



College Curriculum

**DATABASE
ADMINISTRATION
CURRICULUM**



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Database Administration

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This report presents the competency-based curriculum developed for the Pierce College Database Management and Design Program. The curriculum was translated from the skill standards for the Database Administration Associate career cluster published in *Building a Foundation for Tomorrow: Skill Standards for Information Technology* by the NorthWest Center for Emerging Technologies in 1997.

This report includes the following:

- **Program Learning Components:** meaningful categories of related skills and knowledge.
- **Learner Program Outcomes:** what the learners must be able to know and demonstrate at the end of the program.
- **Key Competencies:** specific, observable knowledge and skills that support and lead to the program learner outcomes.
- **Sample Activities:** activities or projects that provide a context for learners to acquire technical and foundation skills and knowledge, with associated competencies and suggested assessments.
- **Curriculum Map:** a map that assigns the program outcomes and competencies into specific courses.

We wish to thank Donna Pagoria, Program Coordinator and Instructor, Computer Information Systems, Pierce College, and her faculty colleagues for their review and adaptation of this information.

PROGRAM LEARNING COMPONENTS

The Learning Components are meaningful categories of related skills and knowledge that are best taught/learned together and represent logical pieces of curriculum.

Program Learning Components

Technical Learning Components

Accounting
Business Knowledge
Computer Information Systems
Data Management
Data Modeling
Data Security
Database Administration
Database Analysis and Design
Hardware
Networks
Operating Systems
Presentation Software
Programming
Spreadsheets
Statistics
Word Processing

Foundation Learning Components

Customer Relations
Effective Communication
Information Competency
Logic
Problem Solving
Project Management
Responsibility
Self-Learning
Task Management
Teaming
Technical Writing
Training/Teaching Others
Visualization

LEARNER PROGRAM OUTCOMES

Learner Program Outcomes are statements that support the Learning Components by describing what students must know and be able to do by the end of the program.

Technical Learner Program Outcomes

Accounting – *Technical Learning Component*

- Utilize budgetary techniques to prepare forecasts and track progress
- Understand the importance of applying generally accepted accounting principles to the recording of financial information
- Recognize the need for various security and internal controls, and select appropriate controls for various situations
- Create an accounting information system to meet user needs for internal and external reporting

Business Knowledge - *Technical Learning Component*

- Based on an understanding of basic business principles, create and support information systems to meet user needs

Computer Information Systems - *Technical Learning Component*

- Discuss the impact of the computer upon business
- Demonstrate basic computer usage skills

Data Management - *Technical Learning Component*

- Validate and manage data

Data Modeling - *Technical Learning Component*

- Transfer customer requirements into data model and process model
- Model data with and without case tool software
- Model business and scientific problems

Data Security - *Technical Learning Component*

- Demonstrate an understanding of ethics and security issues surrounding data and databases
- Create a security plan

Database Administration - *Technical Learning Component*

- Examine database administration policies
- Develop procedures and standards to support the policies for database administration
- Explain methods and issues in establishing a database server
- Explain an effective database enterprise integration

Database Analysis and Design - *Technical Learning Component*

- Analyze, design and create relational databases

Hardware - *Technical Learning Component*

- Evaluate the impact on the database design of hardware limitations

Networks - *Technical Learning Component*

- Develop databases to run with different types of networks

Technical Learner Program Outcomes

Operating Systems - *Technical Learning Component*

- Compare and contrast operating systems such as Win 98, NT, or Unix
- Demonstrate basic skills in effectively utilizing operating systems

Presentation Software - *Technical Learning Component*

- Design, create, modify, and present information using presentation software

Programming - *Technical Learning Component*

- Use a programming language such as SQL to create, modify, and query databases
- Use a programming language such as Visual Basic to complete distributed client application

Spreadsheets - *Technical Learning Component*

- Design and create spreadsheets to accurately summarize and document information

Statistics - *Technical Learning Component*

- Use statistics to analyze and choose data to effectively model the database
- Apply statistics in queries and reports in the databases

Word Processing - *Technical Learning Component*

- Design and create technical documentation to accurately summarize and document information.

Foundation Learner Program Outcomes

Customer Relations - *Foundation Learning Component*

- Respond to customer needs in a timely manner

Effective Communication - *Foundation Learning Component*

- Effectively communicate orally and in writing to customers, co-workers, subordinates and supervisors

Information Competency - *Foundation Learning Component*

- Access and acquire useful information
- Use information in ways that do not violate copyright

Logic - *Foundation Learning Component*

- Use logic to draw conclusions from available information

Problem Solving - *Foundation Learning Component*

- Question and evaluate situations
- Recognize and evaluate assumptions and biases related to decision making
- Effectively problem solve situations

Project Management – *Foundation Learning Component*

- Identify basic phases of project management
- Identify and recognize various methods and tools used to effectively manage a project
- Effectively manage and coordinate a project with a team

Responsibility – *Foundation Learning Component*

- Examine the relationship between self, others and the organization
- Evaluate potential impacts and consequences of actions
- Make choices based on the examination and evaluation of impacts and consequences

Self-Learning – *Foundation Learning Component*

- Gain personal knowledge, information, and skills to maintain currency in the field

Task Management – *Foundation Learning Component*

- Organize and prioritize multiple tasks based on time and available resources

Teaming – *Foundation Learning Component*

- Effectively work with team members (users, co-workers, associates, management and subordinates) to accomplish a goal

Technical Writing – *Foundation Learning Component*

- Write documents that are clear, concise, accurate and grammatical

Training/Teaching Others – *Foundation Learning Component*

- Effectively train others to use an information system

Visualization – *Foundation Learning Component*

- Visualize new and existing concepts and designs

KEY COMPETENCIES

Key Competencies are specific, observable behaviors, knowledge, abilities and skills that detail and support the Program Outcomes.

Accounting – Technical Learning Component

Learner Program Outcomes

- Utilize budgetary techniques to prepare forecasts and track progress
- Understand the importance of applying generally accepted accounting principles to the recording of financial information
- Recognize the need for various security and internal controls, and select appropriate controls for various situations
- Create an accounting information system to meet user needs for internal and external reporting

Key Competencies

Demonstrate the ability to:

- Describe the accounting documentation required for department, corporate, and regulatory agencies
- Demonstrate the flow of data through an accounting system
- Produce a set of pro forma statements for forecasting and budgetary purposes and perform variance analysis
- Create and use financial information
- Identify various security and internal controls

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Define accounting terms and vocabulary
- Analyze and record financial events into the accounting system
- Create a set of financial statements
- Create a financial forecast or a project budget
- Utilize an accounting program to enter accounting transactions
- Describe the internal control procedures for various situations

Performance Indicators - Expert Level

Demonstrate the ability to:

- Read and analyze financial statements
- Locate errors and effect corrections to accounting data
- Perform analysis techniques to track progress toward budget goals
- Export data from an accounting system to another system
- Perform tasks to set up an accounting system
- Analyze current controls, identify weaknesses and suggest alternatives to strengthen procedures
- Perform cost benefit analysis for management decisions

Business Knowledge – Technical Learning Component

Learner Program Outcomes

- Based on an understanding of basic business principles, create and support information systems to meet user needs

Key Competencies

Demonstrate the ability to:

- Examine basic business objectives
- Compare and contrast business entities and their relationships
- Evaluate business data requirements
- Identify user applications
- Analyze potential impact on whole system
- Describe industry standards and constraints
- Utilize business decision processes

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Use business terminology
- Explain business practices and procedures
- Describe the organization and structure of businesses
- Discuss business data/information requirements
- Develop short range and long range goals, and strategic plans
- Practice business ethics and responsibility

Performance Indicators - Expert Level

Demonstrate the ability to:

- Recognize resource and budgetary constraints
- Incorporate the business short range and long range goals, and strategic plans
- Compare and contrast business entities and their relationships
- Evaluate user applications
- Examine potential impact on whole system
- Evaluate business data/information requirements
- Discuss business practices and procedures
- Examine the organization and structure of businesses

Computer Information Systems – Technical Learning Component

Learner Program Outcomes

- Discuss the impact of the computer upon business
- Demonstrate basic computer usage skills

Key Competencies

Demonstrate the ability to:

- Use terminology associated with the computer field
- Compare and contrast different computer occupations
- Explain a computer system
- Demonstrate basic computer usage skills
- Differentiate between data and information
- Demonstrate computer ethics
- Discuss the history, current events, and future of the computer field

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Identify terminology associated with computer hardware, software, and the database field
- Open, create, save, and print documents using a variety of application software packages
- Demonstrate basic computer hardware skills such as use of a mouse, keyboard, and printer
- Identify different computer-related career fields
- Examine computer information systems in businesses
- Differentiate between data and information
- Describe a computer system to include input, output, processing, and storage
- Describe different computer programming languages

Performance Indicators - Expert Level

Demonstrate the ability to:

- Correctly use terminology associated with computer hardware, software, and the database field
- Differentiate between application software and operating systems
- Save and retrieve files from diskettes and hard drives
- Recognize and clean viruses
- Demonstrate computer ethics
- Use the Internet to include basic searches and e-mail
- Discuss communicating information using multimedia
- Evaluate strengths and weaknesses of various programming languages

Data Management – *Technical Learning Component*

Learner Program Outcomes

- Validate and manage data

Key Competencies

Demonstrate the ability to:

- Manage data
- Validate data

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Check data/information for accuracy and consistency
- Import, convert, and export data from one application to another using built-in tools such as wizards
- Backup, archive, and restore data

Performance Indicators - Expert Level

Demonstrate the ability to:

- Analyze data/information for accuracy and consistency
- Integrate multiple items of data
- Import, convert, and export data from one application to another

Data Modeling – Technical Learning Component

Learner Program Outcomes

- Transfer customer requirements into data model and process model
- Model data with and without case tool software
- Model business and scientific problems

Key Competencies

Demonstrate the ability to:

- Identify the business rules to be included in the process model
- Develop a logical database model
- Refine the logical database model, and transform it into a physical database model to include normalization

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Gather, analyze, and communicate the requirements
- Create and refine conceptual data model
- Validate conceptual data model with clients
- Integrate conceptual model with enterprise model
- Define high level business rules
- Reconcile conceptual model with appropriate level process model
- Identify and define entities, attributes, and relationships
- Identify unique identifiers
- Normalize the data model
- Reconcile the logical data model with the lower level process model
- Use case tools to model data
- Model business and scientific problems

Performance Indicators - Expert Level

Demonstrate the ability to:

- Reconcile the logical data model with the lower level process model
- Integrate the logical data model with enterprise model
- Reconcile conceptual model with appropriate level process model

Data Security – *Technical Learning Component*

Learner Program Outcomes

- Demonstrate an understanding of ethics and security issues surrounding data and databases
- Create a security plan

Key Competencies

Demonstrate the ability to:

- Identify access requirements
- Identify and evaluate risks

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Identify database security procedures and implementation plans
- Gather and document security requirements
- Identify risks
- Identify user's access requirements
- Differentiate methods of security

Performance Indicators - Expert Level

Demonstrate the ability to:

- Identify and understand customer's need for security
- Understand security system tools available
- Identify potential security conflicts
- Gather information based on technical security requirements
- Communicate security tradeoffs and risks
- Evaluate risks based on impact on the whole system
- Evaluate maintenance plan for regular integrity checks
- Prepare contingency plan
- Create alternatives
- Implement user access privileges
- Implement appropriate methods of security

Database Administration – *Technical Learning Component*

Learner Program Outcomes

- Examine database administration policies
- Define procedures and standards to support the policies for database administration
- Explain methods and issues in establishing a database server
- Explain an effective database enterprise integration

Key Competencies

Demonstrate the ability to:

- Discuss information requirements within an entity and the establishment of policies for database administration
- Describe the methods to establish procedures and standards to support the policies for database administration
- Explain methods and issues in establishing a database server
- Explain an effective database enterprise integration

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Define information requirements within an entity and the establishment of policies for database administration
- Define the methods to establish procedures and standards to support the policies for database administration
- Identify methods and issues in establishing a database server
- Define an effective database enterprise integration

Performance Indicators - Expert Level

Demonstrate the ability to:

