ITT Technical Institute

IT331

Network Development Capstone Project

Onsite Course

SYLLABUS

Credit hours: 4

Contact/Instructional hours: 50 (30 Theory Hours, 20 Lab Hours)

Prerequisite(s) and/or Corequisite(s):

Prerequisites: Completion of a minimum of 80 credits earned in the program of study including IT260 Networking Application Services and Security or equivalent and IT320 WAN Technology and Application or equivalent

Course Description:

Network design and implementation project to be jointly agreed upon by the student and the faculty member. The project includes major process of product lifecycle such as data gathering and analysis, needs assessment, planning, designing, testing, implementation, documentation, etc., in addition to actually building a simulated network using existing equipment.

Syllabus: Network Development Capstone Project

Instructor:	_____
Office hours:	_____
Class hours:	_____

Major Instructional Areas

1. Basic principles of project management
2. Project development life cycle
3. Analyses of and response to a Request for Proposal (RFP) or a business case
4. Analyses of technologies available and selection of the appropriate technology for solving a problem
5. Project design, development, and implementation
6. Technical or business presentation of the solution
7. Team dynamics and refinement of presentation skills

Course Objectives

1. Apply important concepts of project management to the actual capstone project proposed for this course.
2. Use Microsoft Office Project to help plan and manage the actual capstone project.
3. Analyze the requirements for the capstone project.
4. Integrate and apply the knowledge acquired in the program to provide effective technological solutions for given problems.
5. Work in teams on a large-scope project.
6. Document solutions to a problem in detail by applying critical-thinking and problem-solving skills.
7. Present and defend a proposal in spoken, written, and panel formats in a professional manner.
8. Complete a comprehensive skills assessment for the program of study.

Course Outline

Unit	Activities

1—
Introduction to the Capstone Project
	• Define and understand project management terminology and apply the terminology to the capstone project.
	• Explore Microsoft Project.
	• Discuss the capstone project, Request for Proposal (RFP), and Project Charter to identify the following:
	  o Objectives and scope
	  o Requirements and specifications
	  o Resources, such as human, time, funds, space, and tools, required to deliver the product
	  o Tasks
	  o Deliverables
	  o Milestones
	• Set up teams and define the roles and responsibilities of each team member.
	• Vote to elect peers for roles in the capstone project.
	• Produce a framework for the project plan.
	• Using Microsoft Project, start configuring project phases, milestones, major deliverables, individual tasks, the final product, and timelines in the capstone project plan.
	• Identify research resources and the methodology.
	• Discuss problem-solving strategies.
	• Identify major milestones and individual tasks.
	• Deliver for review the preliminary project plan, which includes the project phases, milestones, major deliverables, individual tasks, final product, and timelines.
	• Gather hands-on skill validation lab equipment and discuss Web server and site setup procedures.
	• Understand and start preparing for the individual skills assessment.
	• Start research on project components by gathering data.
	
	Deliverables:
	• Submit Project Documentation Part I: Team meeting agenda

2— Planning the Project**:** Part I	• Continue using Microsoft Project to develop the capstone project plan. • Discuss problem-solving strategies. • Conduct individual team consultation sessions. • Deliver for review the second draft of the preliminary project plan, which includes the project phases, milestones, major deliverables, individual tasks, final product, and timelines. • Continue research on project components by gathering data. • Start Project Documentation Part II: o Create a scope document and a project charter.

Unit	Activities
	○ Create a system requirements document. ○ Create a conceptual design document.
3— Planning the Project—Part II	• Modify and finalize the project plan based on instructor feedback. • Discuss the project requirements. ○ Create a Gantt chart. • Review the research resources and methodology. • Analyze the data gathered up to now; identify the areas for further research. • Continue research on the project components. • Plan network setup procedures and timelines and assign individual roles and tasks based on the requirements. ○ Check the project milestones. Check the individual work and teamwork status. ○ Summarize data gathering. ○ Conduct a data analysis. ○ Identify the needs for further data gathering. ○ Identify possible preliminary solutions based on the gathered data. ○ Identify the needs for technological consultation from instructor. ○ Implement the network setup plan. Deliverables: Submit Project Documentation Part II: • Scope document and project charter • System requirements document • Conceptual design document
4— Project Execution	• Discuss technologies available for solutions. • Identify choices on technologies for solutions. • Identify the structure and format of written and spoken presentations. • Assign individual work based on the agreed structure and format. • Further research on technologies for possible solutions. • Implement the network setup plan. • Check the project milestones. Check the individual work and teamwork status. • Identify and filter available technologies for possible solutions. • Narrow the number of possible solutions to two. • Identify a third choice as an alternative solution. • Assign individuals detailed tasks on solutions, such as writing, creating diagrams, collecting detailed specification data, and formatting. • Review the detailed design to ensure that the design implementation meets the customer requirements and expectations.
5— Project Development—Part I	• Check the project milestones. Check the individual work and teamwork status. • Assign detailed tasks to individuals for preparation

