Columbus State Community College
Computer Science

COURSE: **CSCI 2786** **INSTRUCTOR: Todd A. Fichtenberg, J.D.**
Computer Security Ethical and Legal Foundations
CREDITS: 3

DESCRIPTION OF COURSE

CSCI 2786 introduces concepts of government in the American federal system, including branches of government, jurisdiction, and the interplay of federal and state law. Students will complete and analyze readings to gain an understanding of consequences relating to cybersecurity and its jurisprudence under the U.S. Constitution, federal, and state law. Students will engage in critical thinking and ethical reasoning relating to concepts such as free speech, search and seizure, self-incrimination, criminal liability, and individual rights relating to use of technology.

STUDENT LEARNING OUTCOMES

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

- Identify, explain, and apply key provisions of the U.S. Constitution that relate to technology
- Identify, explain, and apply key federal laws that relate to use of technology
- Identify, explain, and apply key Ohio state laws that relate to use of technology
- Understand that differences between state laws, federal circuits, and internationally can implicate decisions and liability related to the use of technology
- Understand expectations in professional environments related to use of technology
- Explain the difference between opinion, ethics, and law related to use of technology

INSTITUTIONAL LEARNING GOALS

Columbus State Community College's Institutional Learning Goals are an integral part of the curriculum and central to the mission of the college. The faculty at Columbus State has identified the following institutional learning goals:

- Critical Thinking
- Ethical Reasoning
- Communication Competence

COURSE MATERIALS REQUIRED

Internet Access
Printed Materials containing statutes and law

TEXTBOOK, MANUALS, REFERENCES, AND OTHER READINGS

TBD – Will probably consist of articles / videos linked on Blackboard.

GENERAL INSTRUCTIONAL METHODS

Lectures
Hands on in-class exercises
Reading assignments

ASSESSMENT
Columbus State Community College is committed to assessment (measurement) of student achievement of academic outcomes. This process addresses the issues of what you need to learn in your program of study and if you are learning what you need to learn. The assessment program at Columbus State has four specific and interrelated purposes: (1) to improve student academic achievements; (2) to improve teaching strategies; (3) to document successes and identify opportunities for program improvement; (4) to provide evidence for institutional effectiveness. In class you are assessed and graded on your achievement of the outcomes for this course. You may also be required to participate in broader assessment activities.

STANDARDS AND METHODS FOR EVALUATION

Item	**Number of Items**	**Total Points**	**Component of Final Grade (%)**
Attendance & Participation in class discussion and labs	30 (5 points per class)	150	25
Quizzes	30 (5-6 points per quiz)	150	25
Mid-Term	1	150	25
Final	1	150	25
	Total	**600**	**100**

GRADING SCALE

Percentage (%)	**Grade**[1]
90-100	A
80-89	B
70-79	C
60-69	D
0-59	E

[1] The minimum grade to pass the course is C.

SPECIAL COURSE REQUIREMENTS
Students are responsible for reading the materials prior to the class session.

Short quizzes will be available on Blackboard, under the *Assignments* link, after each class. Quizzes are due by the day after class and are worth five (5) points each. Late quizzes will receive a one (1) point deduction and will not be accepted after one week from the due date.

ATTENDANCE POLICY
Students are expected to be ready for class at the scheduled start of the class, and are expected to attend every class and participate in every class. Students may miss one (1) class during the semester without a point deduction, but only if the student informs the instructor ahead of the start of class that they cannot attend or wish to be excused from participating in discussions for that one class. In-class participation assignments that count toward the attendance grade may not be made up.

STUDENT CODE OF CONDUCT
As an enrolled student at Columbus State Community College, you have agreed to abide by the Student Code of Conduct as outlined in the Student Handbook. You should familiarize yourself with the student code. The Columbus State Community College expects you to exhibit high standards of academic integrity, respect and responsibility. Any confirmed incidence of misconduct, including plagiarism and other forms of cheating, will be treated seriously and in accordance with College Policy and Procedure 7-10.

AMERICANS WITH DISABILITIES ACT (ADA) POLICY
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TITLE IX

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Renee Fambro	**Danette Vance**	**Joan Cook**	**Darla Van Horn**
Director of Equity & Compliance Human Resources Rhodes Hall 115 rfambro@cscc.edu Phone: 614.287.5519	Title IX Deputy Coordinator Human Resources Rhodes Hall 115 dvance1@cscc.edu Phone: 614.287.2433	Title IX Deputy Coordinator Human Resources Rhodes Hall 115 jcook60@cscc.edu Phone:614.287.2636	Title IX Deputy Coordinator Student Life Eibling Hall 203(D) dvanhorn@cscc.edu Phone:614.287.2856

For additional information about your options at Columbus State Community College or to file a complaint online, please visit our webpage at: http://www.cscc.edu/services/title-ix/

TOBACCO FREE COLUMBUS STATE 2015

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Assignments due on a day the college is closed will be due the next scheduled class period. If an examination is scheduled for a day the campus is closed, the examination will be given on the next class day. If a laboratory is scheduled on the day the campus is closed, it will be made up at the next scheduled laboratory class. If necessary, laboratory make-up may be held on a Saturday. If a clinical is missed because of weather conditions: (***insert department policy***).

Students who miss a class because of weather-related problems with the class is held as scheduled are responsible for reading and other assignments as indicated in the syllabus. If a laboratory or examination is missed, contact me as soon as possible to determine how to make

up the missed exam or lab. Remember! It is the student's responsibility to keep up with reading and other assignments when a scheduled class does not meet, whatever the reason.