- Explain issues regarding the information requirements within an entity and the establishment of policies for database administration
- Explain the methods to establish procedures and standards to support the policies for database administration
- Explain methods and issues in establishing a database server
- Explain an effective database enterprise integration

Database Analysis and Design – *Technical Learning Component*

Learner Program Outcomes

- Analyze, design and create relational databases

Key Competencies

Demonstrate the ability to:

- Design, develop, populate, and troubleshoot using current relational database management system software
- Normalize relationships in tables
- Develop custom user interfaces for databases
- Develop effective queries, forms and reports
- Test the integrity of the database design

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Gather, analyze, and communicate the design requirements
- Create, refine and validate conceptual data model
- Identify and define entities, attributes and relationships
- Identify unique identifiers
- Normalize/de-normalize the data model
- Validate logical data model with clients
- Determine target environment/platform
- Identify concurrency and user access requirements
- Solidify/identify physical database characteristics and define validation rules
- Design distributed model
- Create database objects
- Use test data to populate the database
- Present database implementation plan
- Support test data conversion and validation
- Participate in post implementation review
- Create logical and physical data models using a case tool such as S-Designer
- Identify the various object notation used to specify data requirements
- Develop custom user interfaces for databases
- Develop effective queries, forms and reports
- Implement an index
- Implement database constraints

Performance Indicators - Expert Level

Demonstrate the ability to:

- Implement data access requirements
- Populate the database using converted data
- Reconcile the logical data model with the lower level process models
- Reconcile conceptual model with appropriate level process model
- Reconcile the physical design with the processing requirements
- Define and implement business rules

Technical Key Competencies

- Create and maintain user data views
- Consider response time and system capacity needs
- Evaluate and choose database design tools
- Define database requirements, object, validation, triggers using case tools such as S-Designer
- Create data models using various object notation such as Unified Notation
- Test the integrity of the database design

Hardware – Technical Learning Component

Learner Program Outcomes

- Evaluate the impact on the database design of hardware limitations

Key Competencies

Demonstrate the ability to:

- Evaluate the strengths and limitations of hardware

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Use hardware terminology to include input, output, processing, and storage devices
- Recognize how various hardware is used

Performance Indicators - Expert Level

Demonstrate the ability to:

- Evaluate and choose hardware based on its strengths and limitations

Networks – Technical Learning Component

Learner Program Outcomes

- Develop databases to run with different types of networks

Key Competencies

Demonstrate the ability to:

- Identify the proper protocol to use for different types of connectivity
- Connect a client to a database server on a LAN
- Connect a client to a database server on the internet/intranet
- Create both DSN and DSN-less connections to data sources

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Develop a database application that uses a LAN based database connection
- Develop a web based application that uses an Intranet based database connection
- Use the proper protocol for use with different types of connectivity

Performance Indicators - Expert Level

Demonstrate the ability to:

- Develop a web based application that uses an Internet based database connection
- Explain N-tier systems

Operating Systems – Technical Learning Component

Learner Program Outcomes

- Compare and contrast operating systems such as Win 98, NT, or Unix
- Demonstrate basic skills in effectively utilizing operating systems

Key Competencies

Demonstrate the ability to:

- Examine the strengths and limitations of various operating systems with regard to I/O, processing, and memory
- Analyze operating systems management
- Examine networking within the operating system
- Examine the operating system support of applications
- Integrate a database with the operating system
- Configure a network client

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Define the environment and configuration of operating systems
- Analyze various operating systems, noting their strengths and limitations with regards to I/O, processing, and memory
- Define and use of the various operating systems management
- Define the establishment of the network within the operating system and the management of I/O
- Explain the operating system support of applications
- Describe the integration of a database such as SQL or Oracle
- Demonstrate basic skills in effectively utilizing operating systems
- Explain the configuration parameters of an operating system that effect a database (i.e. client, protocols)

Performance Indicators - Expert Level

Demonstrate the ability to:

- Explain I/O management
- Explain process management
- Explain memory management
- Explain system management
- Explain integration with database
- Troubleshoot ambiguous problems
- Configure a network client
- Apply software upgrades and fixes
- Plan and manage physical resource requirements
- Provide and support development environments
- Analyze limitations of specific operating systems

Presentation Software – *Technical Learning Component*

Learner Program Outcomes

- Design, create, modify, and present information using presentation software

Key Competencies

Demonstrate the ability to:

- Create a presentation to effectively communicate with the user
- Give the presentation utilizing slides, handouts, and speaker's notes

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Create, reopen, save, rename, and exit a presentation
- Use templates and wizards
- Get and use on-line help files
- Enter text, numbers, objects, sound, and pictures
- Edit documents by adding, deleting, and changing information or objects
- Use spell-checker, grammar-checker, thesaurus
- Format words, paragraphs, columns, or pages
- Use bullets, and numbering
- Import text, tables, graphs, and charts from spreadsheets or word processing documents
- Use headers and footers
- Print outlines, slides, or notes
- Run a presentation

Performance Indicators - Expert Level

Demonstrate the ability to:

- Design a presentation into a user-appropriate format
- Create a presentation from a blank presentation format
- Build and use templates
- Create, modify, and format tables, graphs, and charts
- Import, convert, and export information
- Embed or link with other documents
- Use drawing and animation capabilities
- Edit presentations by moving or hiding slides
- Time a presentation

Programming – Technical Learning Component

Learner Program Outcomes

- Use a programming language such as SQL to create, modify, and query databases
- Use a programming language such as Visual Basic to complete distributed client application

Key Competencies

Demonstrate the ability to:

- Use a programming language such as SQL to define a database
- Use a programming language such as SQL to query and create views of a database
- Use a programming language such as SQL to update a database
- Embed a programming language such as SQL into another program language
- Use a programming language such as SQL for report formatting
- Use a programming language such as Visual Basic to create custom modules
- Use a programming language such as Visual Basic to create custom user interfaces

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Build multiple tables to the users specifications
- Define the data fields to be used in the tables
- Develop single table queries
- Sort data in tables
- Use built in math functions
- Group data
- Update data
- Format reports
- Create custom modules to solve common business problems
- Create custom user interfaces to enter and access data
- Write error-handlers
- Use store procedures and triggers for inserts, deletes, and updates in a database that supports these functions (i.e. Oracle, Sybase)
- Create a cursor

Performance Indicators - Expert Level

Demonstrate the ability to:

- Nest queries
- Create multiple table queries by joining tables
- Create custom views of the data
- Embed a programming language such as SQL into another program language
- Implement error-handling at the database level

Spreadsheets – *Technical Learning Component*

Learner Program Outcomes

- Design and create spreadsheets to accurately summarize and document information

Key Competencies

Demonstrate the ability to:

- Translate technical information into user-appropriate format
- Design, build, and modify spreadsheets, charts, graphs, and macros for business applications

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Create, reopen, save, rename, print, and exit a workbook
- Get and use on-line help files
- Enter text, data, and formulas into cells
- Edit worksheets by adding, deleting, and changing cells
- Edit worksheets by inserting, and deleting rows, columns, and worksheets
- Edit worksheets by cutting, copying, and pasting cells, rows, columns, ranges, and worksheets
- Format cells, rows, columns, and workbooks
- Create, modify, and format tables, charts, and graphs
- Print previews, ranges, sheets, cell contents, and the workbook
- Present mathematical, accounting, logical, and statistical problems using spreadsheet capabilities

Performance Indicators - Expert Level

Demonstrate the ability to:

- Translate technical information into user-appropriate spreadsheet formats
- Solve mathematical, accounting, logical, and statistical problems using spreadsheet capabilities
- Sort and filter data
- Pivot tables
- Use spreadsheet database capabilities
- Perform goal-seeking and what-if-analysis
- Build and use templates
- Create, modify, and run macros
- Import, convert, and export data from one application to another
- Link with other documents

Statistics – Technical Learning Component

Learner Program Outcomes

- Use statistics to analyze and choose data to effectively model the database
- Apply statistics in queries and reports in the databases

Key Competencies

Demonstrate the ability to:

- Use basic statistical functions such as mean, mode, median, minimum, maximum, standard deviation, hypothesis Testing, and confidence level
- Decide when enough data is available for data modeling
- Apply statistics to test for reasonableness of numbers

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Apply central tendency such as mean and mode
- Apply dispersion such as variance and standard deviation
- Apply sampling methods and distributions
- Apply hypothesis testing
- Forecast future events based on current and historical data
- Test for reasonableness of numbers
- Create appropriate graphs and charts
- Determine and compute the appropriate confidence level

Performance Indicators - Expert Level

Demonstrate the ability to:

- Decide when enough data is available
- Examine data for relevance, accuracy, and consistency
- Analyze the relationship between multiple pieces of information
- Synthesize information
- Determine the correct statistical method to use
- Determine the correct population size to accurately model the database

Word Processing – *Technical Learning Component*

Learner Program Outcomes

- Design and create technical documentation to accurately summarize and document information

Key Competencies

Demonstrate the ability to:

- Translate technical information into user-appropriate format
- Create, modify, and format word processing documents with embedded or linked charts, graphs, or tables for business applications

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Create, reopen, save, rename, print, and exit a document
- Get and use on-line help files
- Enter text, numbers, objects, and pictures
- Edit documents by cutting, copying, inserting, deleting, and pasting words, paragraphs, or pages
- Format words, paragraphs, columns, or pages
- Print previews, selections, pages, or the document
- Use spell-checker, grammar-checker, thesaurus
- Use bullets, and numbering
- Use headers and footers

Performance Indicators - Expert Level

Demonstrate the ability to:

- Translate technical information into user-appropriate word processing format
- Create outlines
- Build and use templates
- Create html documents
- Create, modify, and format tables, graphs, and charts
- Use the sort function
- Use drawing and forms capabilities
- Import, convert, and export information
- Link with other documents

Customer Relations – *Foundation Learning Component*

Learner Program Outcomes

- Respond to customer needs in a timely manner

Key Competencies

Demonstrate the ability to:

- Identify the role of the customer
- Determine customer needs
- Provide information to customer
- Create user appropriate formats
- Communicate in a manner that provides clear understanding between you and the customer

Performance Indicators -Proficiency Level

Demonstrate the ability to:

- Recognize internal and external customers
- Interview customer by asking questions to determine customer's actual needs versus desires
- Listen to customer's input
- Recognize missing information from customer interview
- Inform the customer about the process and/or product that will be used to resolve situation
- Deliver solution to customer in a timely manner
- Follow-up with customer to evaluate the effectiveness of the process or product used to resolve situation
- Use language and analogies to explain issues, processes and products that the customer understands

Performance Indicators -Expert Level

Demonstrate the ability to:

- Recommend processes or products that will be proactive in minimizing or alleviating future problems
- Make recommendations to improve customer relations
- Act as liaison between groups and customers
- Determine training to meet customer needs
- Design and evaluate training delivered to customer

Effective Communication – *Foundation Learning Component*

Learner Program Outcomes

- Effectively communicate orally and in writing to customers, co-workers, subordinates and supervisors

Key Competencies

Demonstrate the ability to:

- Recognize the value of effective oral and written communication
- Recognize the impact of the message sent
- Effectively send a message to another orally and in writing
- Accurately receive a message from another orally and in writing
- Organize message into an understandable format
- Actively listen
- Give and receive feedback
- Recognize the need for additional information
- Ask questions to gain further information as needed
- Identify and use appropriate communication media based on the purpose, content, audience and situation
- Identify personal bias and communication patterns that negatively impact communication

Performance Indicators - Proficiency level

Demonstrate the ability to:

- Demonstrate listening by paraphrasing others in a conversation
- Ask questions to gain clarification
- Use language that facilitates mutual understanding
- Use correct grammar and punctuation
- Send messages (orally and in writing) that are clear and concise
- Summarize messages received (orally and in writing)
- Recognize cultural differences that impact communication
- Give and receive feedback
- Accurately record information received from others
- Slow personal assumptions that may create communication conflict

Performance Indicators -Expert Level

Demonstrate the ability to:

- Predict the impact of messages sent (orally and in writing)
- Identify missing information; probe to gain further information, understanding and clarity
- Minimize cultural conflict when communicating
- Address and resolve conflict when it occurs
- Actively listen to others; paraphrase and use body language that promotes interaction
- Identify underlying meaning of what is said or written
- Prepare and deliver oral and written presentations that appeal to various audiences
- Use information received from another to plan and prepare necessary work

