

## **CIS S105 – Computer Literacy**

Upon successful completion of this course, students will be able to:

### **Computing Fundamentals**

1. Identify types of computers, how they process information and how individual computers interact with other computing systems and devices.
2. Identify the function of computer hardware components.
3. Identify how to maintain computer equipment and solve common problems relating to computer hardware.
4. Identify how software and hardware work together to perform computing tasks and how software is developed and upgraded.
5. Identify what an operating system is and how it works, and solve common problems related to operating systems.
6. Manipulate and control the Windows desktop, files and disks.
7. Identify how to change system settings, install and remove software.
8. Demonstrate ability to start and exit an application and utilize sources of online help.

### **Applications**

1. Identify common on-screen elements of Windows applications, change application settings and manage files within an application
2. Perform common editing and formatting functions
3. Perform common printing functions
4. Demonstrate ability to format text and documents including the ability to use automatic formatting tools.
5. Demonstrate ability to insert, edit and format tables in a document.
6. Demonstrate ability to modify worksheet data and structure and format data in a worksheet.
7. Demonstrate ability to sort and manipulate data using formulas and functions and add and modify charts in a worksheet.
8. Demonstrate ability to create and format simple presentations
9. Identify network fundamentals and the benefits and risks of network computing.

### **Online Resources**

1. Identify how to appropriately use an email application, including "netiquette".
2. Identify different types of information sources on the Internet.
3. Demonstrate ability to use a web browsing application.
4. Demonstrate ability to search the Internet for information.
5. Identify how computers are used in different areas of work, school and home.
6. Identify the risks of using computer hardware and software.
7. Identify how to use computers and the Internet safely, legally, ethically and responsibly.

## **CIS S116 – Business Mathematics**

Upon successful completion of this course students will be able to:

1. Demonstrate ability to work with whole numbers: adding, subtracting, multiplying, dividing
2. Demonstrate ability to work with fractions: adding, subtracting, multiplying, dividing
3. Demonstrate ability to work with decimals: adding, subtracting, multiplying, dividing
4. Demonstrate the ability to read and work with banking statements: checking and credit card
5. Demonstrate ability to solve for the unknown in basic linear equations and word problems
6. Demonstrate ability to work with percentage calculations: conversions with decimals and fractions and working with the portion formula
7. Demonstrate ability to compute a basic payroll: weekly/biweekly/semimonthly/monthly; hourly, salary, overtime, piecework, commissions; federal and state taxes
8. Demonstrate ability to compute simple interest and maturity value
9. Demonstrate ability to compute compound interest (future value) and present value
10. Demonstrate ability to compute the cost of installment buying (loans), paying installment loans early, and revolving credit cards
11. Demonstrate ability to compute the cost of home ownership: mortgages and amortization
12. Demonstrate ability to read, analyze, and interpret financial reports (balance sheet, income statement, trend and ratio analysis)
13. Demonstrate ability to analyzing and computing various depreciation options (straight-line, unit of production, sum of the year's digits, declining balance, MARCS)
14. Demonstrate ability to analyze life, fire, and auto insurance options
15. Demonstrate ability to read and explain stock, bond, and mutual fund quotations
16. Demonstrate ability to compute basic business statistical values: mean, median, and mode

## **CIS S157 – Introduction to Web Design**

Upon successful completion of this course students will be able to:

