



Lake Technical College

2017 - 2018

Master Plan of Instruction

Applied Cybersecurity

Aramis Martinez, Instructor

Trevor Scharich, Industrial Assistant



The mission of Lake Technical College is to be an integral component of the economic growth and development in our community by offering a variety of high quality career-training opportunities.

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2001 Kurt Street, Eustis, FL 32726 - (352) 589-2250

www.laketechnology.org

LAKE TECHNICAL COLLEGE

Applied Cybersecurity

INTRODUCTION

The tremendous growth and advancement of the computer industry during recent years have made it essential that prospective technicians receive basic training that will be applicable in many related fields.

The Cybersecurity program prepares students for employment as a professional certified through CompTIA: Security+. Students will learn foundational skills in computer network security, security vulnerabilities, attack mechanisms and techniques, intrusion detection and prevention, cryptographic systems, system hardening, risk identification, incidence response, penetration testing, key management, access control, and recovery.

The program is designed as an open-entry/open-exit, competency-based, individualized program of study in which students may gain the minimum job entry-level skills in the computer systems industry. The Applied Cybersecurity Program offers 4 courses of study totaling 750 hours.

PROGRAM MISSION

The mission of the Applied Cybersecurity program is to prepare students for careers in the growing fields of Cybersecurity. The learning experience involves hands-on and simulated experience with real-world projects, utilizing current technologies.

PROGRAM PHILOSOPHY

The Cybersecurity class philosophy is “Nobody is left behind.” Regardless of your learning style or background in information technology, your faculty will do everything possible to ensure your comprehension of the material. You can rest assured that your learning experience is our first priority.

We believe that competent workers in the high-performance workplace need: 1. Skills in communications, mathematics, critical thinking, teamwork, and effective work habits. 2. Training in emerging concepts and technologies. 3. Relevant work-based learning experience.

We will provide a caring atmosphere that promotes a high degree of student-faculty interaction and fosters development of business and industry partnerships.

PROGRAM CONTENT

The topics covered include: Network design and security, Security vulnerabilities, Attack mechanisms and techniques, Intrusion detection and prevention, Cryptographic systems, System hardening, Risk identification, Incidence response, Penetration testing, Access control, Recovery, Database Security Planning and analysis Software, Web security, User authentication, Session Management, Employability skills.

ADMISSIONS REQUIREMENTS

Applicants must be at least 16 years of age and should be academically, physically, and emotionally capable of meeting the demands of the chosen program. Applicants make initial application through the Admissions Office. A minimum skills evaluation is part of the admission process.

The Applied Cybersecurity program has the following minimum admissions requirements:

1. Complete an LTC online application.
2. Take the TABE.
3. Meet with a career advisor.

A high school diploma or GED is not required to enroll. However, it is **recommended that all students complete either a high school diploma or a GED prior to program completion.**

Students who enroll with prior computer skills and/or training may be able to complete program requirements in less time than students who enter without this background.

TEST OF ADULT BASIC EDUCATION (TABE)

All applicants for Career and Technical Education (CTE) programs 450 hours or more, with the exception of Florida Law Enforcement Academy applicants, take a state mandated TABE prior to enrollment. TABE scores are good for two years and must be valid at the time of enrollment.

Several exemptions to TABE are accepted. In order to be exempt, a student must submit official documentation to a career advisor for verification of an exemption:

1. Applicants who have earned a standard State of Florida high school diploma, 2007 or later, or possess a documented degree (AA, AS, AAS, BA or BS) may be exempt from TABE testing. (s.1004.91).
2. Applicants who have earned a State of Florida High School diploma via the GED® test no more than two years prior to the start of class.
3. Students taking any accepted standardized tests such as PERT or ACT may be exempt from the TABE provided the scores are at satisfactory levels and the test was taken within two years of enrollment in a Career and Technical Education program (6A-10315, 6A-10.040).
4. A student who has completed or who is exempt from the college-level communication and computation skills (CLAST) examination pursuant to s.1008.29 is also exempt from the TABE. Per s. 1008.29.
5. Documented successful completion of college-level remedial coursework may be used to meet TABE requirement.
6. Documented passing scores on state-designated industry certification tests may be used.
7. Mandated TABE exit scores may be waived for documented special needs students as per Florida guidelines. The student must enroll in AAEE and begin remediation in order to meet the exit requirements of the CTE program in which the student is enrolled. A student, with a documented disability, who is approaching completion (mastered 90% of the competencies) of the CTE program and has not met TABE scores, may be considered for a TABE exemption based on the following. It is determined through a SIT meeting that the student has successfully mastered the competencies of the CTE program in which she/he is enrolled and has been participating as expected in AAEE. The members of the SIT meeting may agree to waive TABE requirements.