Information Competency – *Foundation Learning Component*

Learner Program Outcomes

- Access and acquire useful information
- Use information in ways that do not violate copyright

Key Competencies

Demonstrate the ability to:

- Recognize the need for information
- Develop and formulate vocabulary based on information needed
- Identify and use information structures such as libraries, Internet, Intranet and community-based sources to access and acquire information
- Identify issues related to intellectual property rights
- Identify issues related to copyright
- Organize information
- Use information gathered
- Recognize bias related to information

Performance Indicators- Proficiency Level

Demonstrate the ability to:

- Identify missing information
- Recognize information patterns
- Formulate questions to determine the need for information
- Use appropriate search language and nomenclature to find necessary information
- Identify potential sources of information
- Access sources that will provide necessary information
- Evaluate information to determine useful components
- Integrate new information with existing information
- Eliminate information redundancy
- Determine information that is timely, accurate and useable
- Recognize when there is sufficient information to resolve an issue or problem
- Create information subsets or sub-components
- Use information that does not violate copyright or intellectual property rights
- Identify issues of bias in information

Performance Indicators - Expert Level

Demonstrate the ability to:

- Recognize the context and implications of information
- Use patterns to organize information
- Evaluate bias related to information

Logic – Foundation Learning Component

Learner Program Outcomes

- Use logic to draw conclusions from available information

Key Competencies

Demonstrate the ability to:

- Determine the validity of arguments
- Analyze relationships between parts/whole, sets/subsets by applying Boolean logic

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Test validity of arguments
- Use deductive reasoning in solving problems
- Use set theory to visually represent the relationship between parts/whole, sets/subsets
- Use truth tables in solving problems or to visually represent the relationship between parts/whole, sets/subsets
- Apply Boolean logic to determine the relationship between sets such as numbers, ideas, or objects

Performance Indicators - Expert Level

Demonstrate the ability to:

- Use logic to draw conclusions from available information
- Think logically and organize information
- Understand the relationship between multiple pieces of information
- Examine data for relevance and accuracy
- Recognize conflicting specifications
- Synthesize information
- Analyze relationship between parts/whole, sets/subsets

Problem Solving – *Foundation Learning Component*

Learner Program Outcomes

- Question and evaluate situations
- Recognize and evaluate assumptions and biases related to decision making
- Effectively problem solve situations

Key Competencies

Demonstrate the ability to:

- Accurately identify root components of a problem situation
- Identify and evaluate conditions, risks, and criteria for successful resolution of problems
- Review potential options for resolving problems based on conditions, risks and criteria for success
- Identify and use resources available to assist in solving problems
- Select solutions to problems that minimize risks and match criteria for success
- Communicate the problem solving process and outcome to others
- Evaluate results and make modifications as necessary
- Recognize assumptions and biases that impact decision-making

Performance Indicators- Proficiency Level

Demonstrate the ability to:

- Accurately identify a problem in a timely manner
- Select best method and tools to resolve problem
- Consider input from others during the problem solving process
- Ask critical questions to further define the parameters of the problem
- Recognize conditions, risk and criteria for successful resolution of problems
- Evaluate solution to ensure risk reduction
- Implement solution(s) in a timely manner
- Communicate with users, co-workers and others throughout the problem solving process
- Recognize bias that impacts decision-making
- Assess effectiveness of selected solution(s)
- Make modifications in solution as necessary

Performance Indicators -Expert Level

Demonstrate the ability to:

- Predict problem situations and be proactive in minimizing problems
- Identify creative and innovative solutions to problems
- Evaluate and recommend improvements for recurring problems
- Actively seek input from stakeholders
- Evaluate and recommend improvements related to problem solving process

Project Management – *Foundation Learning Component*

Learner Program Outcomes

- Identify basic phases of project management
- Identify and recognize various methods and tools used to effectively manage a project
- Effectively manage and coordinate a project with a team

Key Competencies

Demonstrate the ability to:

- Define project scope and goals
- Use the System Development Life Cycle as a foundation for project management
- Identify requirements for each phase of project management
- Effectively use tools, methods and resources
- Establish milestones, benchmarks, and monitoring strategies
- Identify criteria used to determine the effectiveness of a project
- Establish and monitor budgets
- Work effectively with team members to complete a project
- Respond positively to change

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Explain different components of the System Development Life Cycle used in project management
- Develop project scope and goals
- Identify stakeholders and decision-makers
- Obtain tools and resources to accomplish the project
- Identify and prioritize tasks related to goal accomplishment
- Develop a project flow chart
- Use milestones and benchmarks to monitor progress and accomplishments
- Accomplish tasks according to identified timelines
- Identify and evaluate risks
- Positively manage change
- Adhere to project budget
- Communicate in a timely manner with other project members
- Be flexible to meet goals and objectives of the project
- Develop project reports

Performance Indicators - Expert Level

Demonstrate the ability to:

- Analyze cost and benefit of resources, tools, and methods
- Access and secure resources and tools
- Develop milestones and benchmarks
- Identify interdependencies
- Develop contingency plans
- Determine timelines, tasks, and available resources for project completion
- Develop a system or process to monitor the project

Foundation Key Competencies

- Negotiate timelines, conditions, and resources when necessary
- Develop and use a budget to accomplish the project goal
- Identify and use team member strengths to accomplish the goal
- Monitor and evaluate project effectiveness: processes, procedures, and production
- Make recommendations to improve the project plan

Responsibility – *Foundation Learning Component*

Learner Program Outcomes

- Examine the relationship between self, others and the organization
- Evaluate potential impacts and consequences of actions
- Make choices based on the examination and evaluation of impacts and consequences

Key Competencies

Demonstrate the ability to:

- Identify employer expectations related to work behaviors and job performance
- Recognize how experiences and values affect decisions and actions
- Take responsibility for actions
- Prioritize and act upon priorities
- Make and follow-through with commitments
- Identify and abide by ethics and laws pertaining to information access and use

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- List employer expectations of workers
- Define one's role in relation to others and an organization
- Recognize the impact of own behavior
- Accept responsibility for own actions
- Make improvements in behavior based on feedback from others
- Produce work that meets standards and expectations of organization
- Respect and cooperate with others
- Use language and behaviors that are sensitive to others
- Identify and adhere to laws pertaining to information access and use
- Adhere to the ethics related to industry and business standards
- Demonstrate punctuality and regular attendance

Performance Indicators -Expert Level

Demonstrate the ability to:

- Actively seek opportunities for attitude and behavior self-improvement
- Continuously evaluate own behavior
- Modify or change behavior based on personal assessment
- Produce work that exceeds standards and expectations of organization
- Recognize the need for help and seek assistance from others
- Actively help others
- Balance work load and personal needs
- Support organizational goals
- Challenge unfair or unethical situations
- Challenge past and future discrimination

Self-Learning – *Foundation Learning Component*

Learner Program Outcomes

- Gain personal knowledge, information, and skills to maintain currency in the field

Key Competencies

Demonstrate the ability to:

- Assess and identify the need for additional information and skill
- Identify and use own learning style
- Summarize and integrate new knowledge, information and skills
- Use new information to further skills

Performance Indicators -Proficiency Level

Demonstrate the ability to:

- Identify gap between existing knowledge and skills versus necessary knowledge and skills
- Research options for additional knowledge and skill (library, colleagues, Internet, training seminars, education etc.)
- Use resources available for increasing knowledge and skills
- Learn from mistakes
- Learn from others
- Willingly participate in formal and informal training opportunities

Performance Indicators - Expert Level

Demonstrate the ability to:

- Predict the need for increased knowledge and skills
- Develop a personal education and training plan to increase knowledge and skills
- Actively seek out new knowledge and skills
- Access and use the knowledge, skills and abilities of others to increase own knowledge skills and abilities
- Actively share personal knowledge and skills with others
- Evaluate the learning process and resources based on desired learning outcome

Task Management – *Foundation Learning Component*

Learner Program Outcomes

- Organize and prioritize multiple tasks based on time and available resources

Key Competencies

Demonstrate the ability to:

- Break down projects and activities into a series of tasks
- Identify and use resources available for task completion
- Prioritize tasks
- Recognize various levels of complexity related to tasks
- Develop a personal schedule to accomplish tasks
- Monitor personal schedule
- Evaluate the impact of own work related to the work of others
- Evaluate the impact of own work related to the entire project

Performance Indicators -Proficiency Level

Demonstrate the ability to:

- Develop task list or “to do lists” related to assigned tasks
- Prioritize tasks
- Create an estimation of time needed for completion of each task
- Negotiate time and resources as needed to accomplish tasks
- Create a work schedule that will facilitate completion of task while considering personal work style
- Successfully complete tasks in a timely manner
- Consider the impact of personal task list and completion on the team and the project
- Report problems in a timely manner
- Generate and maintain task status reports

Performance Indicators - Expert Level

Demonstrate the ability to:

- Anticipate change in work load
- Accommodate changes in work load
- Evaluate own work schedule and process to determine effectiveness
- Make modifications and changes based on personal evaluation of effectiveness
- Work on and monitor several tasks at one time (multi-tasking)
- Recognize the contribution of own work on others and the project
- Delegate responsibility when appropriate

Teaming – Foundation Learning Component

Learner Program Outcomes

- Effectively work with team members (users, co-workers, associates, management and subordinates) to accomplish a goal

Key Competencies

Demonstrate the ability to:

- Recognize the roles and responsibilities of various people involved in a team
- Function in different roles within a team
- Attend to team activities
- Encourage and support team members
- Work collaboratively to accomplish team goals
- Accept responsibility for accomplishing team goals
- Effectively communicate with team members

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Describe various team roles
- Contribute toward the accomplishment of the team goal
- Adjust own style while working with others
- Take risks within the team
- Congratulate self and others upon completion of tasks or goals
- Share personal knowledge and skills with others
- Communicate with other team members in a timely manner
- Participate in the resolution of conflict that arises within the team
- Consider input from others when working on team projects
- Negotiate solutions to accommodate multiple needs

Performance Indicators - Expert Level

Demonstrate the ability to:

- Actively seek input from all members of the team, even those with different perspectives
- Acknowledge the contribution of all team members
- Anticipate and meet team needs
- Recognize the needs of the team over personal needs
- Constructively resolve conflict which emerges in the team
- Evaluate team effectiveness
- Make recommendations for team work improvement

Technical Writing – *Foundation Learning Component*

Learner Program Outcomes

- Write documents that are clear, concise, accurate and grammatical

Key Competencies

Demonstrate the ability to:

- Recognize principles of technical writing
- Accurately translate thoughts and designs to written documentation
- Write grammatically correct sentences and paragraphs to create a documentation of work
- Edit written work

Performance Indicators -Proficiency Level

Demonstrate the ability to:

- Document an existing design or process in a manner that can be understood by the user
- Use spell-checker, grammar-checker, thesaurus or other tools to assist with writing
- Edit documentation for clarity and correct grammar

Performance Indicator - Expert Level

Demonstrate the ability to:

- Document a mental or visual design or process in a manner that can be understood by the user
- Create documents that are clear and concise
- Evaluate documentation against user needs
- Evaluate written documentation produced by others
- Create detailed supportive documentation

Training/Teaching Others – *Foundation Learning Component*

Learner Program Outcomes

- Effectively train others to use an information system

Key Competencies

Demonstrate the ability to:

- Recognize various adult learning styles
- Use multimedia to train and inform others
- Use a skill training model which incorporates multiple learning styles to train others
- Provide constructive feedback to those learning a new skill

Performance Indicators -Proficiency level

Demonstrate the ability to:

- Identify learning styles of others
- Match training plan to the needs of the trainee
- Present skill training to others one-on-one or in small groups
- Provide constructive and specific feedback to each trainee regarding his/her skill development
- Use a variety of presentation software and tools to train and inform others

Performance Indicators - Expert Level

Demonstrate the ability to:

- Incorporate multiple learning styles in training
- Anticipate needs of the trainee beyond identified training outcomes
- Adapt teaching style to best meet trainee needs
- Present training to others one-on-one and in small and large groups
- Present and train complex knowledge and skills
- Recognize cultural aspects of learning
- Actively seek feedback from trainee(s) to improve one's own training skill

Visualization – Foundation Learning Component

Learner Program Outcomes

- Visualize new and existing concepts and designs

Key Competencies

Demonstrate the ability to:

- Mentally design prototypes
- Mentally anticipate problems
- Link ideas and concepts
- Use past experience and knowledge to predict future outcomes

Performance Indicators - Proficiency Level

Demonstrate the ability to:

- Using incomplete information, create a complete visual prototype
- Ask questions that anticipate outcomes
- Explain, orally or in writing, the connection between a given idea and concept

Performance Indicators - Expert Level

Demonstrate the ability to:

- Given continuously changing information, mentally modify and recreate a prototype to meet user needs
- Transfer the mental prototype to a user appropriate format

SAMPLE ACTIVITIES

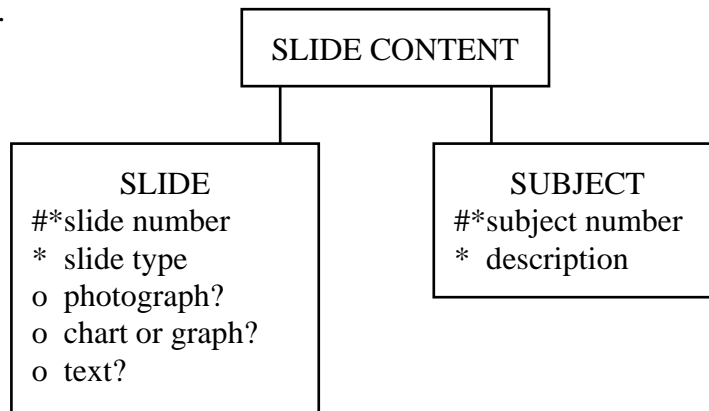
- **Activity**
- **Primary Outcomes Addressed by Activity**

The Learning Activities integrate the technical and foundation Program Competencies.

