologies, and large-scale computing. Depending on department needs and the specific work assignment, advanced knowledge of information technology systems and applications, or supervisory experience, may be required.

Information Technology Series

VCU Pay Band	VCU Internal Title	Banner Position Class Code
N1	Network Analyst, CL 1	N9111
N2	Network Analyst, CL 2	N9112
N3	Network Analyst, CL 3	N9113

Scope and Department Usage

Typically these titles are reserved for use with positions in central Technology Services. Use of these titles outside of Technology Services requires approval by the Chief IT Officer.

Concept/Function

The majority of duties performed in these titles involve support of voice, data and/or video networks in differing stages of development, maintenance, and modification. Specific duties will vary according to the life cycle and the technical complexity of the network and associated hardware and software. The range of duties may include the planning, design, engineering, programming, maintenance and management of networks. Networks may include wide area, local area or comparable transmission networks, but positions in these titles typically do not provide day to day support of local area networks as a majority function. Positions in these titles are primarily responsible for the design and implementation of networks as opposed to service coordination of externally developed and owned systems.

Within these titles a full continuum of position complexity and incumbent competency from entry level to expert is represented. Within these titles there will be positions of varying levels of technical complexity based on department need. Positions may also function as *working* supervisors with a full range of permanent supervisory responsibilities or may act as team or project leaders. Positions may direct or supervise positions in these titles or in other titles.

Typical Duties

The following are typical activities of positions in the Network Analyst titles. Actual functions performed will differ from position to position and will be determined by specific work assignment. A position in these titles has the majority of its work assignments in one or more of the following functions.

Typical **network design and implementation functions**:

Plan, design and engineer network installations to meet information processing and traffic needs. Develop systems and/or network configurations, including hardware, software, and integration requirements. Determine network architecture, topology, and transmission media appropriate for the installation. Develop/recommend network standards and protocols. Design networked facilities (e.g., studios, classrooms, teleconference facilities). Evaluate user needs, systems, and new technologies to recommend the most effective communication and transmission systems. Research and evaluate network/systems, performance capacity, and compatibility with existing systems. Analyze and recommend system elements such as system cabling and software and expansion capacity. Coordinate network development activities with systems as appropriate. Act as the technical liaison for network product or system vendors.

Typical **network administration and support functions**:

Administration of assigned network to optimize services and access to telecommunications and related networks. Install, configure, maintain, and support network equipment and network operating systems (e.g., routers, bridges, servers, switches, and/or port connectors). Provide (or order) network connectivity, ensuring appropriate integration of data, voice, and video networks. Recommend and modify network configuration to improve efficiency and cost effectiveness. Configure network and/or third party software application programs to provide improved response

time, quality, or cost effectiveness. Recommend network database policies and procedures. Ensure that the network is fully operational and appropriately integrated for access with other systems. Customize or develop reports from network control or billing databases. Develop interface programs. Ensure compliance with industry regulations (e.g., FCC) and with industry and campus standards.

Typical **network operations functions**:

Analyze and monitor network activity to ensure optimal network operation. Monitor network traffic, usage, and performance. Assist in monitoring network database integrity. Run diagnostics to forecast performance thresholds. Perform analysis of network efficiency (e.g., channel, trunks, etc.) and traffic routing and troubleshoot system failures, referring to vendor or technicians as appropriate. Maintain network security and implement disaster recovery procedures. Perform file conversions and system backups. Ensure adequate inventory of network supplies.

Qualifications Guide

Specific qualifications including knowledge, skills, abilities and education will differ from position to position as work assignments vary. See the *Competency Level Guidelines* for details. Incumbents in these titles will typically possess knowledge and/or applied skills and abilities in technical information network systems, telecommunications and transmissions technologies, including network architecture, topologies, protocols, programming applications and interfaces appropriate to the defined work area and assignments. Depending on department needs and the specific work assignment, a background and/or vendor training or licensure in computer operating systems, broadcast network functions, or telecommunications switching systems may be required. Position assignment also may require significant experience in supervision, project management, advanced network systems analysis and design, and/or advanced telecommunications systems experience.

Information Technology Series

VCU Pay Band	VCU Internal Title	Banner Position Class Code
E1	Equipment/Applications Specialist, CL 1	E9111
E2	Equipment/Applications Specialist, CL 2	E9112

Scope and Department Usage

These positions are typically found in central Technology Service (computer center, telecommunications, multimedia, etc.), although there may be infrequent use of these titles by schools/departments.

Concept/Function

The majority of duties performed in these titles are in one or more of the following technical areas:

- Providing support for information technology equipment and/or systems (e.g., computer and peripheral equipment**,** telecommunications and network devices, audio and video equipment, and related transmission equipment and systems) which typically are integrated with or interconnected to larger systems;
- Providing user application support by developing software solutions using PC-based and/or mainframe applications and database management systems or by modifying existing software programs; and
- Site administration of technology-based facilities.

