

MERRITT COLLEGE COURSE OUTLINE

COLLEGE:		STATE APPROVAL DATE:	
ORIGINATOR:	Anita M Black	STATE CONTROL NUMBER:	CCC000558 994
		BOARD OF TRUSTEES APPROVAL DATE:	04/25/2017
		CURRICULUM COMMITTEE APPROVAL DATE:	04/03/2017
		CURRENT EFFECTIVE DATE:	01/22/2018

DIVISION/DEPARTMENT:
1. REQUESTED CREDIT CLASSIFICATION:

Credit - Degree Applicable
 Course is not a basic skills course.
 Program Applicable

2. DEPT/COURSE NO:

CIS 059

3. COURSE TITLE:

Applications in Information Security

4. COURSE: MC Course Changes
 in Catalog Info

TOP NO. 0702.00

5. UNITS: 3.000

HRS/WK LEC: 2.00 Total: 35.00

HRS/WK LAB: 3.00 Total: 52.50

HRS/WK TBA:

6. NO. OF TIMES OFFERED AS SELETED TOPIC: AVERAGE ENROLLMENT:
7. JUSTIFICATION FOR COURSE:

Organizations have large dependency on applications to conduct business electronically today and it is important that these systems are safe and secure. Security incidents occur on frequent basis and include financial losses, theft of intellectual property, and disclosure of private information. It is important that application security is well understood and organizations can implement best practices to minimize the impacts of these issues.

8. COURSE/CATALOG DESCRIPTION

Architecture of web-based applications and security best practices: Authentication and authorization for accessing applications; managing common security vulnerabilities, security of data at rest and in transit.

9. OTHER CATALOG INFORMATION

a. Modular: No If yes, how many modules:

- b. Open entry/open exit: No
- c. Grading Policy: Both Letter Grade or Pass/No Pass
- d. Eligible for credit by Exam: No
- e. Repeatable according to state guidelines: No
- f. Required for degree/certificate (specify):
Applications Security, Applications Security
- g. Meets GE/Transfer requirements (specify):
- h. C-ID Number: Expiration Date:

- i. Are there prerequisites/corequisites/recommended preparation for this course? Yes
Date of last prereq/coreq validation: 10/09/2014

- 10. LIST STUDENT PERFORMANCE OBJECTIVES (EXIT SKILLS):** (Objectives must define the exit skills required of students and include criteria identified in Items 12, 14, and 15 - critical thinking, essay writing, problem solving, written/verbal communications, computational skills, working with others, workplace needs, SCANS competencies, all aspects of the industry, etc.)(See SCANS/All Aspects of Industry Worksheet.)

Students will be able to:

1. Understand how attackers are able to compromise applications.
2. Learn future application security trends and security measures to build defensible applications.
3. Understand how web based applications are architected and best practices to defend these applications.
4. Implement secure software development life cycle methodologies.
5. Secure software products purchased from third parties.

- 11A. COURSE CONTENT:** List major topics to be covered. This section must be more than listing chapter headings from a textbook. Outline the course content, including essential topics, major subdivisions, and supporting details. It should include enough information so that a faculty member from any institution will have a clear understanding of the material taught in the course and the approximate length of time devoted to each. There should be congruence among the catalog description, lecture and/or lab content, student performance objectives, and the student learning outcomes. List percent of time spent on each topic; ensure percentages total 100%.

LECTURE CONTENT:

1. Application security threats and vulnerabilities - 12.5%
2. Web application architecture and security best practices - 12.5%
3. Secure application authentication and authorization - 12.5%
4. Secure software development life cycle - 12.5%
5. Security of data "in transit" and "at rest" - 12.5%
6. Web application session management - 12.5%
7. Third party application security - 12.5%

8. Ongoing applications security operations - 12.5%

11B. LAB CONTENT:

1. Create a Virtual Machine of Windows 8.1 for Security Testing – 8%
2. Case study Bay Pointe Security Consulting - explain IT Security – 8%
3. SDLC - Compile native application written in "C" – 7%
4. Windows Local Group Policy Editor – 7%
5. Explore User Account Control (UAC) – 7%
6. Authentication, Authorization, and Access Control – 7%
7. Compile and run a Java Application – 7%
8. Use OpenPuff Steganography – 7%
9. Run an RSA Cipher Demonstration – 7%
10. Use TrueCrypt – 7%
11. Use MD5 Hash to secure native application – 7%
12. SSL Server and Client Tests – 7%
13. View Digital Certificates – 7%
14. Incident Response Procedures - 7%

12. METHODS OF INSTRUCTION (List methods used to present course content.)

1. Discussion
2. Distance Education
3. Lecture
4. Observation and Demonstration
5. Projects
6. Activity
7. Directed Study

13. ASSIGNMENTS: 6.00 hours/week (List all assignments, including library assignments. Requires two (2) hours of independent work outside of class for each unit/weekly lecture hour. Outside assignments are not required for lab-only courses, although they can be given.)

Out-of-class Assignments:

Assigned textbook readings. Research application security trends Term paper: draft a document for securing business applications for an organization

ASSIGNMENTS ARE: (See definition of college level):

Primarily College Level

14. STUDENT ASSESSMENT: (Grades are based on):

ESSAY (Includes "blue book" exams and any written assignment of sufficient length and complexity to require students to select and organize ideas, to explain and support the ideas, and to demonstrate critical thinking skills.)

COMPUTATION SKILLS

NON-COMPUTATIONAL PROBLEM SOLVING (Critical thinking should be demonstrated by solving

unfamiliar problems via various strategies.)

SKILL DEMONSTRATION

MULTIPLE CHOICE

15. TEXTS, READINGS, AND MATERIALS

A. Textbooks:

Gary McGraw. 2006. *Software Security, Building Security In* Addison Wesley
Rationale: Content still relevant.

Bruce Schneier. 01-01-2014. *CRYPTO-GRAM*. <http://www.schneier.com/crypto-gram.html>

SANS. 01-01-2014. *SANS NewsBites; NewsBites@sans.org*. SANS.org

*Date is required: Transfer institutions require current publication date(s) within 5 years of outline addition/update.

B. Additional Resources:

Library/LRC Materials and Services:

The instructor, in consultation with a librarian, has reviewed the materials and services of the College Library/LRC in the subject areas related to the proposed new course

Are print materials adequate? No

Are nonprint materials adequate? No

Are electronic/online resources available? No

Are services adequate? No

Specific materials and/or services needed have been identified and discussed. Librarian comments:

C. Readings listed in A and B above are: (See definition of college level):

Primarily college level

16. DESIGNATE OCCUPATIONAL CODE:

C - Occupational

17. LEVEL BELOW TRANSFER:

Y = Not Applicable

SUPPLEMENTAL PAGE

Use only if additional space is needed. (Type the item number which is to be continued, followed by "continued."

Show the page number in the blank at the bottom of the page. If the item being continued is on page 2 of the outline, the first supplemental page will be "2a." If additional supplemental pages are required for page 2, they are to be numbered as 2b, 2c, etc.)

1a. Prerequisites/Corequisites/Recommended Preparation:

RECOMMENDED PREPARATION:

CIS 005: Introduction to Computer Science
or
CIS 006: Introduction to Computer Programming
and
CIS 071: Introduction to Information Systems Security
and
CIS 055: Hacker Techniques, Exploits & Incident Handling
and
CIS 060: Computer Forensics Fundamentals

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STUDENT LEARNING OUTCOMES

1. **Outcome:** Describe the common threats to information and communication systems.

This outcome maps to the following Institution Outcomes:

- Communication - Communicate with clarity and precision using oral, nonverbal, and/or written language, expressing an awareness of audience, situation, and purpose.
- Critical Thinking - Think critically using appropriate methods of reasoning to evaluate ideas and identify and investigate problems and to develop creative and practical solutions to issues that arise in workplaces, institutions, and local and global communities.
- Quantitative Reasoning - Apply college-level mathematical reasoning to analyze and explain real world issues and to interpret and construct graphs, charts, and tables.