Activity 1 - Interview to Identify Field Specifications and Business Rules

Scenario

As a work-study student, your college professor has asked you to develop a database to be used to track overheads/slides used during lectures. The following model was sketched from initial interviews.



Assignment:

- Build one template, using a word processing or spreadsheet package, to document field specifications and another template to document business rule specifications.
- Analyze each field to determine field constraints that should be imposed.
- Prepare a list of open-ended interview questions to establish each relationship and the business rules for each field.
- Set up an interview with the faculty member assigned to you. The faculty has agreed to role-play for this assignment. They are from different academic disciplines, so your results may vary from student to student.
- Using interview techniques previously discussed, determine how your professor wishes to track the overheads/slides. Keep the interview to one hour or less.
- Based on your interview, modify the field specifications and document the business rules.
- Hand in a portfolio with
 1. Cover page and table of contents
 2. A typed copy of the interview questions, answers, and any additional notes taken.
 3. Copies of the completed field and business rule specification forms.
 4. Redraw the data model showing any changes resulting from the interview.
 5. A summary page documenting the interview experience to include a self-assessment of your ability to interview.
 - How well did you stay on track and in control of the interview?
 - How well did you keep the interview paced? Did you cover all the questions you had planned?
 - How well were you able to make your professor feel comfortable with the process and willing to participate? How did you break the ice? How did you set the stage?
 - In retrospect, what questions still need to be answered?

Primary Program Outcomes Addressed by Activity:

Computer Information Systems

- Identify terminology associated with computer hardware, software, and the database field
- Open, create, save, and print documents using a variety of application software packages
- Demonstrate basic computer hardware skills such as use of a mouse, keyboard, and printer
- Differentiate between data and information
- Correctly use terminology associated with computer hardware, software, and the database field
- Save and retrieve files from diskettes and hard drives
- Recognize and clean viruses
- Demonstrate computer ethics

Customer Relations

- Interview customer by asking questions to determine customer's actual needs versus desires
- Listen to customer's input
- Recognize missing information from customer interview
- Inform the customer about the process and/or product that will be used to resolve situation
- Use language and analogies to explain issues, processes and products that the customer understands
- Recommend processes or products that will be proactive in minimizing or alleviating future problems
- Make recommendations to improve customer relations

Data Modeling

- Gather, analyze, and communicate the requirements
- Create and refine conceptual data model
- Validate conceptual data model with clients
- Define high level business rules
- Identify and define entities, attributes, and relationships

Database Administration

- Define information requirements within an entity and the establishment of policies for database administration
- Explain issues regarding the information requirements within an entity and the establishment of policies for database administration

Database Analysis and Design

- Gather, analyze, and communicate the design requirements
- Create, refine and validate conceptual data model
- Identify and define entities, attributes and relationships
- Identify unique identifiers
- Define and implement business rules

Effective Communication

- Demonstrate listening by paraphrasing others in a conversation
- Ask questions to gain clarification
- Use language that facilitates mutual understanding
- Use correct grammar and punctuation
- Send messages (orally and in writing) that are clear and concise
- Summarize messages received (orally and in writing)
- Recognize cultural differences that impact communication
- Give and receive feedback
- Accurately record information received from others
- Slow personal assumptions that may create communication conflict
- Predict the impact of messages sent (orally and in writing)
- Identify missing information; probe to gain further information, understanding and clarity
- Minimize cultural conflict when communicating
- Address and resolve conflict when it occurs
- Actively listen to others by paraphrasing and using body language that promotes interaction
- Identify underlying meaning of what is said or written
- Use information received from another to plan and prepare necessary work

Information Competency

- Identify missing information
- Recognize information patterns
- Formulate questions to determine the need for information
- Use appropriate search language and nomenclature to find necessary information
- Identify potential sources of information
- Access sources that will provide necessary information
- Evaluate information to determine useful components
- Integrate new information with existing information
- Eliminate information redundancy
- Determine information that is timely, accurate and useable
- Recognize when there is sufficient information to resolve an issue or problem
- Create information subsets or sub-components
- Use information that does not violate copyright or intellectual property rights
- Recognize the context and implications of information
- Use patterns to organize information

Problem Solving

- Accurately identify a problem in a timely manner
- Select best method and tools to resolve problem
- Consider input from others during the problem solving process
- Ask critical questions to further define the parameters of the problem
- Recognize conditions, risk and criteria for successful resolution of problems
- Recognize bias that impacts decision-making
- Assess effectiveness of selected solution(s)
- Make modifications in solution as necessary

- Predict problem situations and be proactive in minimizing problems
- Identify creative and innovative solutions to problems
- Evaluate and recommend improvements for recurring problems
- Actively seek input from stakeholders
- Evaluate and recommend improvements related to problem solving process

Project Management

- Develop project scope and goals
- Identify stakeholders and decision-makers
- Obtain tools and resources to accomplish the project
- Identify and prioritize tasks related to goal accomplishment
- Use milestones and benchmarks to monitor progress and accomplishments
- Accomplish tasks according to identified timelines
- Identify and evaluate risks
- Positively manage change
- Be flexible to meet goals and objectives of the project
- Develop project reports
- Access and secure resources and tools
- Develop milestones and benchmarks
- Identify interdependencies
- Develop contingency plans
- Determine timelines, tasks, and available resources for project completion
- Negotiate timelines, conditions, and resources when necessary
- Monitor and evaluate project effectiveness: processes, procedures, and production
- Make recommendations to improve the project plan

Responsibility

- List employer expectations of workers
- Define one's role in relation to others and an organization
- Recognize the impact of own behavior
- Accept responsibility for own actions
- Produce work that meets standards and expectations of organization
- Respect and cooperate with others
- Use language and behaviors that are sensitive to others
- Demonstrate punctuality and regular attendance
- Actively seek opportunities for attitude and behavior self-improvement
- Continuously evaluate own behavior
- Modify or change behavior based on personal assessment
- Produce work that exceeds standards and expectations of organization
- Recognize the need for help and seek assistance from others
- Actively help others
- Balance work load and personal needs
- Support organizational goals
- Challenge unfair or unethical situations
- Challenge past and future discrimination

Self-Learning

- Identify gap between existing knowledge and skills versus necessary knowledge and skills
- Research options for additional knowledge and skill (library, colleagues, Internet, training seminars, education etc.)
- Use resources available for increasing knowledge and skills
- Learn from mistakes
- Learn from others
- Predict the need for increased knowledge and skills
- Develop a personal education and training plan to increase knowledge and skills
- Actively seek out new knowledge and skills
- Access and use the knowledge, skills and abilities of others to increase own knowledge skills and abilities
- Actively share personal knowledge and skills with others
- Evaluate the learning process and resources based on desired learning outcome

Spreadsheets

- Create, reopen, save, rename, print, and exit a workbook
- Get and use on-line help files
- Enter text, data, and formulas into cells
- Edit worksheets by adding, deleting, and changing cells
- Edit worksheets by inserting, and deleting rows, columns, and worksheets
- Edit worksheets by cutting, copying, and pasting cells, rows, columns, ranges, and worksheets
- Format cells, rows, columns, and workbooks
- Create, modify, and format tables, charts, and graphs
- Print previews, ranges, sheets, cell contents, and the workbook
- Translate technical information into user-appropriate spreadsheet formats
- Build and use templates

Task Management

- Develop task list or “to do lists” related to assigned tasks
- Prioritize tasks
- Create an estimation of time needed for completion of each task
- Negotiate time and resources as needed to accomplish tasks
- Create a work schedule that will facilitate completion of task while considering personal work style
- Successfully complete tasks in a timely manner
- Report problems in a timely manner
- Anticipate change in work load
- Accommodate changes in work load
- Evaluate own work schedule and process to determine effectiveness
- Make modifications and changes based on personal evaluation of effectiveness
- Work on and monitor several tasks at one time (multi-tasking)

Technical Writing

- Use spell-checker, grammar-checker, thesaurus or other tools to assist with writing
- Edit documentation for clarity and correct grammar
- Create documents that are clear and concise
- Evaluate documentation against user needs
- Create detailed supportive documentation

Visualization

- Using incomplete information, create a complete visual prototype
- Ask questions that anticipate outcomes
- Explain, orally or in writing, the connection between a given idea and concept
- Given continuously changing information, mentally modify and recreate a prototype to meet user needs
- Transfer the mental prototype to a user appropriate format

Word Processing

- Create, reopen, save, rename, print, and exit a document
- Get and use on-line help files
- Enter text, numbers, objects, and pictures
- Edit documents by cutting, copying, inserting, deleting, and pasting words, paragraphs, or pages
- Format words, paragraphs, columns, or pages
- Print previews, selections, pages, or the document
- Use spell-checker, grammar-checker, thesaurus
- Use bullets, and numbering
- Use headers and footers
- Translate technical information into user-appropriate word processing format
- Build and use templates
- Create, modify, and format tables, graphs, and charts
- Use drawing and forms capabilities

Activity 2 - Data Modeling

Scenario:

Your client sells wholesale to customers located in many states. Invoices are created for each customer showing the customer name and address, the products purchased, the description of the product, the quantity, the price, and the sales tax. Every state has a different sales tax rate. Additionally, a few of the cities have a separate tax rate added to the state rate. Some of the customers are non-profit organizations. While they still pay the state sales tax, they are exempt from the city tax but must provide a non-profit identification number on the invoice.

Assignment:

- Divide into teams.
- Analyze the case to determine entities and attributes.
- Draw and label the model to show first normal form.
- Redraw and label the model to show second normal form.
- Redraw and label the model to show third normal form.
- Redraw the model to show cardinality, optionality, unique identifiers, relationship labels, and to resolve any many-to-many relationships.
- Hand in
 1. Cover sheet identifying team members.
 2. Data models in first, second, and third normal forms.
 3. A fully labeled completed data model.

