Program Title: E-Business Technology  
Occupational Area: Business

CIP Number: 1506.120100 AS Degree  
0506.120100 AAS Degree

Grade Level College Credit

Length AS Degree - 63 credits  
AAS Degree - 63 credits

I. MAJOR CONCEPTS/CONTENT: This program is designed to prepare students for employment in occupations in e-business. Typical positions include database technicians, security specialists, Web content specialists, developers, technical, systems, and network analysts, Web security specialists, Internet technical support specialists, sales technicians, marketing technicians, database administrators, in addition to business entrepreneurs and owners incorporating online business strategies. This program also provides supplemental training for persons currently or previously employed in these occupations.

This program focuses on a balance of business and technology components and allows the student to gain additional skills in one of four areas of specialization: Business, Technology, Software, and Security.

II. LABORATORY ACTIVITIES: Laboratory activities are an integral part of this program. The tools, test equipment, materials and processes used in this laboratory are similar to those used in industry as defined by DACUM participants. Students should be able to use equipment such as firewalls, routers, intrusion detection equipment, sniffers, etc. They will also be familiar with various software applications such as electronic payment systems and computer-based business tools.

III. SPECIAL NOTE: Phi Beta Lambda is the appropriate vocational student organization for providing leadership training and for reinforcing specific vocational skills. Vocational Student Organizations, when provided, shall be an integral part of the vocational instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, FAC.

The general education requirement must have a minimum of 15 semester hours. The program must include courses with oral and written communication and computational skills. The computational skills should include algebra.

Cooperative training – OJT is appropriate for this program. Whenever cooperative training – OJT is offered, the following are required for each student: a training plan, signed by the student, teacher, and employer, which includes instructional objectives and a list of on-the-job and in-school learning experiences; a workstation that reflects equipment, skills and tasks that are relevant to the occupation which the student has chosen as a career goal. The student must receive compensation for work preformed.

To be transferable statewide between institutions, this program/course must have been reviewed, and a “transfer value” assigned the curriculum content by the appropriate Statewide Course
Numbering System discipline committee. This does not preclude institutions from developing specific program or course articulation agreements with each other.

The typical end point for the average achieving student is an Associate Degree

IV. INTENDED OUTCOMES
After successfully completing the program, the student will be able to:

**General Education Requirements (Minimum of 15 hours):**

1.0 Demonstrate appropriate communication skills
2.0 Perform math computations
3.0 Develop human relations skills
4.0 Perform decision-making activities
5.0 Demonstrate employability skills

**Foundation Courses**

**Technology core:**
6.0 Identify and explain various communication hardware devices
7.0 Use Web browsers to access Internet services
8.0 Create local area networks
9.0 Demonstrate proficiency in microcomputer operating systems and software

**Business core:**
10.0 Compare and contrast E-Business with traditional business
11.0 Identify, classify and demonstrate management activities for E-Business
12.0 Identify legal and ethical issues for E-business
13.0 Perform accounting activities
14.0 Perform project management activities
15.0 Perform marketing activities for E-business

The student will successfully complete at least one of the following specializations:

**Security Specialization:**
16.0 Design, develop and implement physical, network, host, application, and user security systems for E-business.
17.0 Maintain and monitor security policies.

**Software Specialization:**
18.0 Perform Web authoring activities.
19.0 Perform programming activities to support E-business.
20.0 Use various software applications and languages for E-business environment.
22.0 Conduct systems analysis and design.

**Technology Specialization:**
23.0 Perform Web Server Management activities
24.0 Support E-business applications and product development
25.0 Maintain network infrastructure
26.0 Design, integrate and deploy E-business systems
27.0 Perform technical requirements to support UNIX operating system
28.0 Maintain systems quality and perform testing activities.
Business Specialization
29.0 Perform management activities to support human resources in E-business environment.
30.0 Perform activities to enhance supply chain management in E-business.
31.0 Use various models and strategies for E-business.
32.0 Perform customer service techniques for E-business.
33.0 Perform selling techniques for E-business.
34.0 Perform advertising techniques for E-business.
Program Title: E-Business Technology
Secondary Number: 
Postsecondary Number: 1506.120100 AS Degree
0506.120100 AAS Degree

1.0 DEMONSTATE APPROPRIATE COMMUNICATION SKILLS--The student will be able to:

1.01 Write logical and clear statements, or phrases, to accurately fill out forms/invoices commonly used in business and industry.
1.02 Read and explain graphs, charts, diagrams, and tables commonly used in this industry/occupation area.
1.03 Read and follow written and oral instructions.
1.04 Answer and ask questions coherently and concisely.
1.05 Read critically by recognizing assumptions and implications and by evaluating ideas.
1.06 Demonstrate appropriate telephone/communication skills.
1.07 Conduct oral presentations.
1.08 Observe and interpret verbal and nonverbal behavior.
1.09 Use English language skills in punctuation and grammar.
1.10 Compose and critique business documents, memorandums, business letters, request, answers requests, claims/adjustments, and letters using correct English grammar and punctuation.
1.11 Communicate through the Internet using e-mail, attachments, net meetings, and video conferencing.
1.12 Summarize the skills involved in being an effective listener.
1.13 Identify barriers to intercultural communication.
1.14 Search the Internet using different search engines.
1.15 Write routine, good and bad news, and goodwill messages.
1.16 Write persuasive messages.
1.17 Communicate information through the Internet and using other electronic devices.
1.18 Find, evaluate and process information.
1.19 Create an electronic presentation.
1.20 Create effective business reports and proposals.
1.21 Write professional resumes and complete applications.