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UNITS OF INSTRUCTION

WEEK	UNIT OF INSTRUCTION	LEARNING OBJECTIVES/GOALS	ASSESSMENT METHODS	READING ASSIGNMENTS
Week 1	Introduction to Government – Jurisdiction	-Understand the three branches of government -Understand personal jurisdiction -Understand subject matter jurisdiction -Understand federal supremacy -Understand Ohio court structure -Understand the implications of jurisdiction in a networked world	Quiz 1 Quiz 2	Class 1 -Text: Chapter 1 -Ohio Revised Code § 2307.382 (Text: A-40) -U.S. Constitution Article IV, § 1 (Text: A-5) Class 2 -Text: Chapter 2 -U.S. Constitution Article VI, clause 2 (Text: A-6) -*Governing Cyberspace Law* by David G. Post (Pgs. 885-895) -*Exploring the Puzzle of Cyberspace Governance* by Andrew Liaropoulos (Section 2, Pgs. 199-201)
Week 2	First Amendment	-Understand types of speech that are not protected -Understand protected types of speech -Apply legal knowledge to distribution of electronic blogs, posts, and other materials	Quiz 3 Quiz 4	Class 3 -Text: Chapter 3 -Text: Chapter 4 (Parts 1, 2.1 thru 2.3) -First Amendment (Text: A-1) Class 4 -*Is Cyberbullying Free Speech* by David L. Hudson, Jr.

				-Twitter.com/Rules -Communications Decency Act 47 U.S.C. § 230 and ISP safe harbor (Text: A-7 to A-9) -*Tech Industry's Legal Shield is Feeling the Heat* by Dan Levine and Kristina Cooke
Week 3	Fourth Amendment	-Understand legal and illegal searches -Understand legal and illegal seizures -Apply legal knowledge to smart phone technology	Quiz 5 Quiz 6	Class 5 -Fourth Amendment (Text: A-1) -Text: Chapter 9 (Part 3) -*iSearch into the iPhone* by Kristen Vogl (Pgs. 179-201) Class 6 -*Stingray: A New Frontier in Police Surveillance* by Adam Bates
Week 4	Fifth Amendment International Implications	-Understand self-incrimination protection -Apply legal knowledge to smart phones -Understand differences in global law as it relates to all issues discussed so far	Quiz 7 Quiz 8	Class 7 -Text: Chapter 8 (Beginning at "Fifth Amendment Privilege Against Self-Incrimination" to the end of the Chapter) -*iSearch into the iPhone* by Kristen Vogl (Pgs. 201-205) -Fifth Amendment (Text: A-1) Class 8 -Text: Chapter 4 (Part 6) -Text: Chapter 5 (Part 7) -Text: Chapter 9 (Part

				7)
Week 5	Introduction to Black, White, and Gray "Hats" Introduction to the Computer Fraud and Abuse Act (CFAA)	-Understand the difference between opinion, ethics, and law when it comes to hacking -Apply this federal law to the cases we discussed in the previous class as well as future actions	Quiz 9 Quiz 10	Class 9 -Text: Chapter 5 (Parts 1–4, 5.3–5.4) -Text: Chapter 4 (Part 4) Class 10 -Text: Chapter 5 (Part 6) -18 U.S.C. § 1030 (CFAA) (Text: A-10) -*The Grey Hat Hacker: Reconciling Cyberspace Reality and The Law* by Cassandra Kirsch (Pgs. 388 – 394)
Week 6	Various Interpretations of "exceed authorized use" of the CFAA	-Understand that there are harsh consequences for actions that violate the CFAA	Quiz 11 Quiz 12	Class 11 -*Aaron's Law: Bringing Sensibility to the Computer Fraud and Abuse Act* by Mark Murfin (Pgs. 469–476) -*Terrorizing the Technological Neighborhood Watch: The Alienation and Deterrence of the "White Hats" Under the CFAA* by Trevor A. Thompson (Pgs. 560–568) Class 12 -*Cybercrime's Scope: Interpreting "Access" and "Authorization" in Computer Misuse Statutes* by Orin S. Kerr (Pgs. 1615–1624)

Week 7	Proposed Changes to the CFAA Ensuring You Don't Exceed Authority Review for Mid-Term	-Understand that there have been proposals to change the CFAA, but none of those have occurred. -Understand that you must always be aware of consequences even if you think grey hat hacking is sanctioned	Quiz 13 Quiz 14	Class 13 -*Aaron's Law: Bringing Sensibility to the Computer Fraud and Abuse Act* by Mark Murfin (Pgs. 476–490) -*Cybercrime's Scope: Interpreting "Access" and "Authorization" in Computer Misuse Statutes* by Orin S. Kerr (Pgs. 1642–1648) -Written Statement of Orin S. Kerr, March 13, 2013 Class 14 -Google Vulnerability Reward Program, including coordinated disclosure article -PayPal Bug Bounty Program -Facebook Bug Bounty Program -Twitter Bug Bounty Program -*The Grey Hat Hacker: Reconciling Cyberspace Reality and The Law* by Cassandra Kirsch (Pgs. 394 – 398)
Week 8	**Mid-Term (In Class)** Use of Work or School Equipment	 -Understand that there are policies in place regarding technology in the workplace or school place that you must always follow	No quiz Quiz 15	No reading Class 15 -Columbus State Community College Policy 7-10 -Columbus State Community College Policy 15-01