Primary Program Outcomes Addressed by Activity:

Data Modeling

- Gather, analyze, and communicate the requirements
- Create and refine conceptual data model
- Identify and define entities, attributes, and relationships
- Identify unique identifiers
- Normalize the data model
- Reconcile the logical data model with the lower level process model
- Use case tools to model data
- Model business and scientific problems
- Integrate the logical data model with enterprise model

Database Analysis and Design

- Gather, analyze, and communicate the design requirements
- Create, refine and validate conceptual data model
- Identify and define entities, attributes and relationships
- Identify unique identifiers
- Normalize/de-normalize the data model
- Create logical and physical data models using a case tool such as S-Designer

Effective Communication

- Demonstrate listening by paraphrasing others in a conversation
- Ask questions to gain clarification
- Use language that facilitates mutual understanding
- Send messages (orally and in writing) that are clear and concise
- Summarize messages received (orally and in writing)
- Recognize cultural differences that impact communication
- Give and receive feedback
- Accurately record information received from others
- Slow personal assumptions that may create communication conflict
- Predict the impact of messages sent (orally and in writing)
- Identify missing information; probe to gain further information, understanding and clarity
- Minimize cultural conflict when communicating
- Address and resolve conflict when it occurs
- Actively listen to others by paraphrasing and using body language that promotes interaction
- Identify underlying meaning of what is said or written
- Use information received from another to plan and prepare necessary work

Information Competency

- Identify missing information
- Recognize information patterns
- Formulate questions to determine the need for information
- Use appropriate search language and nomenclature to find necessary information
- Identify potential sources of information
- Access sources that will provide necessary information
- Evaluate information to determine useful components
- Integrate new information with existing information
- Eliminate information redundancy
- Determine information that is timely, accurate and useable
- Recognize when there is sufficient information to resolve an issue or problem
- Create information subsets or sub-components
- Use patterns to organize information

Logic

- Test validity of arguments
- Use deductive reasoning in solving problems
- Use set theory to visually represent the relationship between parts/whole, sets/subsets
- Use logic to draw conclusions from available information
- Think logically and organize information
- Understand the relationship between multiple pieces of information
- Examine data for relevance and accuracy
- Recognize conflicting specifications
- Synthesize information
- Analyze relationship between parts/whole, sets/subsets

Problem Solving

- Accurately identify a problem in a timely manner
- Select best method and tools to resolve problem
- Consider input from others during the problem solving process
- Ask critical questions to further define the parameters of the problem
- Implement solution(s) in a timely manner
- Communicate with users, co-workers and others throughout the problem solving process
- Recognize bias that impacts decision-making
- Assess effectiveness of selected solution(s)
- Make modifications in solution as necessary
- Predict problem situations and be proactive in minimizing problems
- Identify creative and innovative solutions to problems
- Evaluate and recommend improvements related to problem solving process

Project Management

- Develop project scope and goals
- Identify stakeholders and decision-makers
- Obtain tools and resources to accomplish the project
- Identify and prioritize tasks related to goal accomplishment
- Use milestones and benchmarks to monitor progress and accomplishments
- Accomplish tasks according to identified timelines
- Communicate in a timely manner with other project members
- Be flexible to meet goals and objectives of the project
- Develop project reports
- Develop contingency plans
- Determine timelines, tasks, and available resources for project completion
- Negotiate timelines, conditions, and resources when necessary
- Identify and use team member strengths to accomplish the goal
- Monitor and evaluate project effectiveness: processes, procedures, and production
- Make recommendations to improve the project plan

Responsibility

- List employer expectations of workers
- Recognize the impact of own behavior
- Accept responsibility for own actions
- Make improvements in behavior based on feedback from others
- Produce work that meets standards and expectations of organization
- Respect and cooperate with others
- Use language and behaviors that are sensitive to others
- Demonstrate punctuality and regular attendance
- Actively seek opportunities for attitude and behavior self-improvement
- Continuously evaluate own behavior
- Modify or change behavior based on personal assessment
- Produce work that exceeds standards and expectations of organization
- Recognize the need for help and seek assistance from others
- Actively help others

- Balance work load and personal needs
- Support organizational goals
- Challenge unfair or unethical situations
- Challenge past and future discrimination

Self-Learning

- Identify gap between existing knowledge and skills versus necessary knowledge and skills
- Research options for additional knowledge and skill (library, colleagues, Internet, training seminars, education etc.)
- Use resources available for increasing knowledge and skills
- Learn from mistakes
- Learn from others
- Willingly participate in formal and informal training opportunities
- Access and use the knowledge, skills and abilities of others to increase own knowledge skills and abilities
- Actively share personal knowledge and skills with others
- Evaluate the learning process and resources based on desired learning outcome

Task Management

- Develop task list or “to do lists” related to assigned tasks
- Prioritize tasks
- Create an estimation of time needed for completion of each task
- Negotiate time and resources as needed to accomplish tasks
- Create a work schedule that will facilitate completion of task while considering personal work style
- Successfully complete tasks in a timely manner
- Consider the impact of personal task list and completion on the team and the project
- Report problems in a timely manner
- Anticipate change in work load
- Accommodate changes in work load
- Evaluate own work schedule and process to determine effectiveness
- Make modifications and changes based on personal evaluation of effectiveness
- Work on and monitor several tasks at one time (multi-tasking)
- Recognize the contribution of own work on others and the project
- Delegate responsibility when appropriate

Teaming

- Describe various team roles
- Contribute toward the accomplishment of the team goal
- Adjust own style while working with others
- Take risks within the team
- Congratulate self and others upon completion of tasks or goals
- Share personal knowledge and skills with others
- Communicate with other team members in a timely manner
- Participate in the resolution of conflict that arises within the team

Sample Activities

- Consider input from others when working on team projects
- Negotiate solutions to accommodate multiple needs
- Actively seek input from all members of the team, even those with different perspectives
- Acknowledge the contribution of all team members
- Anticipate and meet team needs
- Recognize the needs of the team over personal needs
- Constructively resolve conflict which emerges in the team
- Evaluate team effectiveness
- Make recommendations for team work improvement

Technical Writing

- Document an existing design or process in a manner that can be understood by the user
- Edit documentation for clarity and correct grammar
- Document a mental or visual design or process in a manner that can be understood by the user
- Create documents that are clear and concise
- Evaluate documentation against user needs
- Evaluate written documentation produced by others

Visualization

- Using incomplete information, create a complete visual prototype
- Ask questions that anticipate outcomes
- Explain, orally or in writing, the connection between a given idea and concept
- Transfer the mental prototype to a user appropriate format

Activity 3 - User Training

Scenario:

Teach high-end users to enter and run simple SQL queries. Be sure to identify the skills or commands that should have been mastered previous to taking your “class”. You are to teach only one SQL command; however, your query may contain commands “previously mastered”.

Assignment:

- Develop a Tell-Show-Do-Feedback model to teach a group of users.
- Divide into teams of three and take turns testing out each of your models.
- Evaluate each of your “trainers”.
- Hand in
 1. A copy of your original Tell-Show-Do-Feedback model.
 2. Evaluation forms from “trained users”.
 3. A modified copy of your Tell-Show-Do-Feedback model based on feedback from your “students”.

Primary Program Outcomes Addressed by Activity:

Effective Communication

- Demonstrate listening by paraphrasing others in a conversation
- Ask questions to gain clarification
- Use language that facilitates mutual understanding
- Use correct grammar and punctuation
- Send messages (orally and in writing) that are clear and concise
- Summarize messages received (orally and in writing)
- Recognize cultural differences that impact communication
- Give and receive feedback
- Accurately record information received from others
- Slow personal assumptions that may create communication conflict
- Predict the impact of messages sent (orally and in writing)
- Identify missing information and probe to gain further information, understanding and clarity
- Minimize cultural conflict when communicating
- Address and resolve conflict when it occurs
- Actively listen to others by paraphrasing and using body language that promotes interaction
- Identify underlying meaning of what is said or written
- Prepare and deliver oral and written presentations that appeal to various audiences
- Use information received from another to plan and prepare necessary work

Information Competency

- Identify missing information
- Recognize information patterns
- Formulate questions to determine the need for information

Sample Activities

- Use appropriate search language and nomenclature to find necessary information
- Evaluate information to determine useful components
- Eliminate information redundancy
- Determine information that is timely, accurate and useable
- Recognize when there is sufficient information to resolve an issue or problem
- Use patterns to organize information

Presentation Software

- Create, reopen, save, rename, and exit a presentation
- Get and use on-line help files
- Enter text, numbers, objects, sound, and pictures
- Edit documents by adding, deleting, and changing information or objects
- Use spell-checker, grammar-checker, thesaurus
- Format words, paragraphs, columns, or pages
- Use bullets, and numbering
- Use headers and footers
- Print outlines, slides, or notes
- Run a presentation
- Design a presentation into a user-appropriate format
- Import, convert, and export information
- Embed or link with other documents
- Use drawing and animation capabilities
- Time a presentation

Programming

- Develop single table queries
- Group data
- Update data
- Create custom modules to solve common business problems
- Nest queries
- Create multiple table queries by joining tables
- Create custom views of the data

Responsibility

- List employer expectations of workers
- Define one's role in relation to others and an organization
- Recognize the impact of own behavior
- Accept responsibility for own actions
- Make improvements in behavior based on feedback from others
- Produce work that meets standards and expectations of organization
- Respect and cooperate with others
- Use language and behaviors that are sensitive to others
- Demonstrate punctuality and regular attendance
- Actively seek opportunities for attitude and behavior self-improvement
- Continuously evaluate own behavior
- Modify or change behavior based on personal assessment

- Produce work that exceeds standards and expectations of organization
- Recognize the need for help and seek assistance from others
- Actively help others
- Balance work load and personal needs
- Support organizational goals
- Challenge past and future discrimination

Task Management

- Develop task list or “to do lists” related to assigned tasks
- Prioritize tasks
- Create an estimation of time needed for completion of each task
- Negotiate time and resources as needed to accomplish tasks
- Create a work schedule that will facilitate completion of task while considering personal work style
- Successfully complete tasks in a timely manner
- Consider the impact of personal task list and completion on the team and the project
- Report problems in a timely manner
- Anticipate change in work load
- Accommodate changes in work load
- Evaluate own work schedule and process to determine effectiveness
- Make modifications and changes based on personal evaluation of effectiveness
- Work on and monitor several tasks at one time (multi-tasking)
- Recognize the contribution of own work on others and the project

Technical Writing

- Document an existing design or process in a manner that can be understood by the user
- Use spell-checker, grammar-checker, thesaurus or other tools to assist with writing
- Edit documentation for clarity and correct grammar
- Document a mental or visual design or process in a manner that can be understood by the user
- Create documents that are clear and concise
- Evaluate documentation against user needs
- Evaluate written documentation produced by others
- Create detailed supportive documentation

Training/Teaching Others

- Identify learning styles of others
- Match training plan to the needs of the trainee
- Present skill training to others one-on-one or in small groups
- Provide constructive and specific feedback to each trainee regarding his/her skill development
- Use a variety of presentation software and tools to train and inform others
- Incorporate multiple learning styles in training
- Anticipate needs of the trainee beyond identified training outcomes
- Adapt teaching style to best meet trainee needs
- Present training to others one-on-one and in small and large groups

Sample Activities

- Present and train complex knowledge and skills
- Recognize cultural aspects of learning
- Actively seek feedback from trainee(s) to improve one's own training skill

Word Processing

- Create, reopen, save, rename, print, and exit a document
- Get and use on-line help files
- Enter text, numbers, objects, and pictures
- Edit documents by cutting, copying, inserting, deleting, and pasting words, paragraphs, or pages
- Format words, paragraphs, columns, or pages
- Print previews, selections, pages, or the document
- Use spell-checker, grammar-checker, thesaurus
- Use bullets, and numbering
- Translate technical information into user-appropriate word processing format
- Import, convert, and export information
- Link with other documents

Activity 4 - Develop a Simple Database

Scenario:

A six-month medical study will be starting on 600 patients using a new blood pressure drug versus a placebo. Statistical reports will be requested weekly comparing the daily blood pressure of patients using the drug to patients using the placebo with breakdowns by sex, initial weight (overweight, underweight, and within appropriate height/weight/bone structure ratios), age, average weekly blood pressure, weekly percent change, and cumulative change. For confidentiality, patient's identity must be kept separate from their identifying patient number.

Assignment:

- With a partner, create the database using Microsoft ACCESS
- Populate and test with a minimum of 30 patients (15 taking the drug, 15 taking the placebo)
- Hand in
 1. Cover sheet with team names and a table of contents.
 2. A drawing of the data model, field specification forms, and business rule forms.
 3. Printouts of tables, queries, table relationships, input forms, and the requested reports from Microsoft Access.
 4. A virus-free diskette with the working database.