2.0 PERFORM MATH COMPUTATIONS--The student will be able to:

2.01 Solve addition, subtraction, multiplication, and division problems manually and with a calculator.
2.02 Solve problems involving decimals, fractions, percentages and discounts using a calculator.
2.03 Solve problems involving comparison shopping using a calculator.
2.04 Interpret graphs and tables.
2.05 Solve finance charge and annual percentage rate problems using a calculator.
2.06 Determine whether sufficient, insufficient, or extraneous information is given for solving a problem.
2.07 Solve problems involving perimeter or area of a rectangular region.
2.08 Solve problems involving length, width, and capacity.

3.0 DEVELOP HUMAN RELATIONS SKILLS--The student will be able to:

3.01 Demonstrate appropriate work habits.
3.02 Identify traits that promote good human relations and increase job performance.
3.03 Analyze and develop written solution to behavior problems affecting job performance.

4.0 **PERFORM DECISION MAKING ACTIVITIES**--The student will be able to:

4.01 List the steps in problem solving.
4.02 Demonstrate the ability to determine the proper priority of work.
4.03 Prepare a day’s schedule for an employer.
4.04 Choose appropriate action in situations requiring following a chain of command.
4.05 Choose appropriate action in situations requiring effective time management.
4.06 Identify ways to assign work to others.

5.0 **DEMONSTRATE EMPLOYABILITY SKILLS**--The student will be able to:

5.01 Conduct a job search.
5.02 Secure information about a job.
5.03 Identify documents that may be required when applying for a job interview.
5.04 Complete a job application form correctly.
5.05 Demonstrate competence in job interview techniques.
5.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor or other employees.
5.07 Identify acceptable work habits.
5.08 Demonstrate knowledge of how to make appropriate job changes.
5.09 Demonstrate acceptable employee health habits.
5.10 Demonstrate knowledge of the "Florida Right-To-Know Law" as recorded in Florida Statutes Chapter 442.

**Technology core:**

6.0 **IDENTIFY AND EXPLAIN VARIOUS COMMUNICATION HARDWARE DEVICES**--The student will be able to:

6.01 Identify and explain the main purpose of various communication hardware devices, communication media, and protocols.
6.02 Explain transaction processing.
6.03 Describe various network topologies.
6.04 Explain the difference between intranet and extranet.
6.05 Explain the history, purpose and use of the World Wide Web.
6.06 Explain the purpose and use of browsers and search engines.
6.07 Describe the rise of information and content models, broadcast/content aggregations models, interactive models, and content provider models.
6.08 Explain security issues related to electronic payment.
6.09 Explain issues of advertising, marketing and solicitation activities affecting e-business.
6.10 Describe proper Internet behavior.

7.0 **USE WEB BROWSERS TO ACCESS INTERNET SERVICES**--The student will be able to:

7.01 Explain how to connect to the Internet.
7.02 Send electronic messages.
7.03 Explain communication issues specific to email.
7.04 Set up an email account.
7.05 Participate in an email discussion group.
7.06 Explain and use proper Usenet etiquette.
7.07 Use a Web browser to navigate the Web.
7.08 Explain the guidelines for evaluating information needs before beginning a search.
7.09 Explain issues associated with pornography, free speech, censorship, filtering, and copyright on the Web.
7.10 Describe how to critically evaluate information content.
7.11 Use bookmarks to create a bibliography.
Capture images, text, sound, and data from Web pages
Work with FTP clients
Design and publish a simple Web page

CREATE LOCAL AREA NETWORKS-- The student will be able to:
Differentiate between the OSI reference model and the TCP/IP protocol architecture
Explain components that are part of the Physical Layer.
Differentiate between analog and digital signals.
Describe various transmission media and how a modem works.
Describe the functions of the data link layer.
Explain Collision Occurrences and Detection
Describe the function of a bridge and explain how bridges work.
Identify various network layer devices and the function of each.
Explain the factors and techniques for data transportation
Explain the purpose of the upper layers of the OSI model.

DEMONSTRATE PROFICIENCY IN MICROCOMPUTER OPERATING SYSTEMS AND SOFTWARE--The student will be able to:
Describe the historical development of computer operating systems.
Describe the major hardware and related software of microcomputers.
Describe various disk formats.
Describe the various operating systems, including: Windows, Unix, Novell, etc.
Explain system and application architectures.
Use various software applications.
Describe the file system functions.
Demonstrate knowledge of data processing concepts.
Identify the major programming languages used in business data processing.
Locate requested information on a computer printout.
Locate errors on a computer printout.
Use appropriate software.