According to Florida Department of Education rules, students who fail all or parts of the TABE may only retest using a different TABE version after 60 documented hours of remediation in the Applied Academics for Adult Education (AAEE) lab or three months if not attending AAEE. Students may not retake the same test version for six months. We, therefore, strongly recommend that students test early, especially for licensure programs, in order to allow time for remediation and retesting should the need arise.

Students who do not meet the minimum TABE scores set by the Florida Department of Education for their program must begin attending remediation classes in the AAEE lab prior to or at the time of enrollment in a Career and Technical Education program for at least one block a day and make acceptable progress as determined by the AAEE faculty. Students should meet state mandated TABE requirements by the time they have completed 50% of their program. Students who do not meet state mandated TABE scores may not receive a certificate of completion as per Florida Department of Education rules.

Applicants transferring appropriately leveled TABE, PERT or other accepted standardized test scores from other testing centers must do so by having an official score report sent directly to the Admissions Office prior to enrollment in the program. Scores brought by hand will be accepted only if document provided by the outside testing center is in a sealed envelope. Standardized tests scores are valid for two years.

TABE scores are good for two years and must be valid at the time of enrollment. TABE scores that expire during continuous enrollment remain valid until the end of such enrollment. Under continuous enrollment, students must be enrolled at least 50% of one semester per school year and may miss no more than one consecutive semester. Continuous enrollment applies to attendance in a single program.

The TABE exit scores for this program are: Reading 9; Math 10; and Language 9.

ESSENTIAL TASKS

Physical Requirements

View text at short range and long range, and detect errors such as a missing semi-colon. Remain seated for extended periods of time, with short breaks of 30-90 seconds every 25 minutes. Climb ladder, reach, and use of miscellaneous tools (drill, screwdriver, etc.) to install security equipment.

Cognitive Requirements

Act as a responsible, honest, and contributing citizen and employee. Apply a high level of academic and technical skills. Attend to personal health and financial well-being. Communicate clearly, effectively and with reason. Consider the environmental, social and economic impacts of decisions. Demonstrate creativity and innovation. Employ valid and reliable research strategies. Utilize critical thinking to make sense of problems and persevere in solving them. Model integrity, ethical leadership and effective management. Plan education and career path aligned to personal goals. Use technology to enhance productivity. Work productively in teams while using cultural/global competence.

ACCOMMODATIONS

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's IEP or 504 plan or postsecondary student's accommodations plan to meet individual needs to ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their postsecondary provider.

Students desiring accommodations or updates to their accommodations are encouraged to self-identify as early in the program as possible. In order to receive disability accommodations, students must self-disclose the disability to the Students with Disabilities Coordinator and provide documentation that clearly shows evidence of a disability and applicable accommodations. The Students with Disabilities Coordinator will schedule a meeting with the student and faculty to discuss the documented disability and applicable accommodations.

Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments, assessments, time demands, schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodation requested and provided is maintained in a confidential file.

TUITION

Tuition is charged for adult students at a rate established by the State legislature. Current fee information is available in the Admissions Office. Tuition is waived for eligible high school dual-enrolled students. Tuition is due prior to the first day of each semester based on the Lake Technical College payment calendar. Failure to pay all fees due at the time class begins will result in not being able to attend class and/or clinical if applicable.

CLASS SCHEDULE

Full-time students attend class from 8:15 AM to 4:15 PM Monday through Thursday with a 30 minute lunch period. This schedule provides 7.5 hours of instruction each day for a total of 30 hours per four-day week, excluding holidays and school breaks as outlined in the current school calendar.