Unit	Activities
	work on the solution of choice and an alternative solution if there is any. • Implement the network setup plan. • Discuss and formalize the process for designing, implementing, maintaining, and managing the solution. o Prepare for testing of software/hardware configuration items, including adequate versions of software/hardware and testing procedures to ensure quality control and management. • Discuss the financial aspects of the solution at all stages of the project. Ensure that the design is completely and accurately documented and ready for formal release to the customer site. • Allocate resources for the preparation of the detailed design, implementation, management, and other miscellaneous aspects of the solution. • Review testing procedures for software and hardware configuration items. • Answer the individual skills assessment questions.
6— Project Development—Part II	• Prepare for installation of server and workstation. • Check the project milestones. Check the individual work and teamwork status. • Review and process design details. • Review and process implementation details. • Review and process management details. • Review and process miscellaneous details. • Assign the remaining work based on reviews of the current task status. • Complete the network setup. • Check the project milestones. Check the individual work and teamwork status. • Finalize solution details. • Prepare for installation: o Check the hardware compatibility. o Check the hardware configuration. o Test the server hardware. o Survey the server. • Install and configure server operating systems: o Run the server setup. o Configure a server client. o Work with user accounts. o Work with groups. • Set up the Domain Name Server (DNS) and Dynamic Host Configuration Protocol (DHCP) servers. • Set up the File Transfer Protocol (FTP) servers. • Set up the Web servers. • Begin construction of the Microsoft PowerPoint presentation: o Introduce the project. o List the required elements of the RFP. o Present the recommended solution. Specify the following: ▪ The hardware, software, and final prototype of

Unit	Activities
	the system used in the overall design structure ▪ Cost of the proposed solution ▪ Implementation plan ▪ Post-implementation plan • Answer the individual skills assessment questions.
7— Project Development—Part III	Continue Unit 6 tasks. • Check the project milestones. Check the individual work and teamwork status. • Review and process design details. • Review and process implementation details. • Review and process management details. • Review and process miscellaneous details. • Assign the remaining work based on reviews of the current task status. • Complete the network setup. • Check the project milestones. Check the individual work and teamwork status. • Finalize solution details. • Prepare for installation: o Check the hardware compatibility. o Check the hardware configuration. o Test the server hardware. o Survey the server. • Install and configure server operating systems: o Run the server setup. o Configure a server client. o Work with user accounts. o Work with groups. • Set up the Domain Name Server (DNS) and Dynamic Host Configuration Protocol (DHCP) servers. • Set up the File Transfer Protocol (FTP) servers. • Set up the Web servers. • Begin the construction of the Microsoft PowerPoint presentation. The presentation should: o Introduce the project. o List the required elements of the RFP. o Present the recommended solution, specifying the following: ▪ The hardware, software, and final prototype of the system used in the overall design structure ▪ Cost of the proposed solution ▪ Implementation plan ▪ Post-implementation plan • Answer the individual skills assessment questions.
8— Project Deployment—Part I	• Identify and document the networks that the site routers will utilize. • Document the router command sequence needed to implement the protocols on the routers. • Continue the LAN design task: site wiring designs and LAN logical and physical designs.
9—	• Perform quality assurance:

Unit	Activities
Project Deployment—Part II	○ Verify and test the router configuration. ○ Verify and test the ACLs and complete the LAN design tasks. ○ Select and identify the protocols that are allowed. ○ Document all setup and configuration information. • Submit final drafts of the physical and logical LAN/WAN drawings. • Submit draft of the PowerPoint presentation.
10— Mock Presentation	• Perform a mock presentation of all hardware and software in the network solution. • Present the documentation to the instructor for review.
11— Final Professional Presentation	• Perform a peer review and evaluation of each team. • Make the final presentation.