Week 9	Ohio laws relating to the use of technology	-Understand Ohio laws relating to computer crime, unauthorized use, and telecommunications harassment	Quiz 16 Quiz 17	-Reading assignments TBD -Ohio Revised Code § 2913.04 -Ohio Revised Code § 2917.21 -47 U.S.C. § 223
Week 10	Laws in Other States	-Understand interpretations in computer cases in other states as well as federally and Ohio -Understand that federal laws can be interpreted differently in different circuits	Quiz 18 Quiz 19	-Reading assignments TBD -Oregon Revised Statutes 164.377 -Case Study: *Oregon v. Nascimento* -Case Study: *Oregon v. Schwartz* -Virginia Code 18.2-152.12 -*Lester v. Allied Concrete Company* - Right to privacy in garbage left at curb (*Washington v. Boland*, *New Mexico v. Crane*, *New Hampshire v. Goss*, *New Jersey v. Hempele*, *Vermont v. Morris*) -Highway checkpoints (*Sitz v. Police* (Michigan), *Sitz v. Police* (US Sup. Ct.)) -Free speech at malls (*Pruneyard Shopping Center v. Robins*, *California v. Greenwood*) -Privacy to ISP info: *New Jersey v. Reid* -Cybersecurity / Cybercrime Legislation
Week 11	Intellectual Property and the Digital Millennium	-Understand Copyrights, Fair Use, consequences of actions under the	Quiz 20	Class 20 -U.S. Constitution Article I, § 8, Clause 8 (Text: A-2)

	Copyright Act	Digital Millennium Copyright Act -Understand the patentability of software -Understand trademarks, generally	Quiz 21	-Text: Chapter 7 (Sections 1 through 5) Class 21 -Text: Chapter 6 -Text: Chapter 7 (Section 6) -U.S. Constitution Article I, § 8, Clauses 3 and 8 (Text: A-2)
Week 12	Additional Federal Laws Protection of Data as Fiduciary	-Understand the consequences of other federal laws -Understand the meaning of a fiduciary and how it plays a role in obligations to protect consumer's data	Quiz 22 Quiz 23	Class 22 -Text: Chapter 10 -18 U.S.C. § 1029 (fraud in connection with access devices) -18 U.S.C. § 2510, 2511, 2512, 2520 (interception of wire, oral, or electronic communications) -18 U.S.C. § 2701 (unlawful access to stored communications) -Reading assignments TBD -*Information Fiduciaries and the First Amendment* by Jack M. Balkin -Case Study: Hillary Clinton's emails -Case Study: Security flaw in chipped credit cards -Case Study: *In re Sony Gaming Networks and Customer Data Security Breach Litigation* (S.D.

				Cal.) -18 U.S.C 2702 (voluntary disclosure of customer communications or records)
Week 13	Criminal Law	-Understand general criminal laws and how they are analogous to cybercrimes	Quiz 24 Quiz 25	Class 24 -Text: Chapter 8 -Reading assignments TBD -*Criminal Law in Virtual Worlds* by Orin S. Kerr -18 U.S.C. § 1343 (fraud by wire) -Case Study: FIFA Coins and EA Sports
Week 14	Torts, Civil Remedies, and Property Law applications for Cybercrimes	-Understand torts that can apply in a civil lawsuit for cybercrimes -Understand analogous property laws and historical uses toward computer crime	Quiz 26 Quiz 27	Class 26 -Text: Chapter 4 (Part 2.4) -Text: Chapter 11 -*Terrorizing the Technological Neighborhood Watch: The Alienation and Deterrence of the "White Hats" Under the CFAA* by Trevor A. Thompson (Pgs. 572–574) Class 27 -*Cybercrime's Scope: Interpreting "Access" and "Authorization" in Computer Misuse Statutes* by Orin S. Kerr (Pgs. 1602–1615)

				-*Private Reinforcement of Cybercrime on the Electronic Frontier* by Michael L. Rustad -Trespass to Chattels (*eBay, Inc. v. Bidder's Edge, Inc.*) -*Media3 Technologies v. Mail Abuse Prevention System* (D. Mass.) -*ProCD, Inc. v. Zeidenberg* (7th Cir.) -*Regulation by Contract, Regulation by Machine* by Margaret Jane Radin
Week 15	Review for Final: -Risk Management -Excerpts from Film	-Apply learned concepts to risk management -Identify learned concepts in excerpts from modern film	Quiz 28	-Reading assignments TBD -*Cyber Security Active Defense: Playing with Fire or Sound Risk Management* by Sean I. Harrington Excerpts from Film: -*Jason Bourne* -*Nerve* -*Eagle Eye* -*Snowden* -*Live Free or Die Hard* -*Fate of the Furious* -*Woman in Gold*
Week 16	**Finals Week**			

Columbus State Community College
Computer Science **Department and Technology**

COURSE: CSCI-2787 Networking Routing and Switching Security Fundamentals INSTRUCTOR:

CREDITS: 3 CLASS HOURS PER WEEK: (Lecture 2, Class 3) PREREQUISITES: CSCI-1152

DESCRIPTION OF COURSE :
This course introduces the student to the architecture, components, and operation of switches and routers, as well as the fundamentals of switching, routing, and the primary routing protocols. The course is designed to help students prepare for professional careers in the information and communication technology (ICT) field. It also helps prepare individuals seeking to pass the Cisco Certified Network Associate (CCNA) or Cisco Certified Entry Networking Technician (CCENT) certification exams.

STUDENT LEARNING OUTCOMES:
Upon completion of this course the student will be able to:

- Describe basic switching concepts;
- Discuss the purpose, nature, and operations of a router, routing tables, and the route lookup process;
- Describe and implement Virtual Local Area Networks (VLANs) to create logically separate networks and how routing occurs between them;
- Configure and troubleshoot static and dynamic routing protocols, distance vector routing protocols, and link-state routing protocols;
- Implement, and troubleshoot Access Control Lists (ACLs) for IPv4 and IPv6 networks;
- Configure and troubleshoot Dynamic Host Configuration Protocol (DHCP) for IPv4 and IPv6 networks;
- Implement and troubleshoot Network Address Translation (NAT);
- Utilize network diagrams

INSTITUTIONAL LEARNING GOALS
Columbus State Community College's general education outcomes are an integral part of the curriculum and central to the mission of the college. The faculty at Columbus State has determined that these outcomes include the following competencies:

- Critical Thinking
- Scientific and Technological Effectiveness
- Information Literacy