Positions in these titles typically *do not* independently perform network planning, design and engineering functions. They do, however, assist with implementation and other basic network functions, such as recommending equipment purchases, modifying system configuration, changing system/equipment specifications, assigning passwords, defining attached devices, performing backups, etc. Positions in these titles *do not* independently perform applications planning, design and engineering. They may, however, use software packages (such as statistical, database and spreadsheet applications) to analyze and manipulate data. Positions in these titles *are not* responsible for laboratory, medical, scientific, civil engineering or other non-information technology equipment, machines, devices or instruments.

Within these titles a full continuum of position complexity and incumbent competency from entry level to expert is represented. Within these titles there will be positions of varying levels of technical complexity based on department need. Positions may also function as *working* supervisors with a full range of permanent supervisory responsibilities or may act as team or project leaders. Positions may direct or supervise positions in these titles or in other titles.

Typical Duties

The following are typical activities of positions in the Equipment/Applications Specialist titles. Actual functions performed will differ from position to position and will be determined by specific work assignment. A position in these titles has the majority of its ongoing work assignments in the following functions:

Typical **equipment/systems support functions:**

Install, repair, troubleshoot, maintain and/or modify information technology equipment and/or systems. Ensure that equipment and systems in assigned areas are in good condition and are properly maintained. Perform equipment and system set up (including necessary interconnections) and performance monitoring. Maintain and repair media/video production equipment systems and facilities. Provide technical set up of teleconferencing systems. Maintain technical shop facilities, inventory, repair logs and/or work order systems. Diagnose equipment and/or system malfunctions and perform corrective action. Research system/equipment malfunction history. Analyze and adjust equipment to restore proper operation. Coordinate repair, maintenance and/or equipment or system modifications through vendor resources. Repair voice and data circuit problems. Test and configure equipment and/or systems following service procedures. Assist in planning and implementing installations and/or facility layouts. Assist with determining routing and placement of cabling, wiring, etc. Perform physical installation (e.g., wiring,

cables, microwave/satellite communications modules, components, sound systems and necessary interface cards). Document and/or log equipment/system installations and/or modifications. Act as vendor liaison. Move or relocate equipment. Plan, estimate, and order equipment and materials necessary for project completion. Construct multimedia production sets (e.g., lighting systems, monitors, displays). Configure systems to optimize operations, meet connectivity needs and future expansion requirements. Recommend equipment/system configuration and interface alternatives. Participate in system enhancement and equipment evaluation and planning. Prepare equipment purchase recommendations and cost justification. Reconfigure and test newly installed systems. Provide PC/workstation support for hardware and systems software interfaces. Install and configure standard operating systems and integrate them with related systems. Ensure system integrity between hardware and operating systems. Troubleshoot errors in system operations and related networks. Perform software and hardware modifications. Maintain and support hardware and software for stand-alone systems. Perform local area network (LAN) and systems backups. May administer and maintain a LAN, file server, network operating system and/or mainframe as a part of position duties.

Typical **applications support functions:**

Provide user support for off-the-shelf software application programs, including installing, configuring, modifying and troubleshooting applications, and training users. Evaluate and recommend off-the-shelf software to meet user needs. May write applications or automated routines, or create other ad hoc applications solutions for users. Modify existing or third party software programs to meet user needs. Create, manage or manipulate data bases, using PC-based database software or mainframe database management systems/packages. Modify database report output according to user needs. Provide hardware and software training as needed.

Typical **site administration functions:**

Ensure lab, studio, classroom, and/or stand-alone systems are fully operational and secure. Coordinate multimedia components for lab or classroom use. Coordinate lab or media operations and projects. Schedule facility use and ensure appropriate staffing. Establish facility security and operational policies and procedures. Ensure proper maintenance and support of assigned lab/classroom/stand-alone systems. Re-install damaged or deleted software. Troubleshoot errors in system operation and initiate repairs. Configure media components and/or local area networks (LANs). Administer site LAN including maintenance or related hardware and software. Maintain file/network servers and all lab stations.

Qualifications Guide

Specific qualifications including knowledge, skills, abilities and education will differ from position to position as work assignments vary. See the *Competency Level Guidelines* for details. Incumbents in these titles will typically possess knowledge and/or applied skills and abilities in technical systems and equipment, electronic (digital and analog) theories, mechanical design, and the operation and use of the equipment and systems commonly utilized in the assigned area. Depending on department needs and the specific work assignment, supervisory experience may be required.