Instructional Methods

This course will simulate a real-world network installation project, from the customer's Request for Proposal to hardware installation. Just like in the real world, you will work on a team to figure out and implement the best solution you can.

The first four units will be partially dedicated to the discussion and application of key components of project management using lectures with notes, handouts, and case studies. You will begin to build your project plans and seek approval for the final project from the instructor. After approval of the final project, you will begin the project development phase of the course. You will spend your weekly laboratory time doing hands-on networking activities on the capstone project.

To ensure that you have acquired necessary knowledge to graduate from the program, you will receive an **Individual Skills Assessment Questionnaire** at the beginning of the course. Your instructor will conduct an interview with you based on these assessment questions beginning mid-quarter depending on the class size (if the class size is large, the interview may start earlier in the quarter and vice versa). This process provides a structured opportunity for you to review selected topics covered in the entire program and to practice discussing your understanding of such topics in a spoken form, which is a necessary skill in your career development.

A major portion of the course will be devoted to the capstone project itself. In this project, you will work in teams to develop a software application for a case study. Your project will be evaluated on the documentation, teamwork, presentation, and the actual network solution.

Your instructor—or instructors—for this course will perform the roles of advisor, consultant, and supervisor. Students in each group will perform the role of a professional consulting firm serving customers in a real-life situation. Meetings will be conducted regularly so that the instructor can give your team consultation and guidance on the project and discuss various implementation and problem-solving strategies.

Complete **project documentation** in accordance with the project management guidelines is required. Your grade will be based on the quality and coverage of all the areas and items listed in the Documentation Requirements section.

For **team presentation**, grades will be based on the quality in the following areas:

- Conformation to formalities—stated rules
  - Provide PowerPoint presentation demonstrating final project solution
  - Provide hand-outs for audience
  - Professional business attire mandatory
- Knowledge of principles of project management and their integration into the business case scenarios
- Clarity of explanation on the proposed technical solution and design methodology
- End-user product support training plan

For the **teamwork** portion, you will receive a standard Teamwork Evaluation Form at the beginning of the course. You will use it to evaluate your teammates' and your own performance on the project. Your instructor will collect the completed form at the end of the course.

Areas for evaluation will be:

- Participation
- Team organizational contributions
- Interpersonal communication performance
- Subject area expertise contributions

For the **technical solution**, grades will be based on the following areas:

- Functionality: whether or not the designed network can perform all the functions listed in the Project section.
- Performance: how effective the designed network is in terms of meeting the assessed needs outlined in the project functions.

Instructional Materials and References

Student Textbook Package

Wood, Dawn Parrish, Mary E. Pascarella and David R. Foley. *Essentials: Microsoft Office Project 2007, Custom Edition*. Pearson Custom Publishing, 2012

Note: In addition to this textbook, all textbooks used in the core CNS courses, especially those for network technologies, data communications, system analysis, applications, computer technologies, speech communication, and written communication courses, will be used directly or indirectly as references for this course.

References

ITT Tech Virtual Library

Log on to the ITT Tech Virtual Library at http://library.itt-tech.edu/ to access online books, journals, and other reference resources selected to support ITT Tech curricula.

Books

You may click "Books" or use the "Search" function on the home page to find the following books.

Books> Ebrary

- Heerkens, Gary. *Project Management*. New York: McGraw-Hill Trade, 2001.
- Heldman, Kim. *Project Management JumpStart*. Alameda, CA: Sybex, Inc., 2003.
- Richman, Larry L. *Project Management Step-by-Step*. New York: AMACOM, 2002.

Books> NetLibrary

- Heldman, Kim. *PMP: Project Management Professional Study Guide*. 2nd ed. Alameda, CA: Sybex, Inc., 2004.
- Lewis, James P. *Fundamentals of Project Management*. *WorkSmart Series*. 3rd ed. New York: AMACOM Books, 2007.
- Westland, Jason. *The Project Management Life Cycle: A Complete Step-by-Step Methodology for Initiating, Planning, Executing & Closing a Project Successfully*. Philadelphia: Kogan Page Ltd., 2006.