ATTENDANCE POLICY

In an effort to develop appropriate work ethics, Lake Tech students are expected to attend all class sessions. As is expected in the workplace, when it is necessary to be absent due to illness or emergency situations, all students are to notify the faculty on or before the date of absence. The student attendance policy for each postsecondary program is consistent with industry standards.

Campus attendance is kept via a computerized system. It is the responsibility of the student to **log in and out** in order to receive credit for class time. This allows the school to keep accurate attendance records for the actual number of hours and minutes attended.

Absences

A student who is absent for six (6) consecutive class sessions will be withdrawn from enrollment in his/her program. A student withdrawn for absenteeism must petition administration to return. A student having medical documentation or documentation of an extenuating circumstance does not need to petition to return. Students exhibiting a pattern of consecutive absences less than six days will be subject to dismissal as determined by a School Intervention Team.

Students in non-licensure programs must have achieved a minimum of 80% attendance at the end of each quarter. Students not having met this requirement will be formally notified that continued absences will pose a threat to grades and program enrollment. School Intervention Team meetings will be held as necessary to attempt to alleviate issues resulting in excessive absences and to counsel the student of possible alternatives and consequences. Students who miss more than 20% of their program will not be allowed to re-enroll the next semester and must wait until the following enrollment period to re-register unless the student's appeal to the Executive Director has been approved. Only regularly scheduled class hours will be reported for attendance.

Tardiness

As in the workplace, students are expected to be in their seats promptly in the morning, after break, and after lunch. Students are expected to notify the faculty before the start of class of any anticipated tardies.

Leaving Campus During School Hours

For safety reasons, students will notify their faculty when leaving campus early. Students may leave campus for lunch provided this is done within the allotted time.

PLAN OF INSTRUCTIONAL PRACTICES

Teaching Methods

These include hands-on coding exercises, client project work, lecture presentations, group work, and independent learning through viewing of web-based videos and simulated lab exercises.

Laboratory Activities

Shop or laboratory activities are an integral part of this program. These activities provide instruction in the use of tools, equipment, materials, and processes found in the industry. Students will use various types of precision test equipment for analyzing, troubleshooting, and repairing computer circuitry.

Safety

The student is expected to adhere to safety standards in a normal I.T. environment such as: Exercising caution when handling electronic equipment. Walking (not running, with rare exceptions) No throwing of objects.

Online Access

Technology is an integral part of our daily lives. From smart phones to electronic tablets, these devices are becoming items that many cannot function without. In addition, the Internet is changing the way education is delivered. Lake Technical College strives to ensure that our students are able to compete in this technology driven world. With this in mind, it is recommended that students have an online presence and access to the internet

It is also important that students have an email address that they check on a regular basis. A lot of information may come to you through your email, so it is important that you check it regularly. If you do not have an email address, there are numerous services that provide FREE email addresses. Please make sure your faculty have a current, working email address for you. See your faculty for more information.

Social Media

The advent of social media has created a world-wide communication medium for persons of all ages. While extremely popular, these websites have also created their own set of "not-so-popular" problems such as cyber-stalking, identity theft, cyber-bullying, cyber-cheating (posting of exam, or other course material), and a host of other nebulous challenges that users may face. Another reality associated with social media is its far-reaching consequences for those who share posts that may be seen by others as inappropriate.

Potential employers, current employers, civic, or educational organizations you may be associated with, and many others are looking at social media sites for information that may tell them things about an individual. Students should also be cautioned on how private their social media content really is – despite the settings on an account. All social media sites are potentially vulnerable. A simple search of how to view pages that are set as "private" for a popular social media website yielded numerous responses for ways to view the content. Everything from blogs to online videos offer to explain how to accomplish this task.

Students in all programs need to be cognizant of the fact that most professions rely on great moral character. It is recommended that when using social media, assume that all posts will be seen/read by everyone with access to the internet.

Evaluation

Class performance, quizzes, tests, attendance, portfolio assessments, completion of project assignments, decision-making, professional skills, achievement of entry-level competencies, and other methods are used for evaluation. See "Grading Procedures".

