

# CS - 3750 - Computer and Network Security

## 04. UG Course Modification (No Special Designation)

### Due Dates and Resources

If you have questions or need assistance in filling out this proposal form, you may contact the [Office of Curriculum](#).

Deadlines for curriculum can be found:

[Curriculum SharePoint Curriculum Website Procedural Calendar](#)

On your Curriculog dashboard under 'My Upcoming Events'

In order to meet the deadline, this proposal must be on the *Nonsubstantive, Substantive Colleg/School, OR Substantive University Level Review* step on or before the listed due date. Which step will depend on the changes being made.

Resources for curriculum can be found:

[Originator How-To Guide Curriculum SharePoint](#)

This form **SHOULD** be used for the following:

Modification of a course **without** a special designation (General Studies, Service Learning, Ethnic Studies & Social Justice, or Senior Experience).

This form **SHOULD NOT** be used for the following:

Modifying a course with a special designation (General Studies, Service Learning, Ethnic Studies & Social Justice, or Senior Experience).  
Creating a new course with or without a special designation (General Studies, Service Learning, Ethnic Studies & Social Justice, or Senior Experience).  
Creating or

modifying a  
graduate course.

## Directions for Form

### General Instructions and Information

You may collapse individual sections of this form by clicking the arrow or "V" icon to the right of the section title.

All fields that are marked with an asterisk (\*) are required.

Each section may have additional directions attached. Please follow instructions.

**Note: Proposals that are incomplete or filled out incorrectly will be returned to the originator.**

## **INSTRUCTIONS FOR MODIFYING AN EXISTING COURSE**

Import the course you wish to modify.

Fill out Part I of the form.

Carefully follow the instructions on selecting the level of review your proposal requires.  
Incorrect review selection will require a resubmission of the proposal.

LAUNCH the proposal.

Fill out Part II to indicate all the modifications you make to the course.

Modify any course fields in Part III as needed.

### **Modification Note: DO NOT MAKE CHANGES TO YOUR COURSE**

**INFORMATION (PART III) UNTIL AFTER YOU LAUNCH THE PROPOSAL in order to track changes. Failure to use the track changes feature may cause a delay or denial of your proposal.**

If you modify additional fields not already indicated in Part II, please make sure you add them to the modification list.

Approve the proposal.

Use the checkmark icon on the right of the screen to approve the proposal.

## **Part I: Department and Originator Information (Fill out BEFORE launching the proposal)**

If you are changing course ownership, please list both departments and if applicable, both college/schools.

College/School:\*

College of Aerospace, Computing, Engineering, and Design

Department:\*

Department of Computer Sciences

Name of Proposal Originator\* Weiying Zhu

Email of Proposal Originator\* wzhu1@msudenver.edu

Justification and Resource Implication for Curriculum Proposal:\*

Since the only assembly language-based programming assignment is modified into a programming assignment in an application level language, such as Java, the prerequisite CS2400 is not needed any more. Additionally, years ago, most of the prerequisite topics that are needed in CS3750 and used to be covered in CS2400, such as binary, hexadecimal, and logic operations, were moved to CS1400, it works best to replace the prerequisite CS2400 with CS1400 to CS3750.

This course is a required core course for the proposed Cybersecurity in Computing Major, B.S., program.

Last but not least, the contents of this course are modified to keep it up to date and to better serve the Cybersecurity in Computing Major, B.S., program being proposed.

No additional resource is needed for teaching this course in the near future.

Related Curriculum Proposals:\*

CSCP New Program <https://msudenver.curriculog.com/proposal:11729/form>

Impact Report Results:\*

## Impact Report for CS 3750

There are no results for this report.

## Course Modification Level Review

The modification level review question will determine the workflow of this proposal, so it is essential you select the correct one. Please consult [this document](#) carefully and select your choice. If you select a level of review that does not include the changes you make to the course, this proposal will be denied and you will have to resubmit a new proposal. If you are unsure which level of review you need to select, please contact the Curriculum Staff [here](#).

*Note: Changing the level of review after launching the proposal will not change the workflow. If you discover that you have selected an incorrect review level post-launch, you must submit a new proposal. You can contact the Curriculum Office to delete the incorrect proposal.*

Course Modification Level Review Selection:\*

Nonsubstantive       Substantive College/School Level  
 Substantive University Level

According to the Undergraduate Curriculum Manual, it is the responsibility of both the originator as well as each level of review to consider potential overlap and curriculum conflict. Any potential overlap or conflict with existing curriculum should be reviewed, and the impacted department(s) should be requested to provide a letter of notification or support, depending on the circumstances. Attach documentation that supports affected Departments were notified and/or provided support of the proposed changes in the Proposal Toolbox by clicking on the paperclip icon on the right side of the form.