COMPARE AND CONTRAST E-BUSINESS WITH TRADITIONAL BUSINESS MODELS--
The student will be able to:
Describe the evolution e-business, how it has changed the market place, and the benefits to society.
Define e-business and its categories.
Describe how business operations have changed due to e-business.
Explain the basic business models of electronic marketing.
Identify critical success factors for electronic marketing.
Explain the impact of the Internet on customers and markets for businesses.
Describe consumer buying behavior and organizational buying behavior.
Explain how service industries conduct business electronically.
Describe several innovative applications in the service sector.
Explain how business-to-business commerce is conducted.
Describe the application and key technologies for business-to-business e-commerce models.
Describe the relationship between the Internet, intranet and extranet.
Describe the typical electronic payment system.
Identify the various payment options in e-commerce.
Explain the strategic planning issues for e-business.
Identify the critical success factors of an e-business project/venture.
Discuss contractual issues and copyright infringement on the Web.
Explain the global economics and its impact e-business.
Describe the major components and impact of Web-based economics.
11.0 IDENTIFY AND DEMONSTRATE MANAGEMENT ACTIVITIES--The student will be able to:
11.1 Define the role of the entrepreneur in business-in the United States and across the World.
11.2 Describe the entrepreneurial profile.
11.3 Discuss the role of the internet in helping small business expand their market opportunities both in the United States and abroad.
11.4 Explain the importance of strategic management to small business.
11.5 Describe the components of a marketing plan and explain the benefits of preparing one.
11.6 Describe how to prepare financial statements & use them to manage the small business.
11.7 Describe effective pricing strategies.
11.8 Discuss the links among pricing, image, and competition.
11.9 Explain what seed capital is and why it is so important to the entrepreneurial process.
11.10 Explain the difference in the three types of capital small businesses require: Fixed, Working and Growth.
11.11 Explain the stages in the location decision.
11.12 Describe the location criteria and outline the basic location options for retail and service business.
11.13 Explain purchasing, quality control, vendor analysis and managing inventory while using technology to gain a competitive edge.
11.14 Explain the challenges involved in the entrepreneur's role as leader and what it takes to be a successful leader.
11.15 Learn management succession and risk management strategies in family business together with ethics and social responsibility.
11.16 Describe, explain and discuss business's responsibility to employees, customers, investors and the community.
11.17 Describe management's historical role in business operations.
11.18 Compare and contrast different management philosophies.
11.19 Compare and contrast the employees' personal needs with those of the organization.
11.20 Describe methods managers can use to deal with management politics.
11.21 Describe the nature of management's legal environment for traditional and electronic environments.
11.22 Describe the planning process of managers.
11.23 Discuss the characteristics and functions of an organization chart.
11.24 Describe the act and benefits of delegation.
11.25 Summarize the components of job descriptions and specifications.
11.26 Define and describe the activities involved in making a job analysis.
11.27 Discuss potential problems in evaluating employees and methods to avoid problems.
11.28 Discuss strategies managers may use to build and sustain high morale and motivation.
11.29 Describe methods of direct and indirect compensation.
11.30 Describe various employee relations practices.
11.31 Summarize strategies to improve personal and organizational communication.
11.32 Discuss the role of information systems in the control system.
11.33 Discuss the steps in the basic decision making process.
11.34 Describe several factors that influence decision-making.
11.35 Distinguish among management functions.
11.36 Demonstrate a knowledge of the relationship between authority and responsibility to task accomplishment.
11.37 Select the most effective communication systems.
11.38 Identify problems and make an appropriate decision.
12.0 IDENTIFY LEGAL AND ETHICAL ISSUES FOR E-BUSINESS -- The student will be able to:
  12.01 Discuss the types of works that are protected by copyright, patents, trademark and trade secret law.
  12.02 Describe the procedure to obtaining protection under each intellectual property law.
  12.03 Discuss the basic elements of a contract.
  12.04 Describe and recognize material that is defamatory.
  12.05 Explain the right of publicity and the right of privacy.
  12.06 Explain copyright assignment and the Visual Artists Rights Act.
  12.07 Discuss licensing text, photos, films, television clips, characters, and games, Domain name registration, Cybersquatting and anticybersquatting regulations.
  12.08 Describe the importance in choosing a strong trademark.
  12.09 Understand basic laws that apply to e-commerce.
  12.10 Explain how Article Two of the UCC that applies to the sale of goods involved in e-business.
  12.11 Discuss current US laws that regulate e-business, such as the Uniform Computer Information Transactions Act, clickwraps, sales tax, advertising.
  12.12 Explain the meaning of linking, framing and caching.
  12.13 Discuss the permission required for linking, revenue-sharing agreements, and liability issues pertaining to linking.
  12.14 Discuss e-mail litigation, including anti-spam laws.
  12.15 Describe licensing music for use.
  12.16 Discuss copyright issues important to ISPs.
  12.17 Explain other liability issues for ISPs, such as, defamation, privacy, trademark and patent.
  12.18 Discuss when to use trademark protection and trade secret protection for their property.