1. Read, write, and edit code that complies with the World Wide Web Consortium's standards to perform the following tasks:
  - a. Create Web pages and external style sheets from scratch.
  - b. Add style to Web pages using external CSS, including font styles, background images and colors, margins, padding, borders, and link and navigation styles.
  - c. Create and use tables appropriately – for data – and describe why it is important to avoid using tables for layout.
  - d. Create online forms.
  - e. Create user friendly, CSS-styled navigation.
  - f. Layout Web pages in two and three column layouts using CSS.
  - g. Build, manage, and edit page links, external links, anchors/bookmarks, e-mail links and graphical links using absolute and relative file paths.
  - h. Create Web pages that are user friendly and accessible to users with various disabilities.
2. Describe the importance of separating content from style through the use of semantic HTML code and external CSS.
3. Edit and optimize images for use on the Web.
4. Organize files and folders to ensure that a site is easy to update, maintain, and expand.
5. Transfer files to and from a Web server using FTP, including sites with multiple directories.
6. Demonstrate the basic concepts behind server side scripting for form handling.
7. Become familiar with a variety of Web authoring tools, including open source and commercial applications.
8. Use accepted folder and file naming conventions.
9. Validate HTML and CSS code for compliance with World Wide Web Consortium standards, and for compliance with standards for accessibility.

## **CIS S170 – Programming Fundamentals**

Upon successful completion of this course students will be able to:

1. Describe the underlying hardware and software architecture of the modern digital computer.
2. Describe the history of programming and the state of the art in modern programming languages (1 thru 4 GL)
3. Demonstrate ability to write, compile, and execute your own programs
4. Demonstrate ability to identify and correct syntax and logic errors
5. Demonstrate ability to document programs in a professional manner
6. Demonstrate ability to design a Graphical User Interface (GUI) window
7. Demonstrate ability to program response action items
8. Demonstrate the basic use of variables and their demands on computing resources
9. Demonstrate ability to code control statements and pseudo-code
10. Demonstrate ability to code logical operators and message dialogs
11. Demonstrate ability to code increment and decrement operators and while repetition statements
12. Demonstrate ability to code do...while repetition statements
13. Demonstrate ability to code and use specific formats such as \$1.00 and dates
14. Demonstrate ability to code and use methods and event handling

## **CIS S235 – Spreadsheet Concepts & Applications**

Upon successful completion of this course students will be able to:

1. Design, create, and modify complex workbooks
2. Demonstrate the ability to change and reset default settings
3. Modify complex workbooks through the use of formatting, changes in layout, and changes to formulas
4. Demonstrate the ability to design and create workbooks with multiple sheets and summarization of multiple sheets
5. Demonstrate the ability to plan and develop templates
6. Demonstrate the ability to use built-in templates
7. Demonstrate the use of Pivot tables and charts
8. Demonstrate the use of filters and conditional formatting
9. Demonstrate the difference between linking and embedding
10. Demonstrate the ability to determine when to use either linking or embedding
11. Demonstrate the ability to record and run simple macros
12. Demonstrate the ability to make minor changes to simple macros
13. Interpret basic elements of the Visual Basic Editor
14. Demonstrate use of protecting worksheets
15. Demonstrate using Lookup functions
16. Demonstrate using IF functions and other common financial functions
17. Demonstrate the ability to create what-if analysis, save as scenarios, and switch between scenarios
18. Demonstrate the ability to use goal seek
19. Demonstrate the ability to use Solver
20. Demonstrate the ability to create one and two-variable data tables
21. Convert worksheet data into formats used on the Internet (i.e. HTML, XML, etc.)
22. Demonstrate the ability to use the Query Wizard
23. Demonstrate the ability to work collaboratively on a shared workbook
24. Import data into Excel from external database programs and the Web
25. Demonstrate creating web queries and using hyperlinks
26. Demonstrate the ability to troubleshoot complex spreadsheet problems

## **CIS S240 – Database Concepts and Applications**

Upon successful completion of this course students will be able to:

1. Describe the difference between data and information.
2. Identify and describe the major components of a relational database.
3. Define major database terminology.
4. Identify and describe each type of key used in a database.
5. State the function of referential integrity rules.
6. State and use the different types of relationships used in effective database design.
7. Create an entity-relationship diagram of a relational database.
8. Identify different normal forms and be able to normalize complex datasets.
9. Create a relational database from start to finish, including tables, forms, queries, reports, and macros.
10. Define and be able to use inner and outer joins.
11. Use input masks and other field properties.
12. Create and use multi-criteria queries.
13. Create user friendly forms to ease the data entry process.

