COURSE SYLLABUS

Tunxis Community College
Education That Works For a Lifetime

Course Title:	Ethical Hacking & Penetration Testing	**Date submitted:**	April 2021 (AAC: 21-15)
Department:	STEAM		
Curriculum:	Computer Information Systems		

Course Descriptors: Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.

Course Code: (eg. ACC 101)	**CST*288**
Course Type:	**L/D**

A: Clinical B: Lab D: Distance Learning
I: Individual/Independent L: Lecture N: Internship
M: Seminar P: Practicum U: Studio
X: Combined Lecture/Lab Y: Combined Lecture/ Clinical/Lab Z: Combined Lecture/Studio

Elective Type:	**G**

AH: Art History E: English FA: Fine Arts FL: Foreign Language G: General HI: History HU: Humanities LAS: Liberal Arts & Sciences M: Math S: Science SS: Social Science

Credit Hours:	3
Developmental: (yes/no)	No
Contact Hours: Lecture:	3
Clinical:	0
Lab:	0
Studio	0
Other:	0
TOTAL:	3
Class Maximum:	24
Semesters Offered:	S

Prerequisites:

C- or better in Ethical Hacking & Network Defense (CST*267)

Corequisites:

None

Other Requirements:

None

Catalog Course Description:

This course covers advanced ethical hacking and penetration testing techniques using the latest software, techniques, and methodologies used by hackers and security professionals to lawfully hack an organization. Topics include session hijacking, hacking of web applications and servers, as well as social engineering and denial of services hacking techniques. This course is Part 2 of 2 courses for the preparation for the CEH exam.

Topical Outline: List course content in outline format.

1. Session Hijacking
2. Evading IDS, Firewalls, and Honeypots
3. Hacking Web Servers
4. Hacking Web Applications
5. SQL Injection

6. Hacking Wireless Networks
7. Hacking Mobile Platforms
8. IoT Hacking
9. Cloud Computing
10. Cryptography

Outcomes:
Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.

Upon successful completion of this course, the student will be able to do the following:

1. Demonstrate an understanding of all aspects of ethical hacking.
2. Identify the emerging 18 Attack Vectors including the OWASP Top 10, IoT hacking, Vulnerability Analysis, APT, Fileless Malware, Web API Threats, Webhooks, Web Shell, OT Attacks, Cloud Attacks, AI, ML, and much.
3. Improve exploit development skills by learning about existing and new vulnerabilities from the elementary level.
4. Gain exposure to the latest technologies, such as OT Technology, Container Technology.
5. Explain the hacking techniques on Cloud and IoT incorporating CSP's Container Technologies (like Docker, Kubernetes), Cloud Computing threats, and various IoT hacking tools,
6. Understand malware reverse engineering, as well as static and dynamic malware analysis.
7. Understand the use of Web API, webhooks and web shell concepts as part of Web API hacking & Security.

PROGRAM: *(Numbering reflects Program Outcomes as they appear in the college catalog)*

Cybersecurity Associate of Science Degree

3. solve computer-related problems
7. synthesize computer information systems knowledge and skills in solving basic information processing systems problems
10. knowledge of industry standard networking and communication technology

GENERAL EDUCATION/TAP OUTCOMES: *(Numbering reflects General Education Outcomes as they appear in the college catalog)*

2. **Critical Analysis/ Logical Thinking -** Students will be able to organize, interpret, and evaluate evidence and ideas within and across disciplines; draw reasoned interferences and defensible conclusions; and solve problems and make decisions based on analytical processes.

   Demonstrates: Identifies the issue(s); formulates an argument; explains and analyzes relationships clearly; draws reasonable inferences and conclusions that are logical and defensible; provides support by evaluating credible sources of evidence necessary to justify conclusions.

   Does Not Demonstrate: Identifies few or no issues; formulates an argument without significant focus; provides an unclear explanation of analysis and relationships; drawing few reasonable inferences and conclusions that are illogical and indefensible; provides little to no support using credible sources of evidence necessary to justify conclusions.

3. **Ethical Dimensions -** Students will identify ethical principles that guide individual and collective actions and apply those principles to the analysis of contemporary social and political problems.

	Demonstrates: Identifies and reflects critically on ethical issues presented in classroom instruction or in assigned co-curricular or civic activities and/or professional internships and practica.
Evaluation: List how the above outcomes will be assessed.	**Assessment will be based on the following criteria:** 1. Hands-on assignments and case studies will demonstrate an understanding of theories. 2. Written examinations will demonstrate an understanding of major facts, procedures, and theories.
Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.	**Required:** Computer Lab or Access to a computer with internet connectivity is required. No special software is required as a pre-requisite. **Desired:** None
Textbook(s)	Refer to current academic year printout