13.0 PERFORM ACCOUNTING ACTIVITIES -- The student will be able to:
  13.01 Record transactions in a general journal.
  13.02 Post entries from a general journal to a general ledger.
  13.03 Prepare an income statement.
  13.04 Prepare a balance sheet.
  13.05 Journalize and post adjusting entries.
  13.06 Journalize and post closing entries.
  13.07 Prepare a postclosing trial balance.
  13.08 Prepare checks and stubs.
  13.09 Endorse checks using special endorsements.
  13.10 Prepare a deposit slip and adjust checkbook.
  13.11 Prepare a bank reconciliation.
  13.12 Maintain petty cash records.
  13.13 Record transactions in special journals.
  13.14 Post journal entries to subsidiary ledgers.
  13.15 Prepare payroll records.
  13.16 Interpret financial statements

14.0 PERFORM PROJECT MANAGEMENT ACTIVITIES -- The student will be able to:
  14.01 Describe the role of project management (PM) within the organization.
  14.02 Identify the strengths and weaknesses of various project life cycle design.
  14.03 Understand the importance of project scope management.
  14.04 Compare and contrast project selection methods.
  14.05 Build a Work Breakdown Structure (WBS), Gantt chart, and Pert Chart and describe those different elements.
  14.06 Compare and contrast types of cost estimates.
  14.07 Examine cost control and earned value analysis.
  14.08 Examine organizational planning, staff acquisition, and team development.
  14.09 Examine risk identification, quantification, response development, and response control.
14.10 Compare and contrast project tracking and project reporting.
14.11 Change control and configuration control.
14.12 Subcontracting and outsourcing.
14.13 Discuss and analyze project management case study.

15.0 **PERFORM MARKETING ACTIVITIES FOR E-BUSINESS**
15.01 Discuss what marketing is and why it is important to organizations and individuals.
15.02 Describe the key decisions in the development of corporate strategy.
15.03 Recognize the outcomes of consumers' decisions to purchase or not to purchase and how the affect marketing success.
15.04 Define and explain market segmentation, target markets, and product differentiation and positioning.
15.05 Describe the issues involved in product and brand positioning.
15.06 Differentiate between consumer and business products, and discuss the different types of each.
15.07 Describe the way marketing research is used in the new-product development process.
15.08 Identify many of the influences on marketers' pricing decisions.
15.09 Explain how consumers form perceptions of quality and value.
15.10 Explain the functions and key activities of marketing channels.
15.11 Distinguish between direct and indirect marketing channels.
15.12 Explain the key elements of the marketing communications process.
15.13 Describe the key activities in sales management.
15.14 Explain the difference between e-business, e-commerce, and e-marketing.

16.0 **DESIGN, DEVELOP AND IMPLEMENT PHYSICAL, NETWORK, HOST, APPLICATION AND USER SECURITY SYSTEMS FOR E-BUSINESS** -- The student will be able to:
16.01 Explain use and purpose of security policies
16.02 Conduct a security audit.
16.03 Control access to systems, resources and data.
16.04 Explain system security in common Operating Systems
16.05 Describe concepts of web servers and their role in the network
16.06 Plan and implement a web server.
16.07 Identify the various hardware and software requirements for a Web server.
16.08 Explain how documents and files are stored on a web server.
16.09 Describe different methods for projecting future traffic on a web server.
16.10 Identify the necessary steps to ensure reliability and response of the server.
16.11 Describe and implement the process for effectively organizing a web site.
16.12 Install, configure, and maintain a Web server.
16.13 Publish a web document so that it is easily located through various search engines on the Internet.
16.14 Set up the web server so that dynamic content can be provided to users of the web site.
16.15 Perform corrective, and preventative maintenance on a web server.
16.16 Analyze server log files to determine trends in web server utilization.
16.17 Discuss Internet services operation and the security risk imposed by them on the network.
16.18 Identify vulnerabilities in World Wide Web protocols and counter-measures for securing them.
16.19 Describe the operation of electronic mail and news services protocols and how to effectively secure them.
16.20 Describe the operation of file transfer and printing service protocols and how to effectively secure them.
16.21 Describe the operation of remote access services protocols and how to effectively secure them.
16.22 Describe the operation of real-time conferencing service protocols and how to effectively secure them.
16.23 Properly configure and describe the operation of naming and directory services.
16.24 Describe the operation of authentication and auditing services protocols and how to effectively secure them.
16.25 Describe the operation of administrative services protocols and how to effectively secure them.
16.26 Describe the operation of the IP Security protocol.