Reference Resources

You may click "Reference Resources" or use the "Search" function on the home page to find the following reference resources.

- Microsoft Project
  A tour, list of features, and FAQs about Microsoft Project.
- Primavera Systems
  Detailed information about Primavera Project Management software
- Project Management Forum
  An online source for global news and information related to project management
- Project Management Institute
  The Project Management Institute (PMI) is a not-for-profit project management professional association.
- The Project Management WWW Site
  A collection of links to project management resources, tools, and news
- StartWright Resources
  A list of project management links
- TechRepublic
  A source for discussion and information about IT careers, technology topics, and IT products
- TenStep Project Management Process
  This site describes a methodology for managing work as a project.

Other References

The following resources can be found **outside** of the ITT Tech Virtual Library.

Web sites

- CIO.com – Business Technology Leadership
  http://www.cio.com (accessed Nov. 17, 2009)
  An IT magazine written for CIOs and other technology leaders
- ITtoolbox Project Management Knowledge Base
  http://projectmanagement.ittoolbox.com/ (accessed Nov. 17, 2009)
  An online IT community in which peers share knowledge about a range of IT issues and technologies
- Niwot Ridge Resources—A Source of Information for Mission-Critical Software Systems, Management Processes, and Strategies
  http://www.niwotridge.com/ (accessed Nov. 17, 2009)
  Site maintained by an IT consultant providing links to many resources
- PMOUSA.com
  http://www.pmousa.com (accessed Nov. 17, 2009)
  A Web site offering free information to project professionals
- Project Management Software Comparison
  http://www.capterra.com/landing/psaxproj
  (accessed Nov. 17, 2009)
  A Web site providing a list of available project management tools with links
- The Value of Project Lifecycle Methodology
  http://www.lifecyclestep.com/open/401.0HomeValue.htm (accessed Nov. 17, 2009)
  An article about developing a lifecycle methodology
- Wideman Comparative Glossary of Project Management Terms
  http://www.maxwideman.com/pmglossary/
  (accessed Nov. 17, 2009)
  Definitions for commonly used terms in project management

All links to Web references outside of the ITT Tech Virtual Library are always subject to change without prior notice.

Course Evaluation and Grading

Evaluation Criteria

The final grades will be based on the following categories:

CATEGORY	WEIGHT
Team Project Documentation	20%
Teamwork	10%
Presentation	10%
Network Solution	45%
Individual Skills Assessment	15%
Total	**100%**

Grade Conversion Table

The final grades will be calculated from the percentages earned in the course, as follows:

A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

Grade Book Entry Form

Please use the following form to record the final grades for each individual student:

IT331–COURSE SNAPSHOT

Grading Category	Grade Book Category Weight (% of Course Total)	Unit	Activity / Graded Deliverable	Grade (% of Course Total)	Measuring Rubric* (Subcategory)
A. Project Documentation	20%	11	Submission of the final project binder including all documentation and presentation PPTs.	8%	A-1-1 Communications
				4%	A-2-1 Research
				4%	A-2-2 Critical Thinking
				1%	A-3-1 IT Tools for Business
				2%	A-3-2 Using Applications
				1%	A-3-3 Knowledgeable User
B. Teamwork	10%	10	Teamwork Evaluation	10%	B-1-2 Teamwork
C. Presentation	10%	11	Presentation Evaluation	10%	C-1-1 Communications
D. Network Solution	45%	1	Project Requirement Analysis	5%	D-2-2 Critical Thinking
		3	Project Plan	2%	D-1-3 Project Management
		4	Network Solution Research and Design	2%	D-2-2 Critical Thinking
				2%	D-4-3 Network Development Process
				2%	D-5-1 Evaluate Technologies
				2%	D-5-2 License Requirements
				2%	D-6-1 Apply Design Process
		8	Network Solution Configuration and Testing	5%	D-6-2 Implementation and Management
				5%	D-7-1 Installation, Configuration and Testing
		9	Network Solution Implementation and Management	2.5%	D-6-1 Apply Design Process
				2.5%	D-6-2 Implementation and Management
				2.5%	D-7-1 Installation, Configuration and Testing
				2.5%	D-7-2 Administration and Maintenance
		10	Project execution	8%	D-1-3 Project Management
E. Individual Skills Assessment	15%	1 -10	Review based on questions and respond in spoken interview form	15%	All Applicable
Total	100%			100%	