Information Technology Series

VCU Pay Band	VCU Internal Title	Banner Position Class Code
O1	Operations Specialist, CL 1	O9011
O2	Operations Specialist, CL 2	O9012

Scope and Department Usage

These positions are typically found in central Technology Service (central computing, telecommunications, network, or media operations), although there may be infrequent use of these titles by schools/departments where complex, integrated systems have been developed independent of centralized operations requiring dedicated technical operations support staff.

Concept/Function

The majority of duties performed in these titles involve the operation, monitoring, and control of multisystem information processing or transmission equipment. Types of systems and equipment supported may include mainframe consoles, on-line terminals, peripheral equipment (e.g., tape drives, printers), micro/mini computers, super computers, network devices, file servers, telecommunication systems and devices, and media production and broadcast equipment. Positions in these titles typically *do not* install, repair, or maintain equipment or devices; they may, however, provide telephone help-desk problem diagnosis. Positions may also modify systems in the production process.

Within these titles a full continuum of position complexity and incumbent competency from entry level to expert is represented. Within these titles there will be positions of varying levels of technical complexity based on department need. Positions may also function as *working* supervisors with a full range of permanent supervisory responsibilities or may act as team or project leaders. Positions may direct or supervise positions in these titles or in other titles.

Typical Duties

The following are typical activities of positions in the Operations Specialist titles. Actual functions performed will differ from position to position and will be determined by specific work assignment. A position in these titles has the majority of its ongoing work assignments in the following functions:

Operate multiple systems (e.g., mainframe consoles, peripheral equipment, telecommunications devices, broadcast equipment), and/or operate and monitor network devices (e.g., multiplexors and router, file and print servers, port selectors, and other communication devices), and/or operate media origination and transmission or broadcast equipment (e.g., video recorders, cameras, switches, modulators, transmitters). Verify systems and network availability and respond to error messages. Monitor overall system or operation performance, utilization, and response time. Calibrate, adjust, and align equipment. Perform backup/recovery procedures. Ensure that operations documentation and procedures are accurate and current, and maintain event log. Maintain user accounts. Update system messages. Maintain line location records. Ensure that physical equipment, systems, and data or products are secured and undamaged. Monitor authorization levels for system access and/or equipment usage. Develop or recommend department security policies and procedures. Schedule computer jobs and maintain production run schedules. Prioritize or rearrange job/work order sequence to optimize efficient use of computing resources. Communicate with users on scheduling requirements and job status. Provide for network access and timesharing. Maintain quality assurance using appropriate test and system monitoring procedures. Identify system aborts and/or equipment failure and take corrective action. Reset malfunctioning lines or connections. Provide telephone help desk to conduct remote diagnostics of equipment or system failures. Obtain and interpret error messages. Determine if equipment and/or system problem is related to software, hardware, communications lines, or user-related. Determine points of equipment and/or program failure and work with analysts, specialists or vendors to resolve. May guide users through remedial procedures. Request repair service or refer to appropriate technician as required. Ensure materials, inventory, records, storage, and distribution systems are properly

maintained. Plan and implement methods for storage, retrieval, and processing or applicable materials and inventories. Initialize and prepare storage media (e.g., tapes, cartridges, film). Maintain library and archive storage. Provide electronic or physical distribution of instructional media to classrooms. Issue equipment loans to faculty and students. Provide video copying services.

Qualifications Guide

Specific qualifications including knowledge, skills, abilities and education will differ from position to position as work assignments vary. See the *Competency Level Guidelines* for details. Incumbents in these titles will typically possess knowledge and/or applied skills and abilities in applicable system and related technical terminology, applications, features, and/or services; production job flow and required inputs and outputs; information processing and/or transmission equipment; and reading and interpreting descriptive and quantitative information (e.g., technical manuals, equipment diagrams, and specifications). In addition, a basic knowledge of mathematics and written and oral communication skills is necessary to communicate and document operational information. Depending on the specific work assignment, supervisory experience of a multi-shift data processing operation may be required.

Information Technology Series

VCU Pay Band	VCU Internal Title	Banner Position Class Code
M1	Information Technology Manager	M9011
M2	Information Technology Division Director	M9012

Scope and Department Usage

IT Manager: Jobs in this category have major managerial responsibilities for a single organizational entity and cannot reallocate resources across organizational lines. Responsibilities include fiscal management, budget allocation, personnel, evaluation of employees, decision making, and planning and allocating resources. Use of these titles outside of Technology Services requires approval by the Chief IT Officer.

IT Division Director: Jobs in this category are only located in central Technology Services and have major division responsibility for multiple units; they have IT Managers reporting to them. Responsibilities include fiscal management, personnel, evaluation of staff, planning, moving resources across departmental lines, and budget allocation.