Work Based Activities

Work-based learning activities play an integral part of the curriculum of LTC's career-technical training programs. These activities are planned with two objectives in mind. First, the activity provides students with the opportunity to develop and apply a "real world" experience using the knowledge and skills attained in the program. Second, the activity provides the faculty with objective input from potential employers or customers of program graduates. Each work-based activity has a written instructional plan outlining objectives, experiences, competencies and evaluation required during the activity.

Work-based activities are program specific and may include:

- Unpaid in-school shop/lab activities to provide customer service opportunities under the direct supervision of the program faculty.
- Unpaid job shadowing experiences that may include in-school or off-campus employer-based experiences under the supervision of a qualified employer representative who is working closely with the program faculty.
- Paid or unpaid cooperative training experiences conducted at the employer's work location under the supervision of a qualified employer representative and under the direction of the program faculty.

Cooperative Education

Cooperative training is available for students and coordinated by the faculty. Cooperative training is for students who have shown competence in program training that indicates readiness for placement in an on-the-job program. High school students participating in the cooperative job placement program must be in at least grade 12. To be eligible for a cooperative education experience, students must have completed one-half the required program hours and requirements.

Students may be returned to the program for additional training if they do not function satisfactorily on the job or when the cooperative agreement is terminated at the request of the student, parent, employer, or program faculty. Veterans will be accepted into the program in accordance with the Department of Veterans Affairs approved program.

Additional information regarding co-op opportunities may be obtained from the program faculty.

Job Shadowing

Job shadowing experiences, or volunteer experiences, are available to students as part of their program training. These experiences are designed to give the student actual hands-on experience doing a variety of related tasks. Length and type of experiences will vary. The program faculty determines appropriateness of the experience. Additional information regarding job-shadowing experiences may be obtained from the program faculty.

Career Dual Enrollment Students

All students enrolled in Lake Technical College are expected to function as adults. High school students will be held to the same behavioral and performance standards as adult students.

GRADING PROCEDURE

Grading Scale

The grading policy for this program is as follows:

94 – 100	Excellent
87 – 93	Average
80 – 86	Below Average
< 80	Failing

Lake Technical College is a postsecondary institution designed to provide trained individuals to industry. The grading scale for this program reflects industry standards. The approved postsecondary program grading requirements must be met if the student is to receive a certificate.

Program grades are based on the three criteria: Skills, Knowledge, and Professional Skills. Each area counts as one-third of the course grade. A minimum grade of 80% in each area is required in order to receive a passing grade. If a student's grade is below 80%, the student will be counseled as to what steps need to be taken to bring the grade to a satisfactory level.

Program Progress

Students are expected to complete the program of training within the hours allotted by the State of Florida for completion. The student's rate of progress will be closely monitored by the faculty to ensure program completion in a timely manner.

Requirements for a Certificate

All competencies specified in the State of Florida Curriculum Framework for the program must be successfully completed with at least an 80% in the areas of skills, knowledge, and professional skills. Students must also meet minimum TABE requirements prior to graduation.

Professional Skills

Effective professional skills are the cornerstone to successful employment. Students are expected to demonstrate productive professional skills during all phases of enrollment. Faculty will work with students who need assistance in this area to improve the overall possibility for successful employment.

Attendance: Attends class for all scheduled hours assigned, arrives/leaves on time, contribute to class discussion and is actively involved in all activities.

Character: Displays academic integrity (inclusive of not committing plagiarism), trustworthiness, dependability, reliability, self-discipline, and self-responsibility.

Teamwork: Respects the rights of others; is a team worker; is cooperative; ensures confidentiality in all classroom, clinical and other matters; demonstrates professional behavior in interactions with peers, preceptors, and faculty.

Appearance: Displays appropriate dress, grooming, hygiene, and wears full regulation uniform of the day.

Attitude: Displays a willingness to cooperate and accept constructive criticism; sets realistic expectations; approaches assignments with interest and initiative.

Productivity: Follows safety practices; conserves materials and supplies; maintains equipment; stays on task and utilizes time constructively; demonstrates proactive learning through involvement in activities and contributions to class discussions.

Organization: Manifests skill in prioritizing and management of time and stress; demonstrates flexibility in handling change; completes assignments on time; uses work time appropriately.