## **CIS S257 – Advanced Web Site Design and Development**

Upon successful completion of this course students will be able to:

1. Write W3C standards-compliant HTML to create consistent structure throughout a Web site
2. Identify and use consistent methods for adding style to a Web site through the use of Cascading Style Sheets
3. Create complex, table-free page layouts using CSS
4. Describe the purpose of the Document Object Model (DOM)
5. Use the DOM to implement JavaScript events
6. Dynamically alter Web page content with JavaScript
7. Validate form data using client side scripting
8. Describe how current Web technologies and standards enhance overall site structure and maintenance.

## **CIS S262 – Professional Development**

Upon successful completion of this course students will be able to:

1. Conduct a self-analysis of personal and professional traits that will lead to career success
2. Apply effective job-seeking skills including preparing a professional portfolio and completing a mock interview
3. Describe the elements of a professional image by applying the basics of good health practices, personal grooming, selecting a proper work wardrobe, and demonstrating proper etiquette
4. Discuss principles of effective time management and the importance of productivity
5. Discuss and apply human relations skills needed for professional success including identifying different value systems and their significance in understanding the behavior of others
6. Discuss legal issues relating to the work environment such as sexual harassment, employer/employee rights, privacy of information, substance abuse, and discrimination
7. Discuss personal and professional issues relating to the employee's role in the work environment such as teamwork, negotiation, organizational ethics, corporate culture, dealing with change in the organization, mentoring, office politics, power, leadership, and networking
8. Formulate personal, educational, and professional career goals and develop a plan to accomplish those goals

## **CIS S310 – Management Information Systems (Cross-listed as BA S310)**

Upon successful completion of this course, students will be able to:

1. Describe the major types of information systems and their purposes.
2. Identify challenges a manager might face in developing and using information systems.
3. Describe how information systems can be used to confront competitive forces.
4. Explain how knowledge management, data analytics, and business intelligence can help a business to gain and sustain a competitive advantage.
5. Identify strategic uses of Internet technologies.
6. Identify the components of a computer system, including hardware and software.
7. Describe the value of implementing data resource management processes and technologies in an organization.
8. Identify the basic components, functions, and types of telecommunications networks used in business.
9. Describe how information systems integrate and support enterprise-wide processes, as well as the functions of marketing, manufacturing, human resource management, accounting, and finance.
10. Describe the benefits and challenges of major enterprise applications, such as customer relationship management, enterprise resource planning, and supply chain management systems.
11. Identify the basic process components of e-commerce systems along with important trends, applications, and issues in e-commerce.
12. Describe how information systems such as expert systems, executive information systems, and decision support systems can be used by managers and professionals to support informed decision making.
13. Describe the importance of the planning process in developing IT strategies, along with the challenges that arise when introducing new IT-based strategies and applications.
14. Compare various approaches to the development of information systems, including traditional, prototyping, and end-user development approaches.
15. Discuss defenses necessary for the performance and security of information systems, as well as societal impact and ethical implications of information technology.
16. Describe the managerial implications of the use of information technology in global business.

## **CIS S345 – IT Infrastructure**

Upon successful completion of this course, students will be able to:

1. Describe the principles underlying layered systems architectures and their application to both computers and networks
2. Describe the key principles of data representation and manipulation in computing solutions
3. Explain the basics of computer processor (CPU) technology and its vital role in systems architecture
4. Discuss IT infrastructure data storage technologies
5. Discuss system integration and performance of a computer system
6. Describe the basics of computer system input and outputs technologies and be able to choose the optimum option to support for business applications
7. Demonstrate through practical examples how protocols are used to enable communication between computing devices connected to each other.
8. Configure an IT infrastructure solution for a small organization, including a network based on standard technology components, servers, security devices, and several different types of computing clients.
9. Describe the role and structure of the Internet as an IT infrastructure component and design simple infrastructure solutions based on the use of the Internet
10. Explain the Systems Development Life Cycle and its use in applications development
11. Explain the computer operating system and its corresponding memory usage
12. Compare and contrast file management/data storage options for IT infrastructure