Assessment: exam, student project, written exercise, oral presentation, skill demonstration

2. **Outcome:** Apply ethics and security issues within the context of information technology.

This outcome maps to the following Institution Outcomes:

- Critical Thinking - Think critically using appropriate methods of reasoning to evaluate ideas and identify and investigate problems and to develop creative and practical solutions to issues that arise in workplaces, institutions, and local and global communities.
- Quantitative Reasoning - Apply college-level mathematical reasoning to analyze and explain real world issues and to interpret and construct graphs, charts, and tables.
- Information & Computer Literacy - Use appropriate technology to identify, locate, evaluate and present information for personal, educational and workplace goals.
- Communication - Communicate with clarity and precision using oral, nonverbal, and/or written language, expressing an awareness of audience, situation, and purpose.
- Civic Engagement & Ethics - Internalize and exhibit ethical values and behaviors that address self respect and respect for others with integrity and honesty that will enable success and participation in the larger society.

Assessment: exam, student project, written exercise, oral presentation, skill demonstration

3. **Outcome:** Affect the trends, ethical, security, and globalization issues in information technology.

This outcome maps to the following Institution Outcomes:

- Communication - Communicate with clarity and precision using oral, nonverbal, and/or written language, expressing an awareness of audience, situation, and purpose.
- Critical Thinking - Think critically using appropriate methods of reasoning to evaluate ideas and identify and investigate problems and to develop creative and practical solutions to issues that arise in workplaces, institutions, and local and global communities.
- Quantitive Reasoning - Apply college-level mathematical reasoning to analyze and explain real world issues and to interpret and construct graphs, charts, and tables.
- Information & Computer Literacy - Use appropriate technology to identify, locate, evaluate and present information for personal, educational and workplace goals.
- Cultural Awareness - Through knowledge of history and cultural diversity, recognize and value perspectives and contributions that persons of diverse backgrounds bring to multicultural settings and respond constructively to issues that arise out of human diversity on both the local and the global level.
- Civic Engagement & Ethics - Internalize and exhibit ethical values and behaviors that address self respect and respect for others with integrity and honesty that will enable success and participation in the larger society.

Assessment: exam, student project, written exercise, oral presentation, skill demonstration

4. **Outcome:** Demonstrate a working knowledge of security practices to optimize information assurance.

This outcome maps to the following Institution Outcomes:

- Communication - Communicate with clarity and precision using oral, nonverbal, and/or written language, expressing an awareness of audience, situation, and purpose.
- Critical Thinking - Think critically using appropriate methods of reasoning to evaluate ideas and identify and investigate problems and to develop creative and practical solutions to issues that arise in workplaces, institutions, and local and global communities.
- Quantitive Reasoning - Apply college-level mathematical reasoning to analyze and explain real world issues and to interpret and construct graphs, charts, and tables.
- Information & Computer Literacy - Use appropriate technology to identify, locate, evaluate and present information for personal, educational and workplace goals.

Assessment: exam, student project, written exercise, oral presentation, skill demonstration

5. **Outcome:** Demonstrate a knowledge of current legal requirements for information and system security.

This outcome maps to the following Institution Outcomes:

- Critical Thinking - Think critically using appropriate methods of reasoning to evaluate ideas and identify and investigate problems and to develop creative and practical solutions to issues that arise in workplaces, institutions, and local and global communities.
- Quantitive Reasoning - Apply college-level mathematical reasoning to analyze and explain real world issues and to interpret and construct graphs, charts, and tables.
- Civic Engagement & Ethics - Internalize and exhibit ethical values and behaviors that address self respect and respect for others with integrity and honesty that will enable success and participation in the larger society.
- Communication - Communicate with clarity and precision using oral, nonverbal, and/or written language, expressing an awareness of audience, situation, and purpose.

Assessment: exam, student project, written exercise, oral presentation, skill demonstration