**Please Confirm That:** \*  I, the originator of this proposal, have completed the necessary due diligence to review this proposal for any potential overlap and/or conflict with existing curriculum. Any departments identified as having potential overlap and/or conflicts have been contacted and a letter of notification and/or a letter of support has been obtained.

## Part II: Course Modification Information

**Reminder: This form CANNOT be used to change courses with special designations (Ethnic Studies & Social Justice, Service Learning, Senior Experience, General Studies). If you submit a course with special designation(s) with this form, it will be denied and you will need to resubmit.**

Please indicate on the below list all of the course modifications you are making. **Please do not make changes to sections you do not specify are being modified and make sure to select ALL sections that you modify.**

**Specify which sections have been modified (check all that apply):**

- Part IIIa (prefix, course number, course title, transcript/banner course title, course type, CIP code)
- Part IIIb (credits, distribution of credits, schedule type, grade mode, contact hours, repeats, equivalencies, crosslistings, registration restrictions)
- Part IIIc (prerequisites, corequisites, or prerequisite(s)/corequisite(s), banner enforced prerequisites, corequisites, or prerequisite(s)/corequisite(s), catalog course description, catalog note, lab fees, field trips)
- Part IIId (required reading, SBLOs, outline, evaluation of student performance)

**If the course modification includes changing prefixes, is it a new prefix?**

- Yes
- No
- N/A

**Reminder: DO NOT MAKE CHANGES TO YOUR COURSE INFORMATION (PART IIIa-III d) UNTIL AFTER YOU LAUNCH THE PROPOSAL in order to track changes. Failure to use the track changes feature may cause a delay or denial of your proposal.**

**If you modify additional sections not already indicated, please make sure you add them to the modification checklist.**

## Part IIIa: Course Information

Prefix:\*

CS

Course Number:\* 3750

Course Title:\* Computer and Network Security

Transcript/Banner Course Title:\* Computer & Network Security

Course Type:\*

Computer Science

CIP Code: 11.1003

### Part IIIb: Course Information, continued

Please check all that apply from the selections below. You may select more than one option if applicable.

- Check All that Apply:\*
- Required for Major
  - Required for Minor
  - Required for Concentration
  - Required for Certificate
  - Elective
  - Specified Elective

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

**Federal Credit Hour Definition:** A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:

(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward the award of credit hours. 34CFR 600.2 (11/1/2010)

Credits:\* 4

Distribution of Credits:\* (4 + 0)

Schedule Type(s):\*

Lecture

Grade Mode(s):\*

Letter

### Face-to-Face or Equivalent Hours per course

Consult Appendix B and C of the [Curriculum Manual](#) to determine the hours for the course

Lecture: 50

Lab:

Internship:

Practicum:

Other Hours:

Additional Student Work Hours: 120

**Please answer yes or no to the below questions. If you answer yes to any of the questions, please fill out the related field on the right.**

A specified repeatable course is a course that allows a student to repeat the course either in its entirety or for a certain identified total number of credit hours. If you decide to make your course repeatable, please specify either how many times a student can repeat the course for credit, or for the total number of credits they can receive.

Is this course a specified repeatable course? \*  No  Yes

If yes, indicate specified repeatable number of credits and/or repeats allowed:

Is this course a variable topics umbrella course? \*  No  Yes

If yes, indicate variable topic number of credits and/or repeats available:

A crosslisting is when a course is made available under additional prefixes for students in other programs.

An equivalency is when two courses are coded in Banner to be equal to each other.

Generally equivalencies are used when an old, archived course is needed to be equal to a new course. Crosslistings are used for all active courses. Supporting documentation should be included to demonstrate approval for crosslistings.

Are there course equivalencies? \*  No  Yes

If yes, list all equivalent courses in alphabetical order: CSI 3750

Are there course crosslistings? \*  No  Yes

If yes, list all crosslistings in alphabetical order:

### Registration Restrictions

Program:

Major:

Level:

Class:

Student Attribute:

### Part IIIc: Course Information, continued

The following fields will allow you to attach prerequisites, corequisites, or prerequisites or corequisites to your course. Please specify if you want and of these prerequisites, corequisites, or prerequisites or corequisites Banner enforced.

Banner enforcement means that the requirement will be enforced when the student attempts to register for a course. If you do not Banner enforce the requirement, the system will not check the student's record for the requirement to be met.

Please also indicate the minimum passing grade.