COURSE MATERIALS REQUIRED
none

TEXTBOOK, MANUALS, REFERENCES, AND OTHER READINGS

TITLE: Routing and Switching Essentials Companion Guide
Routing and Switching Essentials Lab Manual

GENERAL INSTRUCTIONAL METHODS

1.0 Introduction to Switched Networks:
- LAN Design
- The Switched LAN Environment

2.0 Basic Switching Concepts and Configuration:
- Basic Switch Configuration
- Switch Security: Management and Implementation
- Troubleshooting Security Implementations

3.0 Virtual Local Area Networks (VLANs):
- VLAN Segmentation
- VLAN Implementation
- VLAN Security and Design
- Troubleshooting VLAN Issues

4.0 Routing Concepts:
- Initial Configuration of a Router
- Routing Decisions
- Router Operation
- Troubleshooting Router Issues

5.0 Inter-VLAN Routing:
- Inter-VLAN Routing Configuration
- Troubleshooting Inter-VLAN Routing
- Layer 3 Switching

6.0 Static Routing:
- Static Routing Implementation
- Configure Static and Default Routes
- Review of Classless Inter-Domain Routing (CIDR) and Variable-Length Subnet Mask (VLSM)
- Configure Summary and Floating Static Routes
- Troubleshoot Static and Default Route Issues

7.0 Dynamic Routing:
- Dynamic Routing Protocols
- Distance Vector Routing Protocols
- Routing Information Protocol (RIP) and RIPng Routing
- Link-State Dynamic Routing
- Routing Table
- Troubleshooting Dynamic Routing Implementations

8.0 Single-Area Open Shortest Path First (OSPF):

- Characteristics of OSPF
- Configuring Single-Area OSPF v2
- Configuring Single-Area OSPF v3
- Troubleshooting OSPF Implementations

9.0 Access Control Lists (ACLs):

- Internet Protocol (IP) ACL Operations
- Standard and Extended IPv4 ACLs
- IPv6 ACLs
- Troubleshooting ACLs

10.0 Dynamic Host Configuration Protocol (DHCP):

- Implementing DHCP v4 and DHCP v6
- Troubleshooting DHCP Implementations

11.0 Network Address Translation (NAT):

- NAT Operation for IPv4
- Configuring NAT
- Troubleshooting NAT

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STANDARDS AND METHODS FOR EVALUATION

Item	Point Value
Labs	145
Assessments	50
Packet Tracer Activities	105
Final Exam	100
Skills Assessment	100
Total	500

GRADING SCALE

Total Points	Percent	Final Grade
450-500	90-100	A
400-449	80-89	B
350-399	70-79	C
300-349	60-69	D
299 and below	59 and below	E

SPECIAL COURSE REQUIREMENTS

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Plan of Study

Week 1
- Unit of Instruction: Review of subnetting, Chapter 1 Intro to Switch Neworks
- Learning Objectives/Goals: LAN Design and Switch LAN environment
- Assignment: Read Chapter 1 and Lab
- Assessment Methods: Lab and Chapter 1 exam

Week 2
- Unit of Instruction: Basic Switch Concepts and Configuration
- Learning Objectives/Goals: Switch's Configuration, Security and troubleshooting
- Assignment: Read Chapter 2 and Lab
- Assessment Methods: Lab and Chapter 2 exam

Week 3
- Unit of Instruction: VLANs
- Learning Objectives/Goals: VLAN Segmentation, Implementation and Security
- Assignment: Read Chapter 3 and Lab
- Assessment Methods: Lab and Chapter 3 exam

Week 4
- Unit of Instruction: Routing Concepts
- Learning Objectives/Goals: Routing Configuration, Operation and Troubleshooting
- Assignment: Read Chapter 4 and Lab
- Assessment Methods: Lab and Chapter 4 exam

Week 5
- Unit of Instruction: VLSM and additional subnetting
- Learning Objectives/Goals: Expansion Routing Concepts
- Assignment: Read handouts

- Assessment Methods: Lab and Subnetting exam

Week 6
- Unit of Instruction: Inter-VLAN Routing
- Learning Objectives/Goals: Inter-VLAN Routing, Troubleshooting and Layer 3 Switch
- Assignment: Read Chapter 5 and Lab
- Assessment Methods: Lab and Chapter 5 exam

Week 7
- Unit of Instruction: Static Routing
- Learning Objectives/Goals: Configure Static and Default Routes, continue VLSM and CIDR
- Assignment: Read Chapter 6 and Lab
- Assessment Methods: Lab and Chapter 6 exam

Week 8
- Unit of Instruction: Dynamic Routing
- Learning Objectives/Goals: Use of Dynamic Routing Protocols (RIP, OSPF and EIGRP)
- Assignment: Read Chapter 7 and Lab
- Assessment Methods: Lab and Chapter 7 exam

Week 9
- Unit of Instruction: Single-Area OSPF
- Learning Objectives/Goals: OSPF Configuration for OSPFv2 and OSPFv3 and Troubleshooting
- Assignment: Read Chapter 8 and Lab
- Assessment Methods: Lab and Chapter 8 exam

Week 10
- Unit of Instruction: Access Control Lists (ACL)
- Learning Objectives/Goals: Standard and Extended IPv4 and IPv6
- Assignment: Read Chapter 9 and Lab
- Assessment Methods: Lab and Chapter 9 exam

Week 11
- Unit of Instruction: Dynamic Host Configuration Protocol
- Learning Objectives/Goals: Implementing DHCP for IPv4 and IPv6, Troubleshooting
- Assignment: Read Chapter 10 and Lab
- Assessment Methods: Lab and Chapter 10 exam

Week 12
- Unit of Instruction: EIGRP
- Learning Objectives/Goals: Enhanced Distance Vector Protocol
- Assignment: Handouts
- Assessment Methods: Lab and exam