17.0 MAINTAIN AND MONITOR SECURITY POLICIES -- The student will be able to:
17.01 Identify basic network security.
17.02 Describe purpose and use of packet sniffing, firewalls and proxies.
17.03 Define web server security.
17.04 Protect against the risks of directory browsing.
17.05 Assess client security issues (including ActiveX, JavaScript, Cookies, etc.)
17.06 Install and configure network security tools
17.07 Explain the strengths, and weaknesses of cryptography as a security tool
17.08 Describe authentication and identification schemes
17.09 Define secure software.
17.10 Describe the use and purpose of encryption.
17.11 Define the advantages of Secure Socket Layer (SSL).
17.12 Define certificate authority.
17.13 Identify basic aspects of intrusion detection and steps to protect the webserver from these threats.
17.14 Explain the history of cryptographic methodology.
17.15 Describe cryptographic attack models.
17.16 Describe the secret key and public key encryption methodology.
17.17 Use hashing techniques.
17.18 Use digital signatures in a network environment.
17.19 Explain applied cryptography.
17.20 Use authentication processes in heterogeneous environments.
17.21 Create secure environment through defensive programming.
17.22 Explain the basic elements of Security Testing and Auditing.
17.23 Describe the capabilities of effective signature filter techniques.
17.24 Explain the importance of architectural design detection of intrusions.
17.25 Describe interoperability aspects of various commercial IDS solutions.
17.26 Define and utilize various network based Intrusion Detection Solutions (IDS).
17.27 Detect various exploitation attempts in a network environment.
17.28 Explain intrusion detection and denial of service.
17.29 Describe techniques for gathering intelligence on intrusion detection and the latest tools and techniques used by hackers.
17.30 Define and recognize structured attacks and differentiate from unstructured attacks.
17.31 Explain management issues related to intrusion detection.

Software Specialization:
18.0 PERFORM WEB AUTHORING ACTIVITIES TO SUPPORT E-BUSINESS -- The student will be able to:
18.01 Identify and describe the components of an HTML document.
18.02 Create lists in an HTML document.
18.03 Recognize the various layouts used in Web site design.
18.04 Use storyboarding to design a comprehensive Web site.
18.05 Create links between HTML documents within a Web site and to external HTML documents.
18.06 Link to another computer, to a downloadable file, to a mail program, or to a newsgroup.
18.07 Create tables.
18.08 Add images to Web pages.
18.09 Customize Web page color schemes.
18.10 Create image maps.
18.11 Identify and use Common Gateway Interface scripts.
18.12 Identify elements of HTML fill-in forms.
18.13 Use Server Side Includes (SSI) commands in an HTML document.
18.14 Identify the required components of a Web page that incorporates advanced features.
18.15 Incorporate Server Side Include commands in a functional Web site.
18.16 Describe the various CGI scripting languages used in a Web site.
18.17 Develop Web pages that utilize PERL scripts with CGI.
18.18 Modify and use JavaScript in a Web site.
18.19 Incorporate Java applets in a Web site.

19.0 PERFORM PROGRAMMING ACTIVITIES TO SUPPORT E-BUSINESS -- The student will be able to:

19.01 Write Java programs that use objects of Socket, SocketServer, URL and Connection.
19.02 Create programs that communicate across the Internet using Remote Method Invocation.
19.03 Implement programs that use local or remote databases with JDBC protocols.
19.04 Create Servlets that send HTML pages to Internet clients.
19.05 Use Java as a scripting language on the client side of a distributed Java program.
19.06 Create and use Java Beans appropriately in distributed applications.
19.07 Implement levels of security in distributed Java applications and applets.
19.08 Read simple UML diagrams, and create UML documents that model Java programs.
19.09 Explain the key network protocols used with the WWW including Transmission Control Protocol (TCP), Internet Protocol (IP), and Hypertext Transfer Protocol (HTTP).
19.10 Use network utilities to monitor activity, determine IP addresses, and locate Web servers.
19.11 Differentiate between client-side scripting and server-side scripting.
19.12 Manipulate the objects contained in the Document Object Model (DOM).
19.13 Use variables and constants within a script.
19.14 Use variables, constants, and arithmetic operators to create valid arithmetic expressions.
19.15 Alter the sequence of script execution.
19.16 Use built-in functions as well as create custom functions, subroutines, and procedures within JavaScript and VBScript scripts.
19.17 Create Active Server pages (ASP).
19.18 Create and use server-side include files.
19.19 Use the Request object to process forms and access server variables.
19.20 Use the Response object to control output from the server. Create and use the Global Application File.
19.21 Read and write cookies.
19.22 Integrate Component Object Model (COM) components with Active Server Pages.
19.23 Use the FileSystemObject object, Dictionary object and the Err object.
19.24 Create a Web page using data from a database.
19.25 Explain NetBIOS programming
19.26 Use Windows redirector.
19.27 Use mailslot networking technology.
19.28 Use pipe networking technology
19.29 Describe the protocol address families supported by Winsock and create a socket.
19.30 Create connection-oriented and connectionless Winsock protocols.
19.31 Describe various Winsock I/O models.
19.32 Differentiate between sockets and ioctl options.
19.33 Describe various name space models.
19.34 Register and query a service.
19.35 Use transport service providers and name space service providers.
19.36 Explain the history of Extensible Markup Language (XML)
19.37 Use the Document Type Definitions that define an XML document structure.
19.38 Use schemas for validating an XML document.
19.39 Manipulate the contents of an XML document.
19.40 Explain the use and purpose of XPath and Simple API.
19.41 Write SXLT documents
19.42 Use XSL transformations
19.43 Explain Extensible Hypertext Markup Language.
19.44 Explain emerging trends in XML-related technologies.
19.45 Explain and use the different elements that make code easier to read.
19.46 Explain and use the different data types available in PERL.
19.47 Explain and use IF and ELSIF statements, WHILE loops, FOR and FOREACH loops, and WHILE loops.
19.48 Output data from PERL scripts to various formats
19.49 Explain the benefits of using subroutines and libraries in code.
19.50 Debug PERL code.
19.51 Explain basic Internet and PERL security issues and common techniques to fix them.
19.52 Use PERL to create and manage form data submitted over the Internet.
19.53 Examine the use of shopping carts on the Internet and how PERL can be used in these applications.
19.54 Examine the use of auctions via the Internet and how PERL can be used.
19.55 Know rules for flowcharting, symbols, and structures.
19.56 Develop the logic for a program using both flowcharting and pseudocode.
19.57 Develop looping and nested looping logic.
19.58 Document programs.
19.59 Develop the logic of: three-level control break program, an extract program, an edit program, a file matching and an update program.
19.60 Interpret a simple table.