**Prerequisite(s):** CS 2050 and CS 1400, both with a grade of "C-" or better, or permission of instructor

**Banner Enforced Prerequisite(s):** CS 2050 and CS 1400

**Minimum Passing Grade for Banner Enforced Prerequisite(s):** C- or T

**Corequisite(s):**

**Banner Enforced Corequisite(s):**

**Prerequisite(s) or Corequisite(s):**

**Banner Enforced Prerequisite(s) or Corequisite(s):**

**Minimum Passing Grade for Banner Enforced Prerequisite(s) or Corequisite(s):**

**Catalog Course Description:\*** In this course, students learn how computers and networks are compromised and what one needs to do to build security into every program. Additionally, students study how cryptography assists in securing data on a computer or in the Internet, how operating systems supports computer security, and how security objectives are achieved in network applications.

**The note field DOES show up in the course listing in the university catalog. A note should be made in specific instances where additional information about a course needs to be conveyed to students. The most common reasons for adding a note are:**

The course is crosslisted Example: *(Note: Credit will be granted for only one prefix.)*

Variable credit courses Example: *(Note: Variable Credit)*

A course is repeatable Example: *(Note: This course may be repeated up to 3 times under different topics) OR (Note: This course is repeatable for a maximum of six semester hours)*

If a student cannot take two courses and earn credit for both Example: *(Note: Students cannot earn credit for XXX1234 and XXX2345)*

**Note:**

**Lab Fees:**

**Field Trips:**

### **Part IIIId: Course Information, continued**

**The following section is the course content.**

**Required reading: Please list materials in preferred citation style (eg. MLA, APA, etc.).**

**List each material in this format. If there are multiple material please format them in a bullet or list style**

**Specific Measurable Student Behavioral Learning Objectives: Please list the SBLOs in your preferred numbering or bulleting style. Start section with: Upon completion of this course, the student should be able to:.**

**Detailed Outline of Course Content or Outline of Field Experience/Internship: Please list the course outline in your preferred numbering or bulleting style. It is recommended that you use a numbering format for this field.**

**Evaluation of Student Performance: Please list the evaluation of student performance in your preferred numbering or bulleting style.**

**You must use the numbering list feature within the toolbar above each field. Right click on a number in the list and select "Numbered List Properties" to change the numbering style. Please maintain consistency in the selected numbering or bulleting styles.**

**Reminder: DO NOT MAKE CHANGES TO YOUR COURSE INFORMATION (PART IIIa-IIIId) UNTIL AFTER YOU LAUNCH THE PROPOSAL in order to track changes. Failure to use the track changes feature may cause a delay or denial of your proposal.**

**If you modify additional sections not already indicated, please make sure you add them to the modification checklist.**

**Required reading and other materials will be equivalent to:\***

Stallings, W. & Brown, L. (2023). *Computer Security: Principles and Practice*. 5th edition. Pearson, London, British. ISBN-13: 9780138091675

**Specific, Measurable Student Behavioral Learning Objectives:\***

Upon completion of this course students are able to:

1. Assess the threats faced by computers
2. Describe the methods for defending against attacks.
3. Explain how cryptography works and how to apply it.
4. Describe how programs and systems might be attacked
5. Evaluate fixes for system and network attacks.
6. Explain how to protect computing systems against typical methods of attack.
7. Describe operating system security controls.
8. Explain how to achieve various security objectives in network applications over the Internet.
9. Develop client and server programs that use secure sockets to exchange application-layer messages.

**Detailed Outline of  
Course Content  
(Major Topics and  
Subtopics) or Outline  
of Field  
Experience/Internship \***

1. Introduction

1. What is computer security?
2. Key security objectives
3. Basic attacks
4. Basic countermeasures

2. Introduction to cryptography and its applications

1. Symmetric encryption
2. Message authentication
3. Public-key (asymmetric) encryption
4. Digital signatures

3. User Authentication

1. Password authentication and its implementation, password cracking, and proactive password checking
2. Token authentication
3. Biometric authentication
4. Remote user authentication

4. Access Control

1. Access control principles, policies, and basic elements
2. Discretionary access control
3. Role-based access control
4. Attribute-based access control

5. Buffer Overflow and Memory Protection

1. Buffer overflow basics
2. Buffer overflow vulnerabilities and attacks
3. Buffer overflow defenses

6. Internet Security

1. Secure socket layer
2. Secure socket programming
3. Extending Hypertext Transfer Protocol (HTTP) into Hypertext Transfer Protocol Secure (HTTPS)
4. Secure/Multipurpose Internet Mail Extensions (S/MIME)

**Evaluation of Student Performance:**\* A combination of

1. Homework and Programming Assignments
2. Programming Projects
3. Oral Presentations
4. Quizzes and Examinations
5. Final Examination

**CAEPD and Registrar's Office Use Only**

**Notes** Director checked Ild since changes were made to all course component fields in this section.

This course modification will be effective for the University 2025-2026 Undergraduate Catalog and will be reflected in Banner beginning in Fall 2025.

*Form updated May 2024*