Concept/Function

The majority of duties performed in these titles include functioning as the senior administrative official in an information technology leadership role for a large section or team of an organization. Positions in these titles are full-time managers rather than working supervisors and spend the majority of time managing and performing administrative functions. Positions frequently have subordinate managers and/or supervisors.

Typical Duties

The following are typical activities of positions in the Information Technology Manager titles. Actual functions performed will differ from position to position and will be determined by specific work assignment.

All positions in these titles perform **administrative functions** as their primary responsibility, including:

> Reviews all project requests and coordinates schedules and related departmental activity. Assigns, reviews and evaluates work of subordinate staff and prepares performance reports. Prepares activity and progress reports. Controls revenue and/or expenses within an operating unit and has responsibility for meeting budget goals and objectives. Responsible for capital purchases, and long and short range planning. Provides input to policy level direction regarding standards, budget, constraints, etc. Evaluates and enhances the efficiency of existing programs in meeting current and future user needs. Develops and awards requests for proposals, negotiates and maintains vendor contracts, and assists in strategic planning and development. Advises management of concepts and capabilities of the responsibility area. Evaluates and forecasts staffing needs; hires subordinate managers and staff; determines or approves personnel policies and performance standards for the division or department.

In addition to administrative responsibilities, a position in these titles manages one or more of the following technical functions.

Typical **computer operations management functions**:

> Directs the operation of the organization's main computer facility, including operating systems, communications software and hardware, and the operations section. Plans, organizes and controls multi-shift computer operations section in the operation of the computer and peripheral data processing equipment for the organization's main computing facility. Functions include supervision of production control, operations documentation, personnel

allocation, remote user work areas, held desk, and tape inventory system. Maintains mainframe hardware, plans capacity needs and develops operations procedures and disaster/recovery plans.

Typical **applications development and programming management functions**:

Directs computer applications analysts and application programmers who are engaged in the full range of applications design, maintenance and programming for several large and complex systems. Schedules, manages, and allocates resources to multiple programming projects. Responsible for all applications programming activities. Applications generally are large-scale administrative and/or clinical systems which support the entire organization or large segments of the organization, such as financial, human resources, payroll, student, patient care, diagnostic, patient billing, or similar systems and related interface software. Develops standards for all applications and provides technical guidance to the applications staff. Develops long-range programming plans and requirements, including needs assessment and software products evaluation.

Typical **operating systems**, **systems analysis and development management functions**:

Manages all functions associated with large-scale computer operating systems and related software, including database management, system security and communications. Responsible for all software systems programming activities. Applications generally affect the overall operating system, such as sophisticated file maintenance routines, advanced scientific software, large telecommunications networks and computer accounting. Projects software and hardware requirements in conjunction with other information systems managers. Develops standards for all software system applications and provides technical guidance to the information systems staff. Directs the interface of software systems with the hardware configuration and the applications systems. Additional areas of responsibility include: configuration/capacity planning, software products evaluation, systems performance analysis and optimization. Develops long-range automation plans, including operating system release upgrades and capacity planning.

Typical **data administration functions**:

Directs and controls the activities related to data planning and development and the establishment of policies and procedures pertaining to its management, security, maintenance and utilization. Provides effective and efficient storage, retrieval, customization and archiving of data, managing multiple sets of data to assure an integrated data base system for all users. Responsible for maintaining data integrity as maintenance and modification projects to existing application are undertaken.

Typical **network management functions**:

Responsible for all aspects of the daily operation for data, voice or video/audio network(s). Manages and coordinates the day-to-day planning, design, operations and maintenance of the voice, data and/or video/audio networks including client server support. Supervises and participates in network strategic and tactical planning, communications equipment evaluation, and communications equipment integration into the network; coordinates with customers, vendors and corporate management; responsible for department resource allocation. Interfaces with senior/executive management to coordinate network plans with organizations business plan. Manages the communications network system. Manages the design, implementation and use of network software to configure network architecture, and test information for budget planning for data communications software and hardware needs.

Typical **end user support management functions**:

Responsible for the integration of the microcomputer and/or minicomputer, work processing, mainframe, and telecommunication activities of the organization. Analyzes, develops and maintains software library. Provides support and direction for user groups in the selection and use of software/hardware systems and programs to support an integrated system. Maintains broad knowledge of cost-effective application of state-of-the-art data processing activities; monitors new and future developments in data processing. Coordinates the purchase, installation, maintenance and consulting for the use of microcomputers. Responsible for the definition of the support environment, user needs analysis, hardware and software evaluation, departmental consultation, troubleshooting, and establishment of support controls.

Qualifications Guide

Specific qualifications including knowledge, skills, abilities and education will differ from position to position as work assignments vary. Incumbents in these titles will possess knowledge and/or applied skills and abilities sufficient to perform the duties and responsibilities of their technical areas.