Week 13
- Unit of Instruction: Adv. OSPF
- Learning Objectives/Goals: Use Loopback address and Designated Router
- Assignment: Handouts
- Assessment Methods: lab and exam

Week 14
- Unit of Instruction: Review for CCENT
- Learning Objectives/Goals: Final exam review
- Assignment:
- Assessment Methods:

Week 15
- Unit of Instruction: Review for Final
- Learning Objectives/Goals:
- Assignment:
- Assessment Methods:

(*Sample A*) UNITS OF INSTRUCTION
(***Please provide a weekly course schedule indicating the units of instruction, learning objectives/goals, assigned readings, assignments, and assessment methods.***)

WEEK	UNIT OF INSTRUCTION	LEARNING OBJECTIVES/GOALS	ASSESSMENT METHODS	ASSIGNMENTS	ASSIGNMENT DUE DATE
Week 1	HTTP Basics	Practical use of RFC 2616 and 7320	Examination	Chapter 1, WAHH RFC 2616	
Week 2	Using an Attack Proxy	Use Zed Attack Proxy to isolate traffic between a web browser and server	Lab	Set up local lab OWASP BWA ZAP FoxyProxy Firefox	
Week 3	Common Vulnerabilities	Demonstrate attacks for OWASP Top 10	Lab	Security Shepherd Initial Walkthrough	
Week 4	Fixing common vulnerabilities	Demonstrate defenses against the OWASP Top 10	Project	WebGoat Defender's Project XSS 4 and 6	
Week 5	Mobile Service Basics	Practical understanding of iOS and Android service communication	Examination	Mobile Security Reading TBA	
Week 6	Mobile Vulnerabilities	Demonstrate attacks for OWASP Mobile Top 10	Lab	iOS Lab demonstration Android Lab setup	
Week 7	Fixing Mobile Vulnerabilities	Demonstrate defenses against the OWASP Mobile Top 10	Examination	Custom Android Lab	
Week 8	Network Communication	Practical understanding of network protocols	Examination	Wireshark install and use	

		used by thick clients			
Week 9	Thick Client Storage	Forensics of various forms of thick client storage	Lab	ILDasm install and use WinDBG (or the new open source one) install and use.	
Week 10	Encryption	Functional understanding of hashing, synchronous encryption, and asynchronous encryption.	Examination	Encryption labs in Security shephard Encryption labs in WebGoat	
Week 11	Logging	Survey of logging techniques and preparation for audit and forensics	Examination	Implementation of System.Log in .NET Implementation of Log4J in Java	
Week 12	Threat Modeling	Creation of a stride model	Project	Installation and Use of Microsoft Threat Model tools.	
Week 13	Legal Realities	Survey of PCI, HIPAA, SOX, and other legal information security standards.	CSSLP Practice Exam	Paper on assigned topic.	
Week 14	Research Project	Student selected project researching an application vulnerability	Status Report	Nothing	
Week 15	Research project	Student selected project researching an application vulnerability	Project	Nothing	
Week 16	**Finals Week**				

Research Project

The penultimate two weeks of the course are consumed with a student led research project. This project, performed individually or in small teams, will involve the solving of a discreet application security issue. This could be via addition of a feature to an open source application security repository, or participation in an OWASP documentation project, or some other participatory event approved by your instructor.

Columbus State Community College
CSET Department
ITST Technology

COURSE: Fundamentals of Application Security ITST 2258

CREDITS: 3 CLASS HOURS PER WEEK: PREREQUISITES:

DESCRIPTION OF COURSE

Application Security Architecture is the structured approach to managing the way an application manages data so to best defend that data against and attacker. It involved understanding of input validation, output encoding, session management, encryption and encoding, device interaction and exception management. This course will cover the fundimentals of coding and testing more secure applications.

STUDENT LEARNING OUTCOMES

- Students will demonstrate a working knowledge of securely coding against the most common application security vulnerabilities.
- Students will demonstrate the ability to test contemporary applications for the most common security vulnerabilities.

INSTITUTIONAL LEARNING GOALS

Columbus State Community College's Institutional Learning Goals are an integral part of the curriculum and central to the mission of the college. The faculty at Columbus State has identified the following institutional learning goals:

- Technological Competence

COURSE MATERIALS REQUIRED

- Regular access to a PC or laptop [not tablet] and the Internet.

TEXTBOOK, MANUALS, REFERENCES, AND OTHER READINGS

Web Application Hacker’s Handbook, Volume 2, Dafydd Stuttard

GENERAL INSTRUCTIONAL METHODS

- Lecture

- Lab work
- Project work
- Examination
- Class Discussion

ASSESSMENT

Columbus State Community College is committed to assessment (measurement) of student achievement of academic outcomes. This process addresses the issues of what you need to learn in your program of study and if you are learning what you need to learn. The assessment program at Columbus State has four specific and interrelated purposes: (1) to improve student academic achievements; (2) to improve teaching strategies; (3) to document successes and identify opportunities for program improvement; (4) to provide evidence for institutional effectiveness. In class you are assessed and graded on your achievement of the outcomes for this course. You may also be required to participate in broader assessment activities.

STANDARDS AND METHODS FOR EVALUATION

- **Quizzes**—Students will complete quizzes for each chapter we cover. All quizzes will be completed through Blackboard at your convenience during the week they are assigned. Students have one attempt for each quiz and all quizzes are open book. Each quiz has a 30 minute time limit, and once you start the quiz, you must finish it. After the quiz, you will be able to see your score and feedback. No late quizzes are accepted.
- **Discussion Board** – See Blackboard for expectations, rubric and requirements. As with all other assignments, no late submissions accepted.
- **Labs**—Students will complete a hands-on lab during many class meetings. The student must be present in class to hear and participate in the Lecture portion of the class to complete the lab. Students who miss the class or come to the class late and miss all or most of the Lecture portion of the class will not be able to complete the Lab for credit. Labs will not be accepted via e-mail. Labs must be submitted in the manner requested to receive credit. No late labs will be accepted or completed outside of class unless arrangements have been made with the Instructor, prior to that class.
- **Final**—Students will complete a final online, by the due date.