- **Please refer to the IT331 Course Grading Rubric and specific criteria in the course.**

COURSE GRADING RUBRIC
IT331—Network Development Capstone Project

Campus: _____

Faculty Name: _____
Student Name: _____

Directions: Please assign a percentage grade on the line for each subcategory.

A. Project Documentation (20% of total grade)

Unit 11—Final project binder including all documentation and presentation PPTs

_____ ***A-1-1 Communications***:

- 90-100%: Accurate and concise message effectively delivered through writing with clarity, logical organization of thoughts and appropriate format/style for expected understanding by targeted audience
- 80-89%: Accurate message delivered through writing with appropriate format/style for expected understanding by the target audience
- 70-79%: Intended message gets across to the target audience in writing with necessary modifications and/or polishing
- 60-69%: Most of the intended message gets across to the audience in writing with some degree of ambiguity; lack of consistent format/style
- Below 60%: Disorganized thoughts with little evidence of logical structure in writing; failure to get the intended message across to the audience

_____ ***A-2-1 Research*:**

- 90-100%: Selection of valid topic with clearly defined problem statement, substantial literature review, appropriate methodology, convincing conclusions, quality documentation and accurate bibliographical format/style
- 80-89%: Valid topic with clear problem statement, adequate literature review and specific methodology; meaningful conclusions with adequate documentation and proper bibliographical format/style
- 70-79%: Valid topic with adequate problem statement and minimum literature review; evidence of attempting with certain methodology; reasonable conclusions with required documentation and proper bibliographical format/style
- 60-69%: Loosely defined topic with unstructured problem statement and random literature review; weak evidence of specific methodology; lack of conclusion; poor documentation with inconsistent bibliographical format and style
- Below60%: Largely undefined topic and no problem statement; little literature review; lack of methodology; no conclusion and no evidence of purposeful documentation

_____ ***A-2-2 Critical Thinking***:

- 90-100%: Effective decision making based on qualitative and quantitative analysis of data and convincing reasoning; evidence of original creativity in providing solutions for challenging qualitative and quantitative problems
- 80-89%: Making decisions based on adequate research and reasoning that require a fair amount of analytical reading and critical thinking; capable of solving qualitative and quantitative problems

- 70-79%: Evidence of making decisions based on some research and analysis; able to solve normal qualitative and quantitative problems
- 60-69%: Making decisions by following the status quo; lack of evidence in strenuous research, analysis and reasoning in making a decision or solving qualitative and quantitative problems
- Below 60%: No evidence of making any decision based on analysis; incapable of solving specific qualitative and quantitative problems

_____ ***A-3-1 IT Tools for Business***:

- 90-100%: Ability to systematically describe hardware and software tools commonly used in today's business office environment and articulate their specific purposes and functions
- 80-89%: Ability to categorize major functions and features of personal computers, operating systems and common business applications their pertinent purposes
- 70-79%: Ability to describe major functions of personal computers, operating systems and common business applications their pertinent purposes
- 60-69%: Some knowledge of personal computers, peripheral equipment and computer applications
- Below 60%: Inability to articulate specific features of personal computers, common peripheral equipment and common PC operating systems and business applications

_____ ***A-3-2 Using Applications***:

- 90-100%: Efficient in computerized business environment through effective use of various types of business IT equipment and tools and applications with visible proficiency
- 80-89%: Ability to use personal computers, peripheral equipment and common business application tools to process commonly used document formats and digital information to serve business needs
- 70-79%: Ability to use popular personal computers and applications to process common business documents and to perform Internet search tasks
- 60-69%: Limited ability in using personal computers and other electronic office equipment; limited ability in using computer applications to process business documents in digital formats
- Below 60%: Inability to use personal computers and peripheral equipment to process documents and information needed for business activities