20.0 USE VARIOUS PROGRAMMING LANGUAGES FOR E-BUSINESS ENVIRONMENT --The student will be able to:
20.01 Explain the key network protocols used with the World Wide Web including Transmission Control Protocol (TCP), Internet Protocol (IP), and Hypertext Transfer Protocol (HTTP)
20.02 Explain how applets differ from applications in terms of program form, operating context, and how they are started.
20.03 Describe and use single- and multi-dimensional arrays.
20.04 Create classes that use inheritance aspects of the object-oriented paradigm.
20.05 Explain the keywords, static, final, abstract, inner classes, interface, etc. and when to use each.
20.06 Describe the error handling constructs.
20.07 Write a program that reads and writes text files.
20.08 Understand the hierarchy of Collections classes, and use sets and lists.
20.09 Identify deprecated classes, and explain how to migrate.
20.10 Use the jar tool.
20.11 Explain and use event handling in a GUI.
20.12 Use network utilities to monitor network activity, determine IP addresses, and locate Web servers.
20.13 Differentiate between client-side scripting and server-side scripting.
20.14 Manipulate the objects contained in the Document Object Model (DOM).
20.15 Use variables and constants within a script.
20.16 Use variables, constants, and arithmetic operators to create valid arithmetic expressions.
20.17 Dynamically alter the sequence of script execution.
20.18 Use built-in functions as well as create custom functions, subroutines, and procedures within JavaScript and VBScript scripts.
20.19 Create Active Server Pages (ASP).
20.20 Create and use server-side include files.
20.21 Use the Request object to process forms and access server variables.
20.22 Use the Response object to control output from the server.
20.23 Create and use the Global Application File.
20.24 Read and write cookies.
20.25. Integrate Component Object Model (COM) components with Active Server Pages.
20.27. Create web page using data from a database.

21.0 DEVELOP SOFTWARE APPLICATIONS FOR E-BUSINESS ENVIRONMENT --The student will be able to:
21.01 Explain the architecture of a Wireless Application Protocol (WAP) application
21.02 Identify a variety of WAP micro-browsers.
21.03 Configure Web servers to recognize appropriate MIME types.
21.04 Identify a variety of vendor supplied development toolkits and explain the strengths and weakness of each.
21.05 Explain the purpose of a WAP gateway.
21.06 Evaluate various WAP gateway products and describe the strengths and weaknesses of each.
21.07 Create Wireless Markup Language (WML) decks.
21.08 Create client-side scripts using WML Script.
21.09 Incorporate ease of use features into WAP applications.
21.10 Incorporate dynamic content in WAP applications by using ASP.
21.11 Design WAP applications that are accessible by a variety of wireless and wired devices.
21.12 Explain alternatives to using ASP to create dynamic content for WAP applications.
21.13 Create a strategy to convert existing HTML based web sites to WAP.
21.14 Build a simple email system accessible from wireless devices.
21.15 Explain security issues and options in a WAP application.
21.16 Integrate the push model of information delivery.
21.17 Explain the architecture of Wireless Telephony applications (WTA).
21.18 Use various HTML elements.
21.19 Explain the various database concepts and vocabulary including: tables, columns, rows, data types, primary and foreign keys, relationships, queries, and relational database design techniques.
21.21 Explain server security and permissions.
21.22 Evaluate the advantages / disadvantages of different server platforms.
21.23 Explain scripting concepts and syntax.
21.24 Connect common databases using standard protocols.
21.26 Write and modify a database record using a Web interface.
21.27 Enable Web security features and tune Web applications.
21.28 Design and implement a basic shopping cart application.

22.0 CONDUCT SYSTEMS ANALYSIS AND DESIGN --The student will be able to:
22.01 Perform a preliminary investigation of a systems project.
22.02 Perform a detailed systems investigation and analysis of the project.
22.03 Design the input and output for the system.
22.04 Design the data files for the systems.
22.05 Design the processing flow of the system.
22.06 Design a system to insure that only valid data is accepted and processed, completely and accurately.
22.07 Establish a project plan for the development and implementation of the systems.
22.08 Program and test the system.
22.09 Develop the final systems documentation.
22.10 Conduct necessary training and file conversion to properly implement the system.
Technology Specialization:

23.0 **PERFORM WEB SERVER MANAGEMENT ACTIVITIES** -- The student will be able to:
   23.01 Perform console management in the author and user mode.
   23.02 Navigate and create a custom management console.
   23.03 Create new user accounts.
   23.04 Implement groups into a domain.
   23.05 Change the domain mode.
   23.06 Manage software settings, scripts, and security settings.
   23.07 Manage administrative templates.
   23.08 Manage folder redirection.
   23.09 Configure and administer network printers.