Primary Program Outcomes Addressed by Activity:

Business Knowledge

- Discuss business data/information requirements
- Practice business ethics and responsibility
- Recognize resource and budgetary constraints
- Incorporate the business short range and long range goals, and strategic plans
- Evaluate business data/information requirements
- Discuss business practices and procedures
- Examine the organization and structure of businesses

Computer Information Systems

- Open, create, save, and print documents using a variety of application software packages
- Demonstrate basic computer hardware skills such as use of a mouse, keyboard, and printer
- Examine computer information systems in businesses
- Correctly use terminology associated with computer hardware, software, and the database field
- Differentiate between application software and operating systems
- Save and retrieve files from diskettes and hard drives
- Recognize and clean viruses
- Demonstrate computer ethics

Data Management

- Check data/information for accuracy and consistency
- Backup, archive, and restore data
- Analyze data/information for accuracy and consistency
- Integrate multiple items of data

Data Modeling

- Gather, analyze, and communicate the requirements
- Create and refine conceptual data model
- Validate conceptual data model with clients
- Integrate conceptual model with enterprise model
- Define high level business rules
- Reconcile conceptual model with appropriate level process model
- Identify and define entities, attributes, and relationships
- Identify unique identifiers
- Normalize the data model
- Reconcile the logical data model with the lower level process model
- Use case tools to model data
- Model business and scientific problems
- Reconcile the logical data model with the lower level process model
- Integrate the logical data model with enterprise model
- Reconcile conceptual model with appropriate level process model

Data Security

- Identify database security procedures and implementation plans
- Gather and document security requirements
- Identify risks
- Identify user's access requirements
- Differentiate methods of security
- Identify and understand customer's need for security
- Understand security system tools available
- Identify potential security conflicts
- Implement appropriate methods of security

Database Analysis and Design

- Gather, analyze, and communicate the design requirements
- Create, refine and validate conceptual data model
- Identify and define entities, attributes and relationships
- Identify unique identifiers
- Normalize/de-normalize the data model
- Solidify/identify physical database characteristics and define validation rules
- Design distributed model
- Create database objects
- Use test data to populate the database
- Support test data conversion and validation
- Develop custom user interfaces for databases

- Develop effective queries, forms and reports
- Implement an index
- Implement database constraints
- Implement data access requirements
- Populate the database using converted data
- Reconcile the logical data model with the lower level process models
- Reconcile conceptual model with appropriate level process model
- Reconcile the physical design with the processing requirements
- Define and implement business rules
- Create and maintain user data views
- Test the integrity of the database design

Effective Communication

- Demonstrate listening by paraphrasing others in a conversation
- Ask questions to gain clarification
- Use language that facilitates mutual understanding
- Use correct grammar and punctuation
- Send messages (orally and in writing) that are clear and concise
- Summarize messages received (orally and in writing)
- Recognize cultural differences that impact communication
- Give and receive feedback
- Accurately record information received from others
- Slow personal assumptions that may create communication conflict
- Predict the impact of messages sent (orally and in writing)
- Identify missing information and probe to gain further information, understanding and clarity
- Minimize cultural conflict when communicating
- Address and resolve conflict when it occurs
- Actively listen to others by paraphrasing and using body language that promotes interaction
- Identify underlying meaning of what is said or written
- Prepare and deliver oral and written presentations that appeal to various audiences
- Use information received from another to plan and prepare necessary work

Information Competency

- Identify missing information
- Recognize information patterns
- Formulate questions to determine the need for information
- Use appropriate search language and nomenclature to find necessary information
- Identify potential sources of information
- Access sources that will provide necessary information
- Evaluate information to determine useful components
- Integrate new information with existing information
- Eliminate information redundancy
- Determine information that is timely, accurate and useable
- Recognize when there is sufficient information to resolve an issue or problem

Sample Activities

- Create information subsets or sub-components
- Use information that does not violate copyright or intellectual property rights
- Identify issues of bias in information
- Recognize the context and implications of information
- Use patterns to organize information
- Evaluate bias related to information

Logic

- Test validity of arguments
- Use deductive reasoning in solving problems
- Use set theory to visually represent the relationship between parts/whole, sets/subsets
- Use logic to draw conclusions from available information
- Think logically and organize information
- Understand the relationship between multiple pieces of information
- Examine data for relevance and accuracy
- Recognize conflicting specifications
- Synthesize information
- Analyze relationship between parts/whole, sets/subsets

Problem Solving

- Accurately identify a problem in a timely manner
- Select best method and tools to resolve problem
- Consider input from others during the problem solving process
- Ask critical questions to further define the parameters of the problem
- Recognize conditions, risk and criteria for successful resolution of problems
- Evaluate solution to ensure risk reduction
- Implement solution(s) in a timely manner
- Communicate with users, co-workers and others throughout the problem solving process
- Recognize bias that impacts decision-making
- Assess effectiveness of selected solution(s)
- Make modifications in solution as necessary
- Predict problem situations and be proactive in minimizing problems
- Identify creative and innovative solutions to problems
- Evaluate and recommend improvements for recurring problems
- Actively seek input from stakeholders
- Evaluate and recommend improvements related to problem solving process

Programming

- Build multiple tables to the users specifications
- Define the data fields to be used in the tables
- Develop single table queries
- Sort data in tables
- Use built in math functions
- Group data
- Update data
- Format reports

- Create custom modules to solve common business problems
- Create custom user interfaces to enter and access data
- Write error-handlers
- Nest queries
- Create multiple table queries by joining tables
- Create custom views of the data
- Implement error-handling at the database level

Project Management

- Develop project scope and goals
- Identify stakeholders and decision-makers
- Obtain tools and resources to accomplish the project
- Identify and prioritize tasks related to goal accomplishment
- Develop a project flow chart
- Use milestones and benchmarks to monitor progress and accomplishments
- Accomplish tasks according to identified timelines
- Identify and evaluate risks
- Positively manage change
- Communicate in a timely manner with other project members
- Be flexible to meet goals and objectives of the project
- Access and secure resources and tools
- Develop milestones and benchmarks
- Identify interdependencies
- Develop contingency plans
- Determine timelines, tasks, and available resources for project completion
- Develop a system or process to monitor the project
- Negotiate timelines, conditions, and resources when necessary
- Identify and use team member strengths to accomplish the goal
- Monitor and evaluate project effectiveness: processes, procedures, and production
- Make recommendations to improve the project plan

Responsibility

- List employer expectations of workers
- Define one's role in relation to others and an organization
- Recognize the impact of own behavior
- Accept responsibility for own actions
- Make improvements in behavior based on feedback from others
- Produce work that meets standards and expectations of organization
- Respect and cooperate with others
- Use language and behaviors that are sensitive to others
- Identify and adhere to laws pertaining to information access and use
- Adhere to the ethics related to industry and business standards
- Demonstrate punctuality and regular attendance
- Actively seek opportunities for attitude and behavior self-improvement
- Continuously evaluate own behavior
- Modify or change behavior based on personal assessment

Sample Activities

- Produce work that exceeds standards and expectations of organization
- Recognize the need for help and seek assistance from others
- Actively help others
- Balance work load and personal needs
- Support organizational goals
- Challenge unfair or unethical situations
- Challenge past and future discrimination

Self-Learning

- Identify gap between existing knowledge and skills versus necessary knowledge and skills
- Research options for additional knowledge and skill (library, colleagues, Internet, training seminars, education etc.)
- Use resources available for increasing knowledge and skills
- Learn from mistakes
- Learn from others
- Willingly participate in formal and informal training opportunities
- Predict the need for increased knowledge and skills
- Develop a personal education and training plan to increase knowledge and skills
- Actively seek out new knowledge and skills
- Access and use the knowledge, skills and abilities of others to increase own knowledge skills and abilities
- Actively share personal knowledge and skills with others
- Evaluate the learning process and resources based on desired learning outcome

Statistics

- Apply central tendency such as mean and mode
- Apply dispersion such as variance and standard deviation
- Apply sampling methods and distributions
- Apply hypothesis testing
- Forecast future events based on current and historical data
- Test for reasonableness of numbers
- Create appropriate graphs and charts
- Determine and compute the appropriate confidence level
- Decide when enough data is available
- Examine data for relevance, accuracy, and consistency
- Analyze the relationship between multiple pieces of information
- Synthesize information
- Determine the correct statistical method to use

Task Management

- Develop task list or “to do lists” related to assigned tasks
- Prioritize tasks
- Create an estimation of time needed for completion of each task
- Negotiate time and resources as needed to accomplish tasks
- Create a work schedule that will facilitate completion of task while considering personal work style
- Successfully complete tasks in a timely manner
- Consider the impact of personal task list and completion on the team and the project
- Report problems in a timely manner
- Generate and maintain task status reports
- Anticipate change in work load
- Accommodate changes in work load
- Evaluate own work schedule and process to determine effectiveness
- Make modifications and changes based on personal evaluation of effectiveness
- Work on and monitor several tasks at one time (multi-tasking)
- Recognize the contribution of own work on others and the project

Teaming

- Describe various team roles
- Contribute toward the accomplishment of the team goal
- Adjust own style while working with others
- Take risks within the team
- Congratulate self and others upon completion of tasks or goals
- Share personal knowledge and skills with others
- Communicate with other team members in a timely manner
- Participate in the resolution of conflict that arises within the team
- Consider input from others when working on team projects
- Negotiate solutions to accommodate multiple needs
- Actively seek input from all members of the team, even those with different perspectives
- Acknowledge the contribution of all team members
- Anticipate and meet team needs
- Recognize the needs of the team over personal needs
- Constructively resolve conflict which emerges in the team
- Evaluate team effectiveness
- Make recommendations for team work improvement

Technical Writing

- Document an existing design or process in a manner that can be understood by the user
- Use spell-checker, grammar-checker, thesaurus or other tools to assist with writing
- Edit documentation for clarity and correct grammar
- Create documents that are clear and concise
- Evaluate documentation against user needs
- Evaluate written documentation produced by others

Visualization

- Using incomplete information, create a complete visual prototype
- Ask questions that anticipate outcomes
- Explain, orally or in writing, the connection between a given idea and concept
- Given continuously changing information, mentally modify and recreate a prototype to meet user needs
- Transfer the mental prototype to a user appropriate format

Activity 5 - Needs Assessment and Computer System Design

Scenario:

The owner of three small retail clothing stores in neighboring towns needs to upgrade his computer system and software. The owner is currently keeping books at each store using DOS-based Peachtree software on three separate 486 PC's. The stores are currently grossing \$720,000 to \$1,200,000 per year, per store with expected growth of 3 to 6 percent per year. They are processing between 20,000 and 40,000 transactions per year per store. The owner would like to network the stores and look at upgrading or replacing the software to track cash flow, inventory, and financial information.

Assignment:

- Divide into teams.
- Develop a portfolio for your “client” analyzing and making recommendations on the best software, hardware, and network. Give the client price options on the low, medium, and high ends.
- Present your results to the client (the class) in a user-appropriate format.