## **CIS S370 – Software Engineering**

Upon successful completion of this course, students will be able to:

1. Discuss how the Software Development Life Cycle methodology is used to develop a computer application
2. Explain the concept of process modeling
3. Describe how to plan a project including how to capture requirements and design the solution(s)
4. Use object oriented programming skills to design, write and test the application.
5. Demonstrate the ability to use primitive data types and data structures in basic programming concepts.
6. Write simple applications that relate to user specifications captured while planning the project.
7. Design, implement, test, and debug a program that uses the fundamental programming constructs of basic computation, simple input/output, standard conditional and iterative structures, and the definition of functions
8. Demonstrate project completeness through application testing with sample data
9. Document end-user requirements and training.
10. Document user requirements traceability to defend that the program meets the user requirements.
11. Discuss the process of delivering the system to the end-user including system documentation, end-user training, and maintenance documentation.

## **CIS S371 – Systems Analysis and Design**

Upon successful completion of this course, students will be able to:

1. Identify the types of business needs that can be addressed using information technology-based solutions.
2. Initiate, specify, and prioritize information systems projects to determine various aspects of feasibility of these projects.
3. Apply at least one specific methodology for analyzing a business situation (a problem or opportunity), modeling it using a formal technique, and specifying requirements for a system that enables a productive change in a way the business is conducted.
4. Write clear and concise business requirements documents and convert them into technical specifications.
5. Communicate effectively with various organizational stakeholders to collect information and to convey proposed solutions to them.
6. Compare and contrast various systems acquisition alternatives, including the use of packaged systems (such as ERP, CRM, SCM, etc.) and outsourced design and development resources.
7. Apply contemporary CASE tools for process and data modeling.
8. Incorporate principles leading to high levels of security and user experience from the beginning of the systems development process.
9. Design high-level logical system characteristics (user interface design, design of data and information requirements).

## **CIS S420 – Information Systems Security**

Upon successful completion of this course, students will be able to:

1. Discuss the fundamental principles of information technology security.
2. Explain the concepts of threat, evaluation of assets, information assets, physical, operational, and information security and how they are related.
3. Discuss the need for the careful design of a secure organizational information infrastructure.
4. Perform risk analysis and risk management.
5. Explain technical and administrative mitigation approaches to system security.
6. Discuss the need for a comprehensive security model and its implications for the security manager or Chief Security Officer (CSO).
7. Create and maintain a comprehensive security model.
8. Explain and apply state of the art security technologies.
9. Discuss basic cryptography, its implementation considerations, and key management.
10. Design and guide the development of an organization's security policy.
11. Determine appropriate strategies to assure confidentiality, integrity, and availability of information.
12. Apply risk management techniques to manage risk, reduce vulnerabilities, threats, and apply appropriate safeguards/controls.

## **CIS S430 – Data and Information Management**

Upon successful completion of this course, students will be able to:

1. Describe the role of databases and database management systems in managing organizational data and information
2. Identify how data is physically stored and accessed.
3. Define business requirements based on organizational needs
4. Develop conceptual models by applying business requirements.
5. Describe the purpose and principles of normalizing a relational database structure
6. Design and implement a relational database using an industrial-strength database management system
7. Apply the data definition, data manipulation, and data control language components of SQL
8. Practice database administration tasks such as applying permissions, creating and deleting user accounts, and applying security policies
9. Apply database transactions appropriately to an application context
10. Apply basic mechanisms for accessing relational databases from various types of application development environments
11. Describe the role of databases and database management systems in the context of enterprise systems
12. Describe key principles of data security and identify data security risks in database management systems.