

*Associate of Applied Science Degree in Information Systems Technology  
– Direct Assessment Competency-Based*

299

**AREA:** Information Systems Technology

**DEGREE:** Associate of Applied Science Degree

**FORMAT:** This program is delivered through direct assessment, competency-based education (CBE). Competencies are performance-based statements about knowledge, skills, and abilities. Direct assessment means that progress and completion are based solely on the attainment of required competencies in lieu of credit hours or clock hours as a measure of student learning. Additional info about this program design is provided in the catalog section on CBE policies.

**LENGTH:** Direct assessment CBE programs are not time-based. Estimate time to completion depends on the student's academic load/attendance status for hours of educational activity per semester and previously attained competencies that are verified by faculty.

**PURPOSE:** The associate of applied science degree program (AAS) in (IST) is designed for students who seek employment or professional development as a generalist in the area of information technology (IT), with specific knowledge in various areas such as Web design/development, computer network design and administration and database administration. These specialized areas are gained by completing one or more career studies certificates which can be applied as the approved IT electives in the IST degree program.

**OCCUPATIONAL OBJECTIVES:** The associate of applied science degree curriculum in information systems technology prepares students for employment with business, industry and government organizations as entry-level Web applications developers, network engineers or database administrators, depending on degree specialization.

**TRANSFER GUIDELINES:** Transfer opportunities for associate of applied science degrees, if existing, are very specific in nature. Students enrolling in an applied science degree with plans to transfer to a four-year college or university should explore opportunities with their assigned CBE program faculty.

**PROGRAM REQUIREMENTS:** A student who studies topics in IT must possess general knowledge in systems analysis and design, software design and development, Web markup languages, Internet and network foundations and database fundamentals. Additionally, students must possess sound analytical and problem-solving skills, strong written and verbal communications skills and must have good interpersonal skills. These skills are an integral part of the information system technology (IST) curriculum. The

curriculum includes technical courses in information technology, business-related areas, general education and electives. Instruction is centered on theoretical concepts and practical, hands-on applications key to success in the information technology field. Students are strongly encouraged to consult with their advisor in planning their programs and selecting electives. Upon satisfactory completion of the program the graduate will be awarded the associate of applied science degree with a major in information system technology.

**COMPETENCIES:** The following competencies are required for completion of this direct assessment, competency-based education program:

#### I. Network Concepts

1. Carry out basic computer network troubleshooting techniques
2. Carry out trouble-shooting strategies for resolving an identified end-user IT problem.
3. Demonstrate the techniques of defensive programming and secure coding
4. Describe the attitudes, knowledge and abilities associated with quality customer service
5. Describe the layers, protocols, and components of the OSI model
6. Diagram the components of an integrated IT system
7. Differentiate among data types, data transfer protocols and file characteristics specified to the targeted use
8. Differentiate among strategies for business continuity provisioning of IT resources at the enterprise level
9. Differentiate among various computer networking models
10. Differentiate among various techniques for making a computer network secure
11. Discuss significant trends and emerging technologies and their impact on our global society
12. Explain the process of authentication and authorization between end-user devices and computing network resources
13. Identify a variety of enterprise-level digital storage technologies
14. Implement a hardware and software configuration responsive to an identified scenario
15. Summarize the flow of data through a computer network scenario
16. Summarize the implications of various cloud computing models
17. Summarize the security implications and risk for distributed IT systems
18. Summarize the tenets of ethics and professional behavior promoted by international computing societies
19. Use a variety of practices for making end-user systems secure

#### II. IT Professions

1. Academic Planning- Provides students with information related to academic programs and how they can achieve their academic goals

*Associate of Applied Science Degree in Information Systems Technology*  
*– Direct Assessment Competency-Based*

299

2. Academic Skills-Provides students with an overview of information related to optimal academic performance
3. Career Exploration and Development –Provides students with an overview of career options
4. College Policies – Provides students with an overview of important college policies as outlined in the Student Handbook
5. College Resources-Provides students with an overview of general college resources including: SIS, Instructional Technology, College Catalog, Library Resources and Student Services
6. Life Management- Provides information on how to manage various aspects of their lives
7. Social/Interpersonal- Provides information on how to effectively interact with others
8. Wellness- Provides information on how to maintain a healthy lifestyle

### **III. Web Page Design**

---

1. Create a web site that incorporates the following as a minimum: HTML5, Proper heading information, Proper CSS code in line, embedded and external files (CSS 3 as a minimum), Unordered, ordered, description lists, images, tables, forms, internal and external web page links.
2. Demonstrate best practices for designing end-user computing interfaces.
3. Document the web site specifications
4. Use the FTP client to transfer files
5. Use the W3C Validator

### **IV. Database Fundamentals**

---

1. Identify database administration tasks.
2. Describe the data management activities associated with the data lifecycle.
3. Diagram a database design based on an identified scenario.
4. Differentiate among data types, data transfer protocols and file characteristics specific to the targeted use.
5. Discuss applications of data analytics.
6. Discuss data governance and its implications for users as well as IT professionals.
7. Discuss issues relevant to dealing with very large data sets, both structured and unstructured.
8. Produce simple database queries.