Primary Program Outcomes Addressed by Activity:

Accounting

- Define accounting terms and vocabulary
- Create a financial forecast or a project budget
- Perform cost benefit analysis for management decisions

Business Knowledge

- Use business terminology
- Discuss business data/information requirements
- Develop short range and long range goals, and strategic plans
- Practice business ethics and responsibility
- Recognize resource and budgetary constraints
- Incorporate the business short range and long range goals, and strategic plans
- Evaluate user applications
- Examine potential impact on whole system
- Evaluate business data/information requirements
- Discuss business practices and procedures

Computer Information Systems

- Identify terminology associated with computer hardware, software, and the database field
- Open, create, save, and print documents using a variety of application software packages
- Demonstrate basic computer hardware skills such as use of a mouse, keyboard, and printer
- Examine computer information systems in businesses
- Describe a computer system to include input, output, processing, and storage
- Correctly use terminology associated with computer hardware, software, and the database field

Sample Activities

- Differentiate between application software and operating systems
- Save and retrieve files from diskettes and hard drives
- Recognize and clean viruses
- Demonstrate computer ethics
- Use the Internet to include basic searches and e-mail
- Discuss communicating information using multimedia

Customer Relations

- Recognize missing information from customer interview
- Recommend processes or products that will be proactive in minimizing or alleviating future problems

Database Analysis and Design

- Gather, analyze, and communicate the design requirements
- Determine target environment/platform
- Consider response time and system capacity needs

Effective Communication

- Demonstrate listening by paraphrasing others in a conversation
- Ask questions to gain clarification
- Use language that facilitates mutual understanding
- Use correct grammar and punctuation
- Send messages (orally and in writing) that are clear and concise
- Summarize messages received (orally and in writing)
- Recognize cultural differences that impact communication
- Give and receive feedback
- Accurately record information received from others
- Slow personal assumptions that may create communication conflict
- Predict the impact of messages sent (orally and in writing)
- Identify missing information and probe to gain further information, understanding and clarity
- Minimize cultural conflict when communicating
- Address and resolve conflict when it occurs
- Actively listen to others by paraphrasing and using body language that promotes interaction
- Identify underlying meaning of what is said or written
- Prepare and deliver oral and written presentations that appeal to various audiences
- Use information received from another to plan and prepare necessary work

Hardware

- Use hardware terminology to include input, output, processing, and storage devices
- Recognize how various hardware is used
- Evaluate and choose hardware based on its strengths and limitations

Information Competency

- Identify missing information
- Recognize information patterns
- Formulate questions to determine the need for information
- Use appropriate search language and nomenclature to find necessary information
- Identify potential sources of information
- Access sources that will provide necessary information
- Evaluate information to determine useful components
- Integrate new information with existing information
- Eliminate information redundancy
- Determine information that is timely, accurate and useable
- Recognize when there is sufficient information to resolve an issue or problem
- Create information subsets or sub-components
- Use information that does not violate copyright or intellectual property rights
- Identify issues of bias in information
- Recognize the context and implications of information
- Use patterns to organize information
- Evaluate bias related to information

Logic

- Test validity of arguments
- Use deductive reasoning in solving problems
- Use set theory to visually represent the relationship between parts/whole, sets/subsets
- Use truth tables in solving problems or to visually represent the relationship between parts/whole, sets/subsets
- Apply Boolean logic to determine the relationship between sets such as numbers, ideas, or objects
- Use logic to draw conclusions from available information
- Think logically and organize information
- Understand the relationship between multiple pieces of information
- Examine data for relevance and accuracy
- Recognize conflicting specifications
- Synthesize information
- Analyze relationship between parts/whole, sets/subsets

Networks

- Develop a database application that uses a LAN based database connection
- Develop a web based application that uses an Intranet based database connection
- Use the proper protocol for use with different types of connectivity
- Develop a web based application that uses an Internet based database connection

Operating Systems

- Analyze various operating systems, noting their strengths and limitations with regards to I/O, processing, and memory
- Define the establishment of the network within the operating system and the management of I/O

- Explain the operating system support of applications
- Explain the configuration parameters of an operating system that effect a database (i.e. client, protocols)
- Plan and manage physical resource requirements
- Analyze limitations of specific operating systems

Presentation Software

- Create, reopen, save, rename, and exit a presentation
- Get and use on-line help files
- Enter text, numbers, objects, sound, and pictures
- Edit documents by adding, deleting, and changing information or objects
- Use spell-checker, grammar-checker, thesaurus
- Format words, paragraphs, columns, or pages
- Use bullets, and numbering
- Use headers and footers
- Print outlines, slides, or notes
- Run a presentation
- Design a presentation into a user-appropriate format
- Import, convert, and export information
- Embed or link with other documents
- Use drawing and animation capabilities
- Time a presentation

Problem Solving

- Accurately identify a problem in a timely manner
- Select best method and tools to resolve problem
- Consider input from others during the problem solving process
- Ask critical questions to further define the parameters of the problem
- Recognize conditions, risk and criteria for successful resolution of problems
- Evaluate solution to ensure risk reduction
- Implement solution(s) in a timely manner
- Communicate with users, co-workers and others throughout the problem solving process
- Recognize bias that impacts decision-making
- Assess effectiveness of selected solution(s)
- Make modifications in solution as necessary
- Predict problem situations and be proactive in minimizing problems
- Identify creative and innovative solutions to problems
- Evaluate and recommend improvements for recurring problems
- Actively seek input from stakeholders
- Evaluate and recommend improvements related to problem solving process

Project Management

- Develop project scope and goals
- Identify stakeholders and decision-makers
- Obtain tools and resources to accomplish the project
- Identify and prioritize tasks related to goal accomplishment

- Develop a project flow chart
- Use milestones and benchmarks to monitor progress and accomplishments
- Accomplish tasks according to identified timelines
- Identify and evaluate risks
- Positively manage change
- Communicate in a timely manner with other project members
- Be flexible to meet goals and objectives of the project
- Develop project reports
- Analyze cost and benefit of resources, tools, and methods
- Access and secure resources and tools
- Develop milestones and benchmarks
- Identify interdependencies
- Develop contingency plans
- Determine timelines, tasks, and available resources for project completion
- Develop a system or process to monitor the project
- Negotiate timelines, conditions, and resources when necessary
- Develop and use a budget to accomplish the project goal
- Identify and use team member strengths to accomplish the goal
- Monitor and evaluate project effectiveness: processes, procedures, and production
- Make recommendations to improve the project plan

Responsibility

- List employer expectations of workers
- Define one's role in relation to others and an organization
- Recognize the impact of own behavior
- Accept responsibility for own actions
- Make improvements in behavior based on feedback from others
- Produce work that meets standards and expectations of organization
- Respect and cooperate with others
- Use language and behaviors that are sensitive to others
- Identify and adhere to laws pertaining to information access and use
- Adhere to the ethics related to industry and business standards
- Demonstrate punctuality and regular attendance
- Actively seek opportunities for attitude and behavior self-improvement
- Continuously evaluate own behavior
- Modify or change behavior based on personal assessment
- Produce work that exceeds standards and expectations of organization
- Recognize the need for help and seek assistance from others
- Actively help others
- Balance work load and personal needs
- Support organizational goals
- Challenge unfair or unethical situations
- Challenge past and future discrimination

Self-Learning

- Identify gap between existing knowledge and skills versus necessary knowledge and skills
- Research options for additional knowledge and skill (library, colleagues, Internet, training seminars, education etc.)
- Use resources available for increasing knowledge and skills
- Learn from mistakes
- Learn from others
- Predict the need for increased knowledge and skills
- Actively seek out new knowledge and skills
- Access and use the knowledge, skills and abilities of others to increase own knowledge skills and abilities
- Actively share personal knowledge and skills with others
- Evaluate the learning process and resources based on desired learning outcome

Spreadsheets

- Create, reopen, save, rename, print, and exit a workbook
- Get and use on-line help files
- Enter text, data, and formulas into cells
- Edit worksheets by adding, deleting, and changing cells
- Edit worksheets by inserting, and deleting rows, columns, and worksheets
- Edit worksheets by cutting, copying, and pasting cells, rows, columns, ranges, and worksheets
- Format cells, rows, columns, and workbooks
- Create, modify, and format tables, charts, and graphs
- Print previews, ranges, sheets, cell contents, and the workbook
- Present mathematical, accounting, logical, and statistical problems using spreadsheet capabilities
- Translate technical information into user-appropriate spreadsheet formats
- Solve mathematical, accounting, logical, and statistical problems using spreadsheet capabilities
- Sort and filter data
- Pivot tables
- Perform goal-seeking and what-if-analysis
- Import, convert, and export data from one application to another
- Link with other documents

Task Management

- Develop task list or “to do lists” related to assigned tasks
- Prioritize tasks
- Create an estimation of time needed for completion of each task
- Negotiate time and resources as needed to accomplish tasks
- Create a work schedule that will facilitate completion of task while considering personal work style
- Successfully complete tasks in a timely manner
- Consider the impact of personal task list and completion on the team and the project

- Report problems in a timely manner
- Generate and maintain task status reports
- Anticipate change in work load
- Accommodate changes in work load
- Evaluate own work schedule and process to determine effectiveness
- Make modifications and changes based on personal evaluation of effectiveness
- Work on and monitor several tasks at one time (multi-tasking)
- Recognize the contribution of own work on others and the project
- Delegate responsibility when appropriate

Teaming

- Describe various team roles
- Contribute toward the accomplishment of the team goal
- Adjust own style while working with others
- Take risks within the team
- Congratulate self and others upon completion of tasks or goals
- Share personal knowledge and skills with others
- Communicate with other team members in a timely manner
- Participate in the resolution of conflict that arises within the team
- Consider input from others when working on team projects
- Negotiate solutions to accommodate multiple needs
- Actively seek input from all members of the team, even those with different perspectives
- Acknowledge the contribution of all team members
- Anticipate and meets team needs
- Recognize the needs of the team over personal needs
- Constructively resolve conflict which emerges in the team
- Evaluate team effectiveness
- Make recommendations for team work improvement

Technical Writing

- Document an existing design or process in a manner that can be understood by the user
- Use spell-checker, grammar-checker, thesaurus or other tools to assist with writing
- Edit documentation for clarity and correct grammar
- Document a mental or visual design or process in a manner to be understood by the user
- Create documents that are clear and concise
- Evaluate documentation against user needs
- Evaluate written documentation produced by others
- Create detailed supportive documentation

Visualization

- Using incomplete information, create a complete visual prototype
- Ask questions that anticipate outcomes
- Explain, orally or in writing, the connection between a given idea and concept
- Given continuously changing information, mentally modify and recreate a prototype to meet user needs
- Transfer the mental prototype to a user appropriate format

Word Processing

- Create, reopen, save, rename, print, and exit a document
- Get and use on-line help files
- Enter text, numbers, objects, and pictures
- Edit documents by cutting, copying, inserting, deleting, & pasting words, paragraphs, or pages
- Format words, paragraphs, columns, or pages
- Print previews, selections, pages, or the document
- Use spell-checker, grammar-checker, thesaurus
- Use bullets, and numbering
- Use headers and footers
- Translate technical information into user-appropriate word processing format
- Create outlines
- Create, modify, and format tables, graphs, and charts
- Use drawing and forms capabilities
- Import, convert, and export information
- Link with other documents

CURRICULUM MAP

The Curriculum Map distributes the program competencies into specific courses.

Accounting - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Utilize budgetary techniques to prepare forecasts and track progress • Understand the importance of applying generally accepted accounting principles to the recording of financial information • Recognize the need for various security and internal controls, and select appropriate controls for various situations • Create an accounting information system to meet user needs for internal and external reporting 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Describe the accounting documentation required for department, corporate, and regulatory agencies • Demonstrate the flow of data through an accounting system • Produce a set of pro forma statements for forecasting and budgetary purposes and perform variance analysis • Create and use financial information • Identify various security and internal controls 	<p>Course Map</p> <ul style="list-style-type: none"> • ACCT101 – Accounting for Mid-Managers • CIS280 – Systems Analysis and Design

Business Knowledge - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> Based on an understanding of basic business principles, create and support information systems to meet user needs 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> Examine basic business objectives Compare and contrast business entities and their relationships Evaluate business data requirements Identify user applications Analyze potential impact on whole system Describe industry standards and constraints Utilize business decision processes 	<p>Course Map</p> <ul style="list-style-type: none"> BUS101 – Business and Society ACCT101 - Accounting for Mid-Managers CIS121 – Intro to Computer Information Systems BUS240 – Human Relations in the Workplace CIS263 – Advanced Database Management & Applications CIS290 – Supervised Internship

Computer Information Systems - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Discuss the impact of the computer upon business • Demonstrate basic computer usage skills 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Use terminology associated with the computer field • Compare and contrast different computer occupations • Explain a computer system • Demonstrate basic computer usage skills • Differentiate between data and information • Demonstrate computer ethics • Discuss the history, current events, and future of the computer field. 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Computer Information Systems • CIS130 – Microcomputer Applications • CIS134 - Operating Systems • CIS150 – Microcomputer Installation and Troubleshooting • CIS266 – Local Area Networks • CIS290 – Supervised Internship <p>Computer information systems will be addressed in all computer courses at Pierce College.</p>

Data Management - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Validate and manage data 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Manage data • Validate data 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Computer Information Systems • CIS122 – Structured Program Design • CIS285 – Windows Programming Using Visual Basic • CIS260 - Data Management & Applications • CIS263 – Advanced Database Management & Applications • CIS261 – SQL