GRADING SCALE

Major Categories	**Point Value**
Quizzes (Blackboard)	200 Points [225 possible]
Labs	275 Points
Project	100 Points
Discussion Board	100 Points
Final	140 Points
TOTAL:	**815 Points [840 possible]**

	90 - 100%	A
	80 - 89%	B
	70 – 79%	C
	60 – 69%	D
	0 – 59%	E

See the Calendar on Blackboard for additional information and due dates

ATTENDANCE POLICY

Class attendance and participation is critical for your success in completing this course. The class will begin promptly and attendance will be taken. Most of the labs cannot be completed after the initial assignment in class. **If you know you will need to miss a class, it is your responsibility to email me and make any possible arrangements for labs or assignments, *prior* to the class meeting date.** There are **no make-up assignments, quizzes or labs**. Attendance and participation in class is important to your overall grade in this course!

If you miss a class, it is your responsibility to go to Blackboard and complete the required assignments.

STUDENT CODE OF CONDUCT

As an enrolled student at Columbus State Community College, you have agreed to abide by the Student Code of Conduct as outlined in the Student Handbook. You should familiarize yourself with the student code. The Columbus State Community College expects you to exhibit high standards of academic integrity, respect and responsibility. Any confirmed incidence of misconduct, including plagiarism and other forms of cheating, will be treated seriously and in accordance with College Policy and Procedure 7-10.

AMERICANS WITH DISABILITIES ACT (ADA) POLICY

It is Columbus State policy to provide reasonable accommodations to students with disabilities as stated in the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act. If you would like to request such accommodations for access, please contact Disability Services: 101 Eibling Hall, (614) 287-2570. Email or give your instructor a copy of your accommodations letter from Disability Services as soon as possible. Accommodations do not start until your instructor receives the letter, and accommodations are not retroactive.

Delaware Campus students may contact an advisor in the Student Services Center on the first floor of Moeller Hall, (740) 203-8000.

AUDIO/VIDEO RECORDING OF CLASS

Audio-and video-recording, transmission, or distribution of class content (e.g., lectures, discussions, demonstrations, etc.) is strictly prohibited unless the course instructor has provided written permission via the syllabus or a signed form. Authorization to record extends solely to students in that particular course. Transmitting, sharing, or distributing course content onto public, commercial, or social media sites is strictly prohibited.

TITLE IX

Columbus State Community College is committed to creating a learning and working environment that is free of bias, discrimination, and harassment by providing open communication and mutual respect. If you have encountered sexual harassment, sexual misconduct, sexual assault, or discrimination based on race, color, religion, age, national origin, ancestry, sex, sexual orientation, gender identity and expression, genetic information (GINA), military status or disability, please contact one of the following people:

Renee Fambro	**Danette Vance**	**Joan Cook**	**Darla Van Horn**
Director of Equity & Compliance Human Resources Rhodes Hall 115 rfambro@cscc.edu Phone: 614.287.5519	Title IX Deputy Coordinator Human Resources Rhodes Hall 115 dvance1@cscc.edu Phone: 614.287.2433	Title IX Deputy Coordinator Human Resources Rhodes Hall 115 jcook60@cscc.edu Phone:614.287.2636	Title IX Deputy Coordinator Student Life Eibling Hall 203(D) dvanhorn@cscc.edu Phone:614.287.2856

For additional information about your options at Columbus State Community College or to file a complaint online, please visit our webpage at: http://www.cscc.edu/services/title-ix/

TOBACCO FREE COLUMBUS STATE 2015

As a result of a proposal by the Ohio Board of Regents in 2012, Columbus State became a tobacco-free institution, as have colleges and universities across the nation, including The Ohio State University, which made the change in 2014. In an effort to support the health and well-being of all students, faculty, and staff, the College has adopted a tobacco free policy which prohibits the use of all tobacco-related products on College property. The primary emphasis of this approach is to focus on the elimination of tobacco use on all College property with cessation left as a choice for the individual. The effective date for the tobacco free policy was July 1, 2015.

INCLEMENT WEATHER OR OTHER EMERGENCIES (*optional wording*)

In the event of severe weather or other emergencies that could force the college to close or to cancel classes, such information will be broadcast on radio stations and television stations. Students who reside in areas that fall under a Level III emergency should not attempt to drive to the college even if the college remains open.

Assignments due on a day the college is closed will be due the next scheduled class period. If an examination is scheduled for a day the campus is closed, the examination will be given on the next class day. If a laboratory is scheduled on the day the campus is closed, it will be made up at the next scheduled laboratory class. If necessary, laboratory make-up may be held on a Saturday. If a clinical is missed because of weather conditions: (***insert department policy***).

Students who miss a class because of weather-related problems with the class is held as scheduled are responsible for reading and other assignments as indicated in the syllabus. If a laboratory or examination is missed, contact me as soon as possible to determine how to make up the missed exam or lab. Remember! It is the student's responsibility to keep up with reading and other assignments when a scheduled class does not meet, whatever the reason.

In the event the college is forced to close during Final Examination Week, exams scheduled for the first missed date will be rescheduled for (date), in the same location at the same time scheduled. Exams scheduled for a second missed date will be rescheduled for _____. Thus, our

final exam is scheduled for (date) at _____ o'clock. If the college is closed that day, the exam will be held on (date) at _____ o'clock. If our exam is the second day the college has been closed, the exam will be held on (date) at _____ o'clock.