Communication: Contacts faculty to report concerns; notifies faculty of tardy/absence one hour before start of class; seeks clarification and understanding through appropriate, pertinent questions.

Leadership: Displays leadership skills; appropriately handles conflict and concerns; demonstrates problem-solving capability; maintains appropriate relationships with supervisors/faculty and peers; follows the chain of command.

Respect: Deals appropriately with cultural/racial diversity; does not engage in harassment of any kind to include but not limited to verbal, nonverbal, and written; addresses faculty and peers in appropriate tone and with appropriate language to include but not limited to electronic (email, text, etc.) communications.

CLASSROOM RULES

Students will:

1. Maintain a neat, clean, appropriate appearance.
 - When in uniform, be dressed according to the dress code.
 - Notify a faculty ½ hour prior to expected arrival time regarding tardiness or absences.
 - Seek permission and follow procedure to leave early when necessary.
 - Return from breaks and meal times at the specified time.
2. Respect the rights of others.
 - Be attentive and polite.
 - Do not distract neighbors thus preventing others from learning.
 - Respect the property of others.
 - Be patient and considerate of others.
 - Pay attention.
 - Think before speaking to avoid misunderstanding.
 - Be respectful of others opinions and questions.
3. Demonstrate good interpersonal relationships with peers and faculty.
 - Exhibit a congenial and cooperative attitude with others.
 - Show respect for faculty and peers.

4. Contribute to a learning atmosphere.
 - Assist classmates if able and time is appropriate.
 - Contribute new or pertinent material on topic when appropriate.
 - Make good use of classroom/laboratory time.
5. Take responsibility for own learning.
 - Come to class prepared.
 - Complete assignments and participate in class discussions.
7. Respect school property.
 - Always leave the classroom and lab areas neater than found.
 - Do not eat, drink, or smoke except in designated areas.
 - Do not deface property of others.
 - Students will not use College copiers for personal use.

REASONS FOR DISMISSAL FROM PROGRAM

1. Unsatisfactory academic, lab or professional skills.
2. Cheating in any manner.
3. Violations of the attendance policy.
4. Failure to satisfy identified probationary requirements within the stated time.
5. Failure to comply with requirements as stated in the Master Plan of Instruction.

STUDENT DRESS CODE

Students who attend Lake Tech shall dress in a manner appropriate for the job in which they are receiving training, including any special protective gear and professional uniforms. All clothing must be clean, neat, modest, in good repair, appropriately sized, and be neither distracting nor offensive. Jewelry and makeup, if worn, must be in accordance with the program Master Plan of Instruction. Please refer to the Master Plans of Instruction for individual program dress code policies.

The Director or designee has the final authority for determining whether or not a student's apparel conforms to the dress code. If it is determined that it does not, students will be required to change into clothing which will conform to this code or leave campus. Students may return to campus when they have changed into appropriate clothing.

Students are expected to wear the LTC Applied Cybersecurity uniformed shirt each day to class and if on assignment, a Job Shadow, or Co-op. No shorts are permitted. On other designated days, students will be required to dress in business attire suitable for a job interview. This is defined to be clothing that would be acceptable for most job candidates to wear to a standard job interview. If a student is absent on a designated day, they will dress in normal business attire or business attire suitable for a job interview on their next day of attendance. Designated days will be announced at least five class days in advance.

NOTE - Remember that you are preparing for employment in a position in which public relations may be a factor in your success. Individual desires cannot always take precedence.

GENERAL SCHOOL INFORMATION

Campus Safety

Lake Technical College makes every effort to provide a safe environment for all students, visitors, faculty and staff. Basic safety standards, which will include fire drills, weather drills, equipment usage, and traffic regulations, will be covered in the program orientation. These basic safety standards will be reinforced throughout the program enrollment. See the current school catalog for additional campus safety information.

Competency-based Instruction

Any student who enters a LTC program with previous experience or educational background that would enable the student to successfully complete a test of competence in any area may, with the permission of the faculty, complete a test to measure that competence.