24.0 **SUPPORT E-BUSINESS APPLICATIONS AND PRODUCT DEVELOPMENT** - The student will be able to:
   24.01 Identify the different components to systems development life cycle and how they are interrelated.
   24.02 Identify deliverables for user project and build subprojects within lifecycle components.
   24.03 Create physical structure of web-based architecture.
   24.04 Create requirements for business request, develop web components necessary to satisfy request and test for acceptance.
   24.05 Use web browser and web authoring tools.
   24.06 Write required queries to get required answer sets.

25.0 **MAINTAIN NETWORK INFRASTRUCTURE** -- The student will be able to:
   25.01 Analyze the infrastructure for E-business, the Internet, packet-switched networks, several Web markup languages, and popular Internet applications, protocols, and utility programs.
   25.02 Identify Web server hardware and discuss performance evaluation
   25.03 Describe security threat countermeasures, including anti-virus software and encryption.
   25.04 Identify basic components of electronic payment systems.
   25.05 Identify how to create and maintain an effective Web presence and brand.
   25.06 Describe various Electronic Data Interchange components.
   25.07 Define and explain virtual communities and Web portals.
   25.08 Identify challenges of a global business regarding culture, legal and financial impacts, and differing languages.
   25.09 Identify the planning stages of the E-Business Project.

26.0 **DESIGN, INTEGRATE AND DEPLOY E-BUSINESS SYSTEMS** -- The student will be able to:
   26.01 Describe the lifecycle of an E-Business.
   26.02 Explain Web site information architecture design principles.
   26.03 Identify various E-Business systems development strategies.
   26.04 Explain integration with LDAP, Messaging, and Collaboration.
   26.05 Identify and describe the use of Meta Directories, Content Syndication, Single Sign-on, and Search Engines.
   26.06 Identify various deployment strategies and Middleware.
   26.07 Identify various Application Server Systems Architectures.
   26.08 Explain Transaction Processing (TP) monitor systems architecture.
   26.09 Identify various integration solutions.

27.0 **PERFORM TECHNICAL REQUIREMENTS TO SUPPORT UNIX OPERATING SYSTEM** --
The student will be able to:
   27.01 Explain the history of UNIX
   27.02 Explain basic command syntax for approximately 100 common shell commands governing the file-system, printing and process control.
   27.03 Identify various UNIX editors and use the vi editor.
27.04 Schedule and reprioritize processes running under UNIX.
27.05 Use commands to get information and communicate with remote users.
27.06 Search for strings of text in files using shell meta-characters.
27.07 Use Awk to generate reports or filter text.
27.08 Use Korn shell scripts to control flow, input, output and jobs.
27.09 Use C shell variables and arrays.
27.10 Troubleshoot various system problems.

28.0 MAINTAIN SYSTEMS QUALITY AND PERFORM TESTING ACTIVITIES -- The student will be able to:
28.01 Identify the advantages and disadvantages of client-server computing.
28.02 Establish controls in a client-server framework.
28.03 Explain software testing methodology.
28.04 Describe the planning, executing and controlling of the testing process.
28.05 Perform Graphical User Interface testing.
28.06 Explain the server applications testing processes.
28.07 Explain testing in a networked application environment.
28.08 Incorporate cross-level functional testing within a data-driven framework-based environment.
28.09 Use client-server testing metrics.
28.10 Explain testing integration on the desktop.
28.11 Explain testing for web-based client-server applications.
28.12 Select and use appropriate automated test tools.

Business Specialization

29.0 PERFORM MANAGEMENT ACTIVITIES TO SUPPORT HUMAN RESOURCES IN AN E-BUSINESS ENVIRONMENT -- The student will be able to:
29.01 Describe the history of human resources.
29.02 Summarize the importance of human resources.
29.03 Identify career choice in human resources.
29.04 Describe the components of the job requirement and analysis process.
29.05 Describe the important elements of effective human resource planning.
29.06 Discuss the performance appraisal and the uses of the performance appraisal.
29.07 Compare various training options available to organizations.
29.08 Discuss strategies to improve organizational performance (various types of work teams, suggestion systems, goal setting, job redesign, etc.).
29.09 Describe various ways of compensating employees.
29.10 Summarize the legal regulations of compensation systems.
29.11 Explain the importance of maintaining employees.
29.12 Discuss the importance of safety and health laws and standards.
29.13 Describe how to create a safe and healthy work environment.
29.14 Describe labor relations and collective bargaining.