_____ ***A-3-3 Knowledgeable User***:

- 90-100%: Ability to articulate specific policies and procedures governing the use of business technology resources to maximize productivity
- 80-89%: Ability to actively utilize networked business technology tools to help raise productivity by following pertinent processes and requirements

- 70-79%: Adequate awareness of networked business computing environment and ability to operate properly without violating defined processes and requirements
- 60-69%: Limited knowledge in the networked business technology environment and pertinent procedures; limited ability to use business technology tools to raise productivity
- Below 60%: Little knowledge in the purpose, function and preferred use of networked business technology environment and pertinent processes and procedures

B. Teamwork (10% of total grade)
Unit 10–Teamwork Evaluation

_____ B- 1-2 Teamwork:

- 90-100%: Consistent active participation in team activities with obvious evidence of leadership (to lead without being a leader) and decision-making based on maximum team functions
- 80-89%: Consistent participation in team activities with weak evidence of leadership and decision-making outcomes
- 70-79%: Regular participation in team activities; able to complete all tasks as assigned
- 60-69%: Reactive and/or irregular participation in most team activities without obvious contributions to the team process and outcomes
- Below 60%: Reluctant or no participation in team activities; no evidence of contribution to team process

C. Presentation (10% of total grade)
Unit 11–Presentation Evaluation

_____ C-1-1 Communications:

- 90-100%: Accurate and concise message effectively delivered through speech with clarity, logical organization of thoughts and appropriate format/style for expected understanding by targeted audience
- 80-89%: Accurate message delivered through speech with appropriate format/style for expected understanding by the target audience
- 70-79%: Intended message gets across to the target audience in speech with necessary modifications and/or polishing
- 60-69%: Most of the intended message gets across to the audience in speech with some degree of ambiguity; lack of consistent format/style
- Below 60%: Disorganized thoughts with little evidence of logical structure in speech; failure to get the intended message across to the audience

D. Network Solution (45% of total grade)
Unit 1–Project Requirement Analysis

_____ D-2-2 Critical Thinking:

- 90-100%: Effective decision making based on qualitative and quantitative analysis of data and convincing reasoning; evidence of original creativity in providing solutions for challenging qualitative and quantitative problems
- 80-89%: Making decisions based on adequate research and reasoning that require a fair amount of analytical reading and critical thinking; capable of solving qualitative and quantitative problems
- 70-79%: Evidence of making decisions based on some research and analysis; able to solve normal qualitative and quantitative problems
- 60-69%: Making decisions by following the status quo; lack of evidence in strenuous research, analysis and reasoning in making a decision or solving qualitative and quantitative problems
- Below 60%: No evidence of making any decision based on analysis; incapable of solving specific qualitative and quantitative problems

Unit 3—Project Plan

_____ D-1-3 Project Management

- 90-100%: Effective execution of clearly defined purposes, conditions and limitations of the project with milestones, resources and deliverables consistently planned and managed using specific tools
- 80-89%: Clearly defined purposes, conditions and limitations of the project with milestones, resources and deliverables with obvious evidence of using systematic tools for planning and management purposes
- 70-79%: Project scope and resources identified with the expected milestones and deliverables using appropriate tools for planning and tracking
- 60-69%: Loosely defined scope of the project with the majority of the expected milestones and deliverables; lack of evidence in applying specific tools for planning and tracking functions
- Below 60%: Vaguely defined purposes for the project; lack of evidence of structured planning and tracking for a project

Unit 4—Network Solution Research and Design

_____ D-2-2 Critical Thinking:

- 90-100%: Effective decision making based on qualitative and quantitative analysis of data and convincing reasoning; evidence of original creativity in providing solutions for challenging qualitative and quantitative problems
- 80-89%: Making decisions based on adequate research and reasoning that require a fair amount of analytical reading and critical thinking; capable of solving qualitative and quantitative problems
- 70-79%: Evidence of making decisions based on some research and analysis; able to solve normal qualitative and quantitative problems

- 60-69%: Making decisions by following the status quo; lack of evidence in strenuous research, analysis and reasoning in making a decision or solving qualitative and quantitative problems
- Below 60%: No evidence of making any decision based on analysis; incapable of solving specific qualitative and quantitative problems