Follow Up

Lake Technical College is proud of its graduates and celebrates the next step graduates take whether it is employment, military or further education. Prior to completing, students may visit the Career Success Center for assistance with employability skills such as resume writing. In addition, faculty may provide students with employment leads. However, it is up to the individual student to actively pursue employment opportunities. We like to hear how our

graduates are doing and want to celebrate your successes so be sure to communicate with your faculty any employment, military, or further education you enter. Students are required to participate in an Exit Interview prior to their last day in their program.

Food and Drink

To protect equipment and furnishings in the classroom and laboratory areas, only water, in closed, covered containers, is permitted. No other food or drinks are allowed, unless specific permission is granted by the faculty. However, under no circumstance may food or drinks be in the laboratory areas.

Lunch

Food services are provided on the main campus by the Culinary Institute and are available during breaks and lunch. Adult students may leave the LTC campus during the scheduled 30-minute lunch break as long as they return to the program on time.

Parking Regulations

Students may park only in the south parking lot in spaces not designated as staff or customer service parking. For safety, loitering in or around vehicles once the vehicle is parked is not allowed, and a 5 mph speed limit is enforced. In consideration of the neighbors and classes in session, loud music in vehicles on campus is prohibited.

Smoking

Lake Tech is a tobacco free institution. The use of tobacco products of any kind, including e-cigarettes, is not permitted at any LTC location, including the parking lots.

FINANCIAL AID

Policies and guidelines for the administration of all financial aid are established according to federal and state law. Applicants complete an information form, Free Application for Federal Student Aid, and furnish documentation needed to verify eligibility. More information on the application process may be obtained in the Financial Aid Office.

The Financial Aid Office will assist students, where possible, with access to financial support offered by federal agencies (U.S. Department of Education – Pell Grants, Department of Veterans' Affairs), other state and local agencies and local organizations (scholarships).

Intended Outcomes

After successfully completing this program, the student will be able to perform all tasks as set forth in the Florida Department of Educational Curriculum Framework (attached).

**Florida Department of Education
Curriculum Framework**

Program Title: Applied Cybersecurity
Program Type: Career Preparatory
Career Cluster: Information Technology

PSAV	
Program Number	Y100300
CIP Number	0511100302
Grade Level	9-12, 30, 31
Standard Length	750 hours
Teacher Certification	Refer to the <u>Program Structure</u> section.
CTSO	Phi Beta Lambda BPA
SOC Codes (all applicable)	15-1122 – Information Security Analysts
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml
Basic Skills Level	Mathematics: 10 Language: 9 Reading: 9

Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and cybersecurity-related careers in the Information Technology career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of cybersecurity.

The content includes but is not limited to foundational knowledge and skills in computer and network security, security vulnerabilities, attack mechanisms and techniques, intrusion detection and prevention, cryptographic systems, system hardening, risk identification, incidence response, penetration testing, key management, access control, and recovery. Specialized courses focus on database security, planning and analysis, software, and web security.

Additional Information relevant to this Career and Technology (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction consisting of two occupational completion points (OCPs). To complete this program, students must complete OCP A plus one of the subsequent courses in OCP B.

This program is comprised of courses which have been assigned course numbers in the SCNS (Statewide Course Numbering System) in accordance with Section 1007.24 (1), F.S. Career and Technical credit shall be awarded to the student on a transcript in accordance with Section 1001.44 (3)(b), F.S.

To teach the courses listed below, instructors must hold at least one of the teacher certifications indicated for that course

The following table illustrates the postsecondary program structure:

OCP	Course Number	Course Title	Teacher Certification	Length	SOC Code
A	CTS0018	Cybersecurity Associate	BUS ED 1 @2 COMPU SCI 6 CYBER TECH 7G INFO TECH 7G	600 hours	15-1122
B	CTS0019	Information Security Manager OR		150 hours	15-1122
	CTS0021	Data Security Specialist OR		150 hours	15-1122
	CTS0060	Software Security Specialist OR		150 hours	15-1122
	CTS0085	Web Security Specialist OR		150 hours	15-1122
	CTS0089	Information Security Administrator		150 hours	15-1122

Common Career Technical Core – Career Ready Practices

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.
2. Apply appropriate academic and technical skills.
3. Attend to personal health and financial well-being.
4. Communicate clearly, effectively and with reason.
5. Consider the environmental, social and economic impacts of decisions.
6. Demonstrate creativity and innovation.
7. Employ valid and reliable research strategies.
8. Utilize critical thinking to make sense of problems and persevere in solving them.
9. Model integrity, ethical leadership and effective management.
10. Plan education and career path aligned to personal goals.
11. Use technology to enhance productivity.
12. Work productively in teams while using cultural/global competence.