FINANCIAL AID ATTENDANCE REPORTING

Columbus State is required by federal law to verify the enrollment of students who participate in Federal Title IV student aid programs and/or who receive educational benefits through the Department of Veterans Affairs. It is the responsibility of the College to identify students who do not commence attendance or who stop attendance in any course for which they are registered and paid. Non-attendance is reported quarterly by each instructor, and results in a student being administratively withdrawn from the class section. Please contact the Financial Aid Office for information regarding the impact of course withdrawals on financial aid eligibility.

For the purposes of financial aid reporting, a student meets the participation and attendance criteria if s/he has actively engaged in the class and demonstrated a meaningful attempt toward completion of the course. Examples of active engagement may include, but are not limited to: completing a graded course assignment (e.g., homework, quiz, essay, project, or lab); actively participating in studio or practicum sessions; making content-related contributions to an online discussion forum (including responses both to prompts and to student/instructor posts).

(*Sample A*) UNITS OF INSTRUCTION
(***Please provide a weekly course schedule indicating the units of instruction, learning objectives/goals, assigned readings, assignments, and assessment methods.***)

WEEK	UNIT OF INSTRUCTION	LEARNING OBJECTIVES/GOALS	ASSESSMENT METHODS	ASSIGNMENTS	ASSIGNMENT DUE DATE
Week 1	HTTP Basics	Practical use of RFC 2616 and 7320	Examination	Chapter 1, WAHH RFC 2616	
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Week 3	Common Vulnerabilities	Demonstrate attacks for OWASP Top 10	Lab	Security Shepherd Initial Walkthrough	
Week 4	Fixing common vulnerabilities	Demonstrate defenses against the OWASP Top 10	Project	WebGoat Defender's Project XSS 4 and 6	
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Week 6	Mobile Vulnerabilities	Demonstrate attacks for OWASP Mobile Top 10	Lab	iOS Lab demonstration Android Lab setup	
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Week 8	Network Communication	Practical understanding of network protocols	Examination	Wireshark install and use	

		used by thick clients			
Week 9	Thick Client Storage	Forensics of various forms of thick client storage	Lab	ILDasm install and use WinDBG (or the new open source one) install and use.	
Week 10	Encryption	Functional understanding of hashing, synchronous encryption, and asynchronous encryption.	Examination	Encryption labs in Security shephard Encryption labs in WebGoat	
Week 11	Logging	Survey of logging techniques and preparation for audit and forensics	Examination	Implementation of System.Log in .NET Implementation of Log4J in Java	
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Week 14	Research Project	Student selected project researching an application vulnerability	Status Report	Nothing	
Week 15	Research project	Student selected project researching an application vulnerability	Project	Nothing	
Week 16	**Finals Week**				

Research Project

The penultimate two weeks of the course are consumed with a student led research project. This project, performed individually or in small teams, will involve the solving of a discreet application security issue. This could be via addition of a feature to an open source application security repository, or participation in an OWASP documentation project, or some other participatory event approved by your instructor.

Columbus State Community College
Integrated Media & Technology Department
Computer Science (CSCI)

FACULTY INFORMATION

Instructor Name:	Bill Payne	**Email:**	wpayne2@cscc.edu
Office/Mailbox:	Delaware Hall, 216C	**Phone:**	614-397-0597
Office Hours:	By appointment only	**Classroom**:	<TBD>
Class Meets:	<TBD>		

COURSE: CSCI 2776

CREDITS: 3 CLASS HOURS PER WEEK: 5 PREREQUISITES: CSCI 2752 or ITST 1123

DESCRIPTION OF COURSE

CSCI 2790 is designed to introduce information security theory and practice in areas of cryptography, security architecture, firewalls, VPNs, IP Security and governance. Intranet / Internet security vulnerabilities and methods of protection will be introduced. Students will apply and demonstrate hands-on knowledge of common attacks and threat vectors, cryptography, detective controls and appropriate countermeasures.

STUDENT LEARNING OUTCOMES

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

- Describe and explain the foundations of information security..
- Explain identity theft prorogates.
- Describe common attacks and threat vectors and distinguish between them.
- Understand how to perform a basic vulnerability assessment.
- Develop a vulnerability mitigation plan.
- Describe and apply basic cryptographic knowledge, including hashing and PKI.
- Describe the methods for securing a wireless network and common attacks against them.
- Contrast account management processes and describe the utility of each.
- Develop a basic business continuity plan, and explain the difference from a disaster recovery plan.
- Identify common security policy frameworks
- Develop a basic security policy.
- List the applicable laws and policies related to cyber defense, and describe the responsibilities related to each.
- Understand the tenets of information assurance, and how the fundamental concepts of cyber defense can be used to provide overall system security.

GENERAL EDUCATION OUTCOMES

Columbus State Community College's general education outcomes are an integral part of the curriculum and central to the mission of the college. The faculty at Columbus State has determined that these outcomes include the following competencies:

- Critical Thinking
- Quantitative Literacy
- Scientific and Technological Effectiveness
- Information Literacy

COURSE MATERIALS REQUIRED

USB Thumb Drive, 4GB or larger

TEXTBOOK, MANUALS, REFERENCES, AND OTHER READINGS

Textbook: Ciampa, Mark; **CompTIA Security+ Guide to Network Security Fundamentals** Fifth Edition; Cengage Learning;
ISBN 1-3050-939-17

Supplemental material will be provided throughout the course.

GENERAL INSTRUCTIONAL METHODS

Lecture	Practical Exercises
Classroom Discussions	Practice
Demonstrations	Discussion Board

ASSESSMENT

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LATE ASSIGNENTS

Late assignments will not be accepted unless arrangements have been made prior to the due date. Assignments submitted in this fashion are worth only partial credit, if any.