_____ D-4-3 Network Development Process:

- 90-100%: Plan and design cost-effective network solutions by following a robust process of research, analysis, development, testing and deployment lifecycle with professional documentation
- 80-89%: Plan, design and implement network solutions by applying specific development process observing product development lifecycle with systematic documentation
- 70-79%: Plan, design and implement network solutions by following a visible process with adequate documentation
- 60-69%: Design and implement network solutions by following some methods with minimum documentation
- Below 60%: Develop and/or install networks with no clear indication of following a specific process and systematic method; little documentation

_____ D-5-1 Evaluate Technologies:

- 90-100%: Analyze networking technologies and services by elaborating their engineering principles, specifications, purposes, functions, availability by vendor or provider
- 80-89%: Describe commonly used networking technologies by major technical purposes and functions with some reference to their technical specifications and availability by vendor or provider
- 70-79%: Explain commonly used networking technologies by describing their purposes, specifications, functions and availability by vendor or provider
- 60-69%: Explain networking technologies and services with adequate comparison and contrast by feature, capability and provider in perspectives
- Below 60%: Randomly enlist some technologies with inadequate description of their purposes and functions and little reference to their technical specifications and availability by vendor or provider

_____ D-5-2 License Requirements:

- 90-100%: Categorize technologies, products and services covered in the program with analysis on specific regulatory, license and cost impacts
- 80-89%: Categorize technologies, products and services covered in the program by their regulatory and license properties with some reference to cost factors

- 70-79%: Fundamental understanding of the licensure requirements with specific technology and software and their implementation impacts.
- 60-69%: Identify some technologies and products covered in the program with generic reference to regulatory and license requirements and some cost concepts
- Below 60%: Inadequate knowledge of technologies, products and services in terms of their license and cost properties

_____ D-6-1 Apply Design Process:

- 90-100%: Develop network solutions by using effective project management tools that incorporate project goals, milestones and resources with requirement analysis, business and technical systems designs, deployment and testing strategies and maintenance plans
- 80-89%: Develop network solutions by evaluating and selecting optimal methods with well-documented user requirement analysis, business system design and technical system design, deployment and testing strategies and maintenance plans
- 70-79%: Develop network solutions by following a documented process of needs analysis and through the design, development, deployment, testing and maintenance executions with proper project management
- 60-69%: Develop networks by following some process with some documented requirements analysis, design, deployment, testing and maintenance executions
- Below 60%: Develop networks by following loosely defined methods with inadequate requirements analysis and vague design, deployment, testing and maintenance plans

Unit 8—Network Solution Configuration and Testing

_____ D-6-2 Implementation and Management:

- 90-100%: Develop network solutions with defined implementation procedures; analyze and define tools that log, track and manage major management capabilities (such as user management, resources management, performance management, security management, etc.)
- 80-89%: Develop network implementation plans as an integral part of the complete network solution identifying specific action plans for the implementation and maintenance and the operational impact of such plans.
- 70-79%: Develop network solutions with some implementation procedures and some capabilities of managing network users, resources, performance and security aspects
- 60-69%: Develop network implementation plans with certain system capabilities of general network management tasks
- Below 60%: Develop networks with inadequate implementation considerations and little management capabilities

_____ D-7-1 Installation, Configuration and Testing:

- 90-100%: Successfully plan, install, configure, test, and troubleshoot LAN/WAN systems with well-documented performance, security and management capabilities
- 80-89%: Effectively plan, install, configure, test and set up LAN/WAN systems that provide anticipated specific network services to users
- 70-79%: Successfully install and configure network systems based on requirements and following industry standards with positive testing results
- 60-69%: Correctly install and bring up LAN/WAN systems that establish and maintain connectivity and generic network services
- Below 60%: Loosely set up LAN/WAN systems with ineffective configurations that provides inconsistent connectivity and network services