Standards

After successfully completing this program, the student will be able to perform the following:

- 01.0 Demonstrate knowledge, skill, and application of computer systems.
- 02.0 Demonstrate knowledge of different operating systems.
- 03.0 Develop a familiarity with the information technology industry.
- 04.0 Develop an awareness of microprocessors and digital computers.
- 05.0 Develop an awareness of programming languages.
- 06.0 Develop an awareness of emerging technologies.
- 07.0 Demonstrate an understanding of the Open Systems Interface (OSI) model.
- 08.0 Identify computer components and their functions.
- 09.0 Demonstrate proficiency using the Internet to locate information.
- 10.0 Demonstrate an understanding of Internet safety and ethics.
- 11.0 Demonstrate proficiency using common software applications.
- 12.0 Perform email activities.
- 13.0 Demonstrate proficiency in using presentation software and equipment.
- 14.0 Perform decision-making activities in a multimedia environment.
- 17.0 Demonstrate an understanding of cybersecurity, including its origins, trends, culture, and legal implications.
- 18.0 Describe the national agencies and supporting initiatives involved in cybersecurity.

- 19.0 Discuss the underlying concepts of terms used in cybersecurity.
- 20.0 Demonstrate an understanding of basic computer components, their functions, and their operation.
- 21.0 Demonstrate knowledge of different operating systems.
- 22.0 Demonstrate an understanding of the Open Systems Interface (OSI) model.
- 23.0 Describe the services and protocols that operate in the application, transport, network, and link layers of the OSI Model.
- 24.0 Demonstrate proficiency using computer networks.
- 25.0 Demonstrate an understanding of basic security concepts.
- 26.0 Demonstrate an understanding of legal and ethical issues in cybersecurity.
- 27.0 Demonstrate an understanding of virtualization technology.
- 28.0 Recognize and understand the administration of the following types of remote access technologies.
- 29.0 Understand the application of the following concepts of physical security.
- 30.0 Understand security concerns and concepts of the following types of devices.
- 31.0 Recognize and be able to differentiate and explain the following access control models.
- 32.0 Understand the security concerns for the following types of media.
- 33.0 Explain the following security topologies as they relate to cybersecurity.
- 34.0 Demonstrate an understanding of the technical underpinnings of cybersecurity and its taxonomy, terminology, and challenges.
- 35.0 Demonstrate an understanding of common information and computer system security vulnerabilities.
- 36.0 Demonstrate an understanding of common cyber attack mechanisms, their consequences, and motivation for their use.
- 37.0 Be able to identify and explain the following different kinds of cryptographic algorithms.
- 38.0 Demonstrate an understanding of the following kinds of steganographic techniques and their use in cybersecurity.
- 39.0 Understand how cryptography and digital signatures address the following security concepts.
- 40.0 Understand and be able to explain the following concepts of PKI (Public Key Infrastructure).
- 41.0 Demonstrate an understanding of certificates and their role in cybersecurity.
- 42.0 Demonstrate an understanding of intrusion, the types of intruders, their techniques, and their motivation.
- 43.0 Demonstrate an understanding of Intrusion Detection Systems (IDS).
- 44.0 Describe host-based IDS, its capabilities, and its approaches to detection (i.e., anomaly, signature).
- 45.0 Describe network-based IDS, its capabilities, and its approaches to detection (i.e., anomaly, signature).
- 46.0 Demonstrate an understanding of IDS applications.
- 47.0 Demonstrate an understanding of port scanning and network traffic monitoring employed as intrusion detection techniques.
- 48.0 Demonstrate an understanding of firewalls and other means of intrusion prevention.
- 49.0 Demonstrate an understanding of vulnerabilities unique to virtual computing environments.
- 50.0 Demonstrate an understanding of social engineering and its implications to cybersecurity.
- 51.0 Demonstrate an understanding of fundamental security design principles and their role in limiting points of vulnerability.
- 52.0 Demonstrate an understanding of how to configure host systems to guard against cyber intrusion.
- 53.0 Demonstrate an understanding of authentication methods and strategies.
- 54.0 Demonstrate an understanding of methods and strategies for controlling access to computer networks.
- 55.0 Demonstrate an understanding of key network services, their operation, vulnerabilities, and ways in which they may be secured.
- 56.0 Demonstrate an understanding of the processes involved in hardening a computer system or network.
- 57.0 Demonstrate an understanding of Public Key Infrastructure (PKI) management functions, key states, and life cycle/transition considerations.
- 58.0 Demonstrate an understanding of the processes associated with assessing vulnerabilities and risks within an organization.
- 59.0 Demonstrate an understanding of penetration testing, the types of tests and metrics, testing methodologies, and reporting processes.
- 60.0 Demonstrate an understanding of the Incident Response Life Cycle and the activities comprising each phase.
- 61.0 Demonstrate proficiency in cybersecurity risk mitigation planning.
- 62.0 Demonstrate proficiency in establishing a risk management framework.
- 63.0 Demonstrate proficiency in creating a corporate security policy.
- 64.0 Demonstrate proficiency in addressing process risks.
- 65.0 Demonstrate proficiency in addressing physical security risks.
- 66.0 Demonstrate proficiency in cybersecurity contingency planning.