### **V. Principles of Information Systems**

---

1. Demonstrate professional behavior in response to an ethically-challenging scenario in computing.
2. Describe IT procurement processes for goods and services.
3. Diagram the components of an integrated IT system.
4. Differentiate among data types, data transfer protocols and file characteristics specific to the targeted use.
5. Differentiate among strategies for business continuity provisioning of IT resources at the enterprise level.
6. Differentiate among various operating systems.

7. Differentiate between public and private data.
8. Discuss issues relevant to dealing with very large data sets, both structured and unstructured.
9. Discuss significant trends and emerging technologies and their impact on our global society.
10. Discuss software development methodologies.
11. Explain the process of authentication and authorization between end-user devices and computing network resources.
12. Identify a variety of assistive or adaptive technologies and universal design considerations.
13. Identify a variety of enterprise-level digital storage technologies.
14. Identify basic components of an end-user IT system.
15. Summarize life-cycle strategies for replacement, reuse, recycling IT technology and resources.
16. Summarize strategies to support or train users with their IT resources.
17. Summarize the differences among various programming languages.
18. Summarize the implications of various cloud computing models.
19. Summarize the role of IT in supporting the mission and goals of an organization.
20. Summarize the security implications and risks for distributed IT systems.
21. Use a variety of practices for making end-user systems secure.
22. Use data analytics to support decision making for a given scenario.

### **VI. Microcomputer Operating Systems**

---

1. Carry out trouble-shooting strategies for resolving an identified end-user IT problem.
2. Describe the attitudes, knowledge and abilities associated with quality customer service.
3. Differentiate among various operating systems.
4. Explain the process of authentication and authorization between end-user devices and computing network resources.
5. Implement an application of virtualization.
6. Summarize the tenets of ethics and professional behavior promoted by international computing societies
7. Use a variety of practices for making end-user systems secure.
8. Use communication, negotiation, and collaboration skills as a member of a diverse team.
9. Use documentation or a knowledge base to resolve a technical challenge in an identified computing scenario.

### **VII. Software Design**

---

1. Demonstrate the techniques of defensive programming and secure coding.
2. Use a programming or a scripting language to solve a problem.
3. Use communication, negotiation, and collaboration skills as a member of a diverse team.
4. Use documentation or a knowledge base to resolve a technical challenge in an identified computing scenario.

*Associate of Applied Science Degree in Information Systems Technology  
– Direct Assessment Competency-Based*

299

**VIII. System Analysis**

---

1. Carry out trouble-shooting strategies for resolving an identified end-user IT problem.
  2. Demonstrate best practices for designing end-user computing interfaces.
  3. Demonstrate professional behavior in response to an ethically-challenging scenario in computing
  4. Describe IT procurement processes for goods and services.
  5. Describe the attitudes, knowledge and abilities associated with quality customer service.
  6. Describe the data management activities associated with the data lifecycle.
  7. Diagram a database design based on an identified scenario.
  8. Diagram the components of an integrated IT system.
  9. Diagram the phases of the Secure Software Development Lifecycle.'
  10. Differentiate among various techniques for making a computer network secure.
  11. Discuss software development methodologies.
  12. Identify a variety of assistive or adaptive technologies and universal design considerations.
  13. Identify a variety of enterprise-level digital storage technologies.
  14. Identify basic components of an end-user IT system.
  15. Identify database administration tasks.
  16. Implement a hardware and software configuration responsive to an identified scenario.
  17. Modify a system to improve data confidentiality or regulatory compliance.
  18. Produce technical documentation responsive to an identified computing scenario.
  19. Summarize life-cycle strategies for replacement, reuse, recycling IT technology and resources.
  20. Summarize strategies to support or train users with their IT resources.
  21. Summarize the implications of various cloud computing models.
  22. Summarize the role of IT in supporting the mission and goals of an organization.
  23. Use a programming or a scripting language to share data across an integrated IT system.
  24. Use a programming or a scripting language to solve a problem.
  25. Use communication, negotiation, and collaboration skills as a member of a diverse team.
  26. Use data analytics to support decision making for a given scenario.
  27. Use documentation or a knowledge base to resolve a technical challenge in an identified computing scenario.
4. Mathematics for the Liberal Arts II (MTM 152)
  5. Principles of Public Speaking (CST 100)
  6. Approved Social/Behavioral Science Elective Competencies
  7. Personal Wellness Competencies
  8. Approved Humanities Elective Competencies

**IX. General Education**

---

1. College Composition I (ENG 111) Competencies
2. College Composition II (ENG 112) Competencies
3. Mathematics for the Liberal Arts I (MTH 151) Competencies