Data Modeling - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Transfer customer requirements into data model and process model • Model data with and without case tool software • Model business and scientific problems 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Identify the business rules to be included in the process model • Develop a logical database model • Refine the logical database model, and transform it into a physical database model to include normalization 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS260 – Data Management & Applications • CIS263 – Advanced Database Management & Applications • CIS262 – Oracle Database

Data Security - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Demonstrate an understanding of ethics and security issues surrounding data and databases • Create a security plan 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Identify access requirements • Identify and evaluate risks 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Computer Information Systems • CIS260 – Data Management & Applications • CIS263 – Advanced Database Management & Applications • CIS262 – Oracle Database

Database Administration - <i>Technical Learning Component</i>		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Examine database administration policies • Develop procedures and standards to support the policies for database administration • Explain methods and issues in establishing a database server • Explain an effective database enterprise integration 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Discuss information requirements within an entity and the establishment of policies for database administration • Describe the methods to establish procedures and standards to support the policies for database administration • Explain methods and issues in establishing a database server • Explain an effective database enterprise integration 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS260 – Data Management & Applications • CIS263 – Advanced Database Management & Applications • CIS262 – Oracle Database

Database Analysis and Design - <i>Technical Learning Component</i>		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> Analyze, design and create relational databases 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> Design, develop, populate, and troubleshoot using current relational database management system software Normalize relationships in tables Develop custom user interfaces for databases Develop effective queries, forms and reports Test the integrity of the database design 	<p>Course Map</p> <ul style="list-style-type: none"> CIS121 – Intro to Computer Information Systems CIS260 – Data Management & Applications CIS263 – Advanced Database Management & Applications CIS262 – Oracle Database

Hardware - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Evaluate the impact on the database design of hardware limitations 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Evaluate the strengths and limitations of hardware 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Computer Information Systems • CIS150 – Microcomputer Installation and Troubleshooting

Networks - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Develop databases to run with different types of networks 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Identify the proper protocol to use for different types of connectivity • Connect a client to a database server on a LAN • Connect a client to a database server on the internet/intranet • Create both DSN and DSN-less connections to data sources 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Computer Information Systems • CIS230 – Network Operating Systems • CIS265 – Data Communications & Networks • CIS266 – Local Area Networks • CIS263 – Advanced Database Management & Applications

Operating Systems - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Compare and contrast operating systems such as Win 98, NT, or Unix • Demonstrate basic skills in effectively utilizing operating systems 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Examine the strengths and limitations of various operating systems with regard to I/O, processing, and memory • Analyze operating systems management • Examine networking within the operating system • Examine the operating system support of applications • Integrate a database with the operating system • Configure a network client 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Computer Information Systems • CIS134 – Microcomputer Operating Systems • CIS230 – Network Operating Systems • CIS263 – Advanced Database Management & Applications • CIS280- Systems Analysis and Design

Presentation Software - <i>Technical Learning Component</i>		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Design, create, modify, and present information using presentation software 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Create a presentation to effectively communicate with the user • Give the presentation utilizing slides, handouts, and speaker's notes 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Computer Information Systems • CIS130 – Microcomputer Applications • SPCH110 – Public Speaking (A new course is being developed)

Programming - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Use a programming language such as SQL to create, modify, and query databases • Use a programming language such as Visual Basic to complete distributed client application 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Use a programming language such as SQL to define a database • Use a programming language such as SQL to query and create views of a database • Use a programming language such as SQL to update a database • Embed a programming language such as SQL into another program language • Use a programming language such as SQL for report formatting • Use a programming language such as Visual Basic to create custom modules • Use a programming language such as Visual Basic to create custom user interfaces 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Microcomputer Applications • CIS122 – Structured Program Design • CIS285 – Windows Programming Using Visual Basic • CIS261 – SQL • CIS263 – Advanced Database Management & Applications

Spreadsheets - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Design and create spreadsheets to accurately summarize and document information 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Translate technical information into user-appropriate format • Design, build, and modify spreadsheets, charts, graphs, and macros for business applications 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Microcomputer Applications • CIS130 – Microcomputer Applications • CIS136 – Spreadsheet Applications <p>Spreadsheets will be used in project classes when appropriate.</p>

Statistics - Technical Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Use statistics to analyze and choose data to effectively model the database • Apply statistics in queries and reports in the databases 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Use basic statistical functions such as mean, mode, median, minimum, maximum, standard deviation, hypothesis Testing, and confidence level • Decide when enough data is available for data modeling • Apply statistics to test for reasonableness of numbers 	<p>Course Map</p> <ul style="list-style-type: none"> • BUS201 – Statistics • CIS130 – Microcomputer Applications • CIS136 – Spreadsheet Applications • CIS260 – Data Management & Applications • CIS263 – Advanced Database Management & Applications

Word Processing - <i>Technical Learning Component</i>		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Design and create technical documentation to accurately summarize and document information 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Translate technical information into user-appropriate format • Create, modify, and format word processing documents with embedded or linked charts, graphs, or tables for business applications 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS121 – Intro to Microcomputer Applications • CIS130 – Microcomputer Applications • Word processing will be used in project classes when appropriate.

Customer Relations - <i>Foundation Learning Component</i>		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Respond to customer needs in a timely manner 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Identify the role of the customer • Determine customer needs • Provide information to customer • Create user appropriate formats • Communicate in a manner that provides clear understanding between you and the customer 	<p>Course Map</p> <ul style="list-style-type: none"> • BUS240 – Human Relations in the Workplace • CIS260 – Database Management & Applications • CIS263 – Advanced Database Management & Applications (new) • CIS280 – Systems Analysis and Design • CIS262 – Oracle Database (new) • CIS290 – Supervised Internship

Effective Communication - <i>Foundation Learning Component</i>		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> Effectively communicate orally and in writing to customers, co-workers, subordinates and supervisors 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> Recognize the value of effective oral and written communication Recognize the impact of the message sent Effectively send a message to another orally and in writing Accurately receive a message from another orally and in writing Organize message into an understandable format Actively listen Give and receive feedback Recognize the need for additional information Ask questions to gain further information as needed Identify and use appropriate communication media based on the purpose, content, audience and situation Identify personal bias and communication patterns that negatively impact communication 	<p>Course Map</p> <ul style="list-style-type: none"> ENGL101 – Composition ENGL111 - Technical Writing SPCH110 – Fundamentals of Public Speaking CIS290 – Supervised Internship <p>Effective communication will be addressed in all courses at Pierce College.</p>

Information Competency - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Access and acquire useful information • Use information in ways that do not violate copyright 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Recognize the need for information • Develop and formulate vocabulary based on information needed • Identify and use information structures such as libraries, Internet, Intranet and community-based sources to access and acquire information • Identify issues related to intellectual property rights • Identify issues related to copyright • Organize information • Use information gathered • Recognize bias related to information 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS280 – Systems Analysis and Design • CIS263 - Advanced Database Management & Applications • CIS285 – Windows Programming Using Visual Basic <p>Information Competency will be addressed in all courses at Pierce College.</p>

Logic - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Use logic to draw conclusions from available information 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Determine the validity of arguments • Analyze relationships between parts/whole, sets/subsets by applying Boolean logic 	<p>Course Map</p> <ul style="list-style-type: none"> • PHIL120 – Intro to Logic • CIS260 – Database Management & Applications • BUS201 – Statistics • CIS261 – SQL

Problem Solving - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Question and evaluate situations • Recognize and evaluate assumptions and biases related to decision making • Effectively problem solve situations 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Accurately identify root components of a problem situation • Identify and evaluate conditions, risks, and criteria for successful resolution of problems • Review potential options for resolving problems based on conditions, risks and criteria for success • Identify and use resources available to assist in solving problems • Select solutions to problems that minimize risks and match criteria for success • Communicate the problem solving process and outcome to others • Evaluate results and make modifications as necessary • Recognize assumptions and biases that impact decision-making 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS122 – Structured Program Design • CIS285 – Windows Programming Using Visual Basic • CIS280 – Systems Analysis and Design • CIS263 – Advanced Database Management & Applications • CIS290 - Supervised Internship <p>Problem solving will be addressed in all courses at Pierce College.</p>

Project Management - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Identify basic phases of project management • Identify and recognize various methods and tools used to effectively manage a project • Effectively manage and coordinate a project with a team 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Define project scope and goals • Use the System Development Life Cycle as a foundation for project management • Identify requirements for each phase of project management • Effectively use tools, methods and resources • Establish milestones, benchmarks, and monitoring strategies • Identify criteria used to determine the effectiveness of a project • Establish and monitor budgets • Work effectively with team members to complete a project • Respond positively to change 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS280 – Systems Analysis and Design • CIS285 – Windows Programming Using Visual Basic • CIS263 – Advanced Database Management & Applications

Responsibility - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Examine the relationship between self, others and the organization • Evaluate potential impacts and consequences of actions • Make choices based on the examination and evaluation of impacts and consequences 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Identify employer expectations related to work behaviors and job performance • Recognize how experiences and values affect decisions and actions • Take responsibility for actions • Prioritize and act upon priorities • Make and follow-through with commitments • Identify and abide by ethics and laws pertaining to information access and use 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS290 – Supervised Internship <p>Responsibility will be addressed in all courses at Pierce College.</p>

Self- Learning - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> Gain personal knowledge, information, and skills to maintain currency in the field 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> Assess and identify the need for additional information and skill Identify and use own learning style Summarize and integrate new knowledge, information and skills Use new information to further skills 	<p>Course Map</p> <ul style="list-style-type: none"> CIS290 – Supervised Internship <p>Self-Learning will be addressed in all computer courses at Pierce College.</p>

Task Management - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> Organize and prioritize multiple tasks based on time and available resources 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> Break down projects and activities into a series of tasks Identify and use resources available for task completion Prioritize tasks Recognize various levels of complexity related to tasks Develop a personal schedule to accomplish tasks Monitor personal schedule Evaluate the impact of own work related to the work of others Evaluate the impact of own work related to the entire project 	<p>Course Map</p> <ul style="list-style-type: none"> CIS280 – Systems Analysis and Design CIS290 – Supervised Internship <p>Task management will be addressed in all computer courses at Pierce College.</p>

Teaming - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> Effectively work with team members (users, co-workers, associates, management and subordinates) to accomplish a goal 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> Recognize the roles and responsibilities of various people involved in a team Function in different roles within a team Attend to team activities Encourage and support team members Work collaboratively to accomplish team goals Accept responsibility for accomplishing team goals Effectively communicate with team members 	<p>Course Map</p> <ul style="list-style-type: none"> BUS240 – Human Relations in the Workplace CIS290 - Supervised Internship <p>Teaming will be addressed in all computer courses at Pierce College.</p>

Technical Writing - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Write documents that are clear, concise, accurate and grammatical 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Recognize principles of technical writing • Accurately translate thoughts and designs to written documentation • Write grammatically correct sentences and paragraphs to create a documentation of work • Edit written work 	<p>Course Map</p> <ul style="list-style-type: none"> • ENGL111 – Technical Writing <p>Technical writing will be addressed in all computer courses at Pierce College.</p>

Training/Teaching Others - <i>Foundation Learning Component</i>		
Learner Program Outcomes <ul style="list-style-type: none"> Effectively train others to use an information system 	Key Competencies <i>Demonstrate the ability to:</i> <ul style="list-style-type: none"> Recognize various adult learning styles Use multimedia to train and inform others Use a skill training model which incorporates multiple learning styles to train others Provide constructive feedback to those learning a new skill 	Course Map <ul style="list-style-type: none"> SPCH110 – Public Speaking (A new Speech class being developed to directly address these components.)

Visualization - Foundation Learning Component		
<p>Learner Program Outcomes</p> <ul style="list-style-type: none"> • Visualize new and existing concepts and designs 	<p>Key Competencies</p> <p><i>Demonstrate the ability to:</i></p> <ul style="list-style-type: none"> • Mentally design prototypes • Mentally anticipate problems • Link ideas and concepts • Use past experience and knowledge to predict future outcomes 	<p>Course Map</p> <ul style="list-style-type: none"> • CIS285 – Windows Programming Using Visual Basic • CIS263 – Advanced Database Management & Applications <p>Visualization will be addressed in all computer courses at Pierce College.</p>