- 67.0 Demonstrate proficiency in cybersecurity disaster recovery planning.
- 68.0 Demonstrate proficiency in cybersecurity business continuity planning.
- 69.0 Demonstrate proficiency in the essential elements of forensic analysis.
- 70.0 Demonstrate an understanding of database design, structure, and operation.
- 71.0 Demonstrate a fundamental understanding of Structured Query Language (SQL).
- 72.0 Demonstrate an understanding of database security policies.
- 73.0 Demonstrate an understanding of database access control, functions, methods, and verification.
- 74.0 Demonstrate an understanding of database vulnerabilities, attack vectors, and associated countermeasures.
- 75.0 Demonstrate an understanding of pre- and post-intrusion actions to facilitate database recovery.
- 76.0 Demonstrate an understanding of software design, structure, and operation.
- 77.0 Demonstrate a fundamental understanding of common software attack vectors.
- 78.0 Demonstrate an understanding input syntax validation.
- 79.0 Demonstrate an understanding of best practices for processing input data to ensure safe and secure program code.
- 80.0 Demonstrate an understanding of the role of environment variables in the operation of software applications.
- 81.0 Demonstrate an understanding of program design strategies for inhibiting elevated privilege attacks.
- 82.0 Demonstrate an understanding of the primary security services used in Internet and intranet environments.
- 83.0 Demonstrate a fundamental understanding of the SSL protocol stack and its elements.
- 84.0 Demonstrate an understanding of IPSec, including its uses, elements, and mechanisms.
- 85.0 Demonstrate an understanding of S/MIME, including its uses, functions, cryptographic algorithms, and key certificates.
- 86.0 Demonstrate an understanding of Kerberos and its role in third-part authentication in a distributed network.
- 87.0 Demonstrate an understanding of identity management and ways in which secure identify information is exchanged across different domains.
- 88.0 Complete a safety skills inventory.
- 89.0 Demonstrate acceptable project values.
- 90.0 Demonstrate the ability to detect and resolve system vulnerabilities.
- 91.0 Plan, organize, and carry out a penetration testing plan.
- 92.0 Demonstrate proficiency in conducting forensic analysis.
- 93.0 Successfully work as a member of a team.
- 94.0 Manage time according to a plan.
- 95.0 Keep acceptable records of progress problems and solutions.
- 96.0 Manage resources.
- 97.0 Use tools, materials, and processes in an appropriate and safe manner.
- 98.0 Research content related to the project and document the results.
- 99.0 Use presentation skills, and appropriate media to describe the progress, results and outcomes of the experience.
- 100.0 Demonstrate competency in the area of expertise related to the Applied Cybersecurity education program previously completed that this project is based upon.