STANDARDS AND METHODS FOR EVALUATION

GRADING SCALE

Tests and lab exercises will have the following weights:

Item		Points
Review Questions	(15 @ 5pts)	75
Labs/Hands-on Activities	(13 @ 10pts)	130
Case Projects	(8 @ 10pts)	80
Group Project/Lab		75
Quizzes	(3 @ 30pts)	90
Midterm		100
Final Exam		200
Total Points		750

Grades will be determined based on the following scale:

675 – 750 points	90 - 100%	A
600 – 674 points	80 - 89%	B
525 – 599 points	70 – 79%	C
450 – 524 points	60 – 69%	D
Below 449 points	0 – 59%	E

SPECIAL COURSE REQUIREMENTS

ATTENDANCE POLICY

Consistent attendance contributes to individual success in the course, as well as a positive group dynamic in which individuals share their varying levels of experience. Persistent non-attendance will affect the final grade. Students receiving financial aid are subject to mid-quarter attendance reporting.

STUDENT CODE OF CONDUCT

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physical, mental or learning disability, please contact the Department of Disability Services, 101 Eibling Hall, 614.287.2570 (V/TTY). Delaware Campus students may also contact an advisor in the Student Services Center, first floor Moeller Hall, 740.203.8000. Ask for Delaware Campus advising, or www.cscc.edu/delaware, for assistance.

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Units of instruction

RQ: Review Questions **Labwork**: Hands-On Projects **Casework**: Discovery Exercises

Week	Unit of Instruction	Learning Objectives/Goals	Assessment Methods	Assignments	Due Date
1	Intro / Syllabus Review Introduction to Security	Explain information security.	Lecture Discussions	**Homework**: RQ CH #1 **Labwork**: 1-1	
2	Malware and Social Engineering Attacks	Explain identity theft prorogates.	Lecture Discussions	**Homework**: RQ CH #2 **Labwork**: 2-1 through 2-3 **Casework**: 2-1, 2-2, 2-4, 2-5	
3	Application and Network Attacks	Describe common attacks and distinguish differences.	Lecture Discussions	**Homework**: RQ CH #3 **Labwork**: 3-2, 3-3 **Casework**: 3-1, 3-2, 3-3, 3-4	
4	Host, Application, and Data Security **Quiz #1** (Chapters 1 – 3)	Identify potential threats to information assets.	Lecture Discussions Quiz	**Homework**: RQ CH #4 **Casework**: 4-1, 4-2, 4-3, 4-4, 4-5 **Quiz #1** (Chapters 1 – 3)	
5	Basic Cryptography	Explain the concept of cryptography and how it is used for securing web traffic.	Lecture Discussions	**Homework**: RQ CH #5 **Labwork**: 5-1, 5-2, 5-3, 5-5 **Casework**: 5-1, 5-2	
6	Advanced Cryptography	Understand how a digital certificate is created and signed.	Lecture Discussions	**Homework**: RQ CH #6 **Labwork**: 6-1, 6-2, 6-3 **Casework**: 6-1, 6-2, 6-3, 6-5	
7	Network Security Fundamentals	Understand basic network security safeguards.	Lecture Discussions	**Homework**: RQ CH #7 **Labwork**: 7-1, 7-2 **Casework**: 7-2, 7-5	

Week	Unit of Instruction	Learning Objectives/Goals	Assessment Methods	Assignments	Due Date
8	**Midterm**: Chapters 1 – 7 Administering a Secure Network	**Exam** Identify common network management processes and describe potential pitfalls with each.	**Midterm Exam** Lecture Discussions	**Midterm Exam** **Homework**: RQ CH #8 **Labwork**: 8-1 through 8-3 **Casework**: 8-2, 8-3, 8-4, 8-5	
9	Wireless Network Security	Describe methods for securing a wireless network. Understand common attacks against wireless networks.	Lecture Discussions	**Homework**: RQ CH #9 **Casework**: 9-1 through 9-5 **Project Lab Assigned**	
10	Mobile Device Security **Quiz #2** (Chapters 8 – 9)	Describe and identify methods for securing mobile devices, including MDM, and explain the common attack vectors.	Lecture Discussions Quiz	**Homework**: RQ CH #10 **Labwork**: 10-1 through 10-3 **Casework**: 10-2, 10-3, 10-4, 10-5 **Quiz #2** (Chapters 8-9)	
11	Access Control Fundamentals	Describe standard access control policies.	Lecture Discussions	**Homework**: RQ CH #11 **Casework**: 11-1 through 11-5	
12	Authentication and Account Management	Contrast differing account management processes.	Lecture Discussions Quiz	**Homework**: RQ CH #12 **Labwork**: 12-1, 12-2, 12-4, 12-5 **Casework**: 12-1, 12-3, 12-4	
13	Business Continuity **Quiz #3** (Chapters 10 – 12)	Create a basic business continuity plan.	Lecture Discussions Quiz	**Homework**: RQ CH #13 **Labwork**: 13-3, 13-4 **Casework**: 13-1, 13-2, 13-3, 13-4 **Quiz #3** (Chapters 10 – 12)	

Week	Unit of Instruction	Learning Objectives/Goals	Assessment Methods	Assignments	Due Date
14	Risk Mitigation Final Review	Identify common security policy frameworks. Develop a basic security policy.	Lecture Discussions	**Homework**: RQ CH #14 **Labwork**: 14-2, 14-3 **Casework**: 14-1, 14-2, 14-4	
15	Vulnerability Assessment and Mitigating Attacks	Explain how to perform a vulnerability assessment. Develop a vulnerability mitigation plan.	Lecture Discussions	**Homework**: RQ CH #15 **Labwork**: 15-1 **Casework**: 15-1, 15-2, 15-4, 15-5	
16	**Comprehensive Final**	**Exam**	**Final Exam**	**Final Exam**	

Note: This is a blended-style course. You are expected to be in class during days marked as “In Class”. Days without such designation **may** be held online, in class, or through group discussion (subject to modification).