Unit 9—Network Solution Implementation and Management

_____ D-6-1 Apply Design Process:

- 90-100%: Develop network solutions by using effective project management tools that incorporate project goals, milestones and resources with requirement analysis, business and technical systems designs, deployment and testing strategies and maintenance plans
- 80-89%: Develop network solutions by evaluating and selecting optimal methods with well-documented user requirement analysis, business system design and technical system design, deployment and testing strategies and maintenance plans
- 70-79%: Develop network solutions by following a documented process of needs analysis and through the design, development, deployment, testing and maintenance executions with proper project management
- 60-69%: Develop networks by following some process with some documented requirements analysis, design, deployment, testing and maintenance executions
- Below 60%: Develop networks by following loosely defined methods with inadequate requirements analysis and vague design, deployment, testing and maintenance plans

_____ D-6-2 Implementation and Management:

- 90-100%: Develop network solutions with defined implementation procedures; analyze and define tools that log, track and manage major management capabilities (such as user management, resources management, performance management, security management, etc.)
- 80-89%: Develop network implementation plans as an integral part of the complete network solution identifying specific action plans for the implementation and maintenance and the operational impact of such plans.

- 70-79%: Develop network solutions with some implementation procedures and some capabilities of managing network users, resources, performance and security aspects
- 60-69%: Develop network implementation plans with certain system capabilities of general network management tasks
- Below 60%: Develop networks with inadequate implementation considerations and little management capabilities

_____ D-7-1 Installation, Configuration and Testing:

- 90-100%: Successfully plan, install, configure, test, and troubleshoot LAN/WAN systems with well-documented performance, security and management capabilities
- 80-89%: Effectively plan, install, configure, test and set up LAN/WAN systems that provide anticipated specific network services to users
- 70-79%: Successfully install and configure network systems based on requirements and following industry standards with positive testing results
- 60-69%: Correctly install and bring up LAN/WAN systems that establish and maintain connectivity and generic network services
- Below 60%: Loosely set up LAN/WAN systems with ineffective configurations that provides inconsistent connectivity and network services

_____ D-7-2 Administration and Maintenance:

- 90-100%: Proactively plan and dynamically apply system embedded capabilities to automate major management tasks that monitor and track system performance, security and resources; provide top-level technical support to all network issues
- 80-89%: Proactively plan and effectively manage user, resources, performance, security with system documentation and perform technical support to help-desk functions
- 70-79%: Effectively manage user, resources, performance, security and perform common helpdesk functions
- 60-69%: Perform common system administration tasks and provide first tier user support without obvious obstacles
- Below 60%: Randomly perform some systems management functions with inconsistent parameters and outcomes; ineffective in user support functions

_____ D-1-3 Project Management

- 90-100%: Effective execution of clearly defined purposes, conditions and limitations of the project with milestones, resources and deliverables consistently planned and managed using specific tools

- 80-89%: Clearly defined purposes, conditions and limitations of the project with milestones, resources and deliverables with obvious evidence of using systematic tools for planning and management purposes
- 70-79%: Project scope and resources identified with the expected milestones and deliverables using appropriate tools for planning and tracking
- 60-69%: Loosely defined scope of the project with the majority of the expected milestones and deliverables; lack of evidence in applying specific tools for planning and tracking functions
- Below 60%: Vaguely defined purposes for the project; lack of evidence of structured planning and tracking for a project

E. Individual Skills Assessment (15% of total grade) See worksheet on the next page.

_____ Individual Skills Assessment

Individual Skills Assessment Scoring Table

Levels of Knowledge	Number of topics Satisfied	Number of topics failed	Points Earned	Points earned
Synthesis/Evaluation			1	( ) x 1.0 = ____
Application/Analysis			0.8	( ) x 0.8 = ____
Knowledge/Comprehension			0.6	( ) x 0.6 = ____
			Total Points Earned	
Divide **Total Points Earned** by 15 (maximum number of points that can be earned), then multiply by 100 and enter the resulting percentage value in this box. This resulting value is to be copied to the Individual Skills Assessment section of the Grade Book				

For example, the student satisfied 5 questions at the top level, 5 questions at the middle level, 4 questions at the lowest level, and failed to address 1 question (total of 15 questions), this is what he/she gets:

5 x 1 = 5
5 x 0.8 = 4
4 x 0.6 = 2.4
1 x 0 = 0
5 + 4 + 2.4 + 0 = 11.4 Total Points Earned

(11.4 ÷ 15) x 100 = **76.0**
Enter this number on the previous page and in the Skills Assessment section of the Grade Book for this student.

(End of Syllabus)