30.0 PERFORM ACTIVITIES TO ENHANCE SUPPLY CHAIN MANAGEMENT -- The student will be able to:
30.01 Explain the electronic environment of the supply chain.
30.02 Explain the importance of information in an integrated supply chain.
30.03 Explain the technological applications for supply chain management.
30.04 Discuss how to engineer or reengineer the supply chain for optimal materials planning and handling.
30.05 Explain how relationships are important to the supply chain.
30.06 Explain the importance of suppliers in the supply chain.
30.07 Describe how to resolve conflicts in the supply chain.
30.08 Explain the laws and regulations regarding "order taking", such as the 30-Day rule, shipment representation, delay and cancellation notices, and refunds.
30.09 Describe the components involved in an international supply chain management system.
31.0 USE VARIOUS MODELS AND STRATEGIES FOR E-BUSINESS -- the student will be able to:

31.01 Explain the components, linkages, and evaluation of Business Models and their relationship with e-business.
31.02 Describe the competitive environment and how it can affect an Internet business.
31.03 Describe competitive advantages and how the general manager of an Internet business can use this information.
31.04 The student will be able to describe the current strengths, weaknesses, opportunities, and threats to Internet business given general and specific information.
31.05 Describe the limitations to transactions over the Internet.
31.06 Describe the dynamics and appraisal of a business model.
31.07 Explain value configurations for the Internet.
31.08 Describe the process of valuing and financing an Internet start-up.
31.09 Describe macro environments and the impact on performance.
31.10 Explain the differences between incumbents and new entrants.

32.0 PERFORM CUSTOMER SERVICE TECHNIQUES FOR E-BUSINESS -- The student will be able to:

32.01 Define customer service.
32.02 Explain the advantages and disadvantages of customer service.
32.03 Discuss solutions to overcoming obstacles in customer service.
32.04 Define service culture in organizations.
32.05 Describe management's role in customer service formulation.
32.06 Describe employee empowerment and its importance in providing good customer service.
32.07 Explain the role of communicating in customer service.
32.08 Explain the difference behavioral styles of a challenging customer.
32.09 Describe strategies of dealing with challenging customers.
32.10 Describe the basic behavioral styles of customers.
32.11 Determine strategies for working with various customer behaviors.

33.0 PERFORM SELLING TECHNIQUES FOR E-BUSINESS -- the student will be able to:

33.01 Describe the relationship of personal selling to market-driven economies.
33.02 List the four broad strategic areas that make up the consultative-style selling model and the characteristics of each.
33.03 Identify career opportunities in the field of selling.
33.04 Explain the importance of relationship skills in personal selling.
33.05 Explain the importance of projecting a positive self-image.
33.06 Discuss communication-style bias and how it influences the relationship process.
33.07 Identify reasons why salespeople and customers benefit from thorough product knowledge.
33.08 List major sources of product information.
33.09 Discuss the evolving role of strategic selling.
33.10 Discuss the factors that influence people to make buying decisions.
33.11 Explain how to plan a sales presentation.
33.12 List criterion for qualifying and organizing prospects.
33.13 List guidelines for effective demonstrations.
33.14 Outline general strategies for negotiating buyer resistance.
33.15 Describe the proper attitude to display toward closing the sale.
33.16 List guidelines for closing the sale.
33.17 Explain how customer service can stimulate repeat business and referrals.
33.18 Describe how to properly handle activities that are part of the customer service program.
33.19 Describe the functions of a sales manager.
33.20 Explain how to manage time wisely.
33.21 List factors that influence the ethical conduct of sales personnel.
33.22 List and describe the functions of telemarketing.
PERFORM ADVERTISING TECHNIQUES FOR E-BUSINESS - The student will be able to:

34.01 Describe the relationship of advertising to market-driven economies.
34.02 Define the concept of self-regulation as it applies to advertising.
34.03 Discuss the major ethical issues that advertisers and government regulatory agencies must address.
34.04 Describe the marketing concept and how it differs from production-oriented marketing.
34.05 Explain the four primary functions in an agency: account management, creative services, media services, and research.
34.06 Distinguish between psychographics and demographics to explain how advertisers use each.
34.07 Explain the role of strategic research in the marketing-advertising function.
34.08 Identify the key elements of a marketing plan and an advertising plan.
34.09 Describe the barriers that an effective advertisement must overcome.
34.10 Explain how the media's qualitative features (atmosphere and environment) are blended with their quantitative dimensions (reach, frequency, and efficiency) to provide the needed profile for selection.
34.11 Describe the audience for each medium and explain how that audience is measured.
34.12 Explain the major trends in print advertisements.
34.13 Explain how buyers translate media plan objectives into target-directed advertising schedules.
34.14 Explain how the various elements in an advertisement work together to create impact.
34.15 Define the roles of the various people associated with television commercials, internet, radio, and print.
34.16 Identify the critical elements in radio and television commercials.
34.17 Distinguish between direct-response advertising, direct marketing, and mail order.
34.18 Identify innovative media to use to deliver sales, reminder, and action messages.
34.19 Distinguish between sales promotion and advertising.
34.20 Explain how public relations, advertising, and other marketing communication can work together.
34.21 Describe the role of the situation analysis in identifying key problems to be solved by the advertising.
34.22 Distinguish between evaluative and diagnostic research.
34.23 Explain business-to-business advertising objectives.
34.24 Explain how international advertising is created and executed.