METROPOLITAN STATE UNIVERSITY OF DENVER
Office of Academic and Student Affairs

REGULAR COURSE SYLLABUS

College of: Letters, Arts, and Sciences

Department: Mathematical and Computer Sciences

Prefix & Course Number: CS 3750 **Crosslisted With*:** _____

Course Title: Computer and Network Security

Transcript Course Title (30 characters): Computer and Network Security

Check All That Apply: Required for Major: _____ Required for Minor: _____ Specified Elective: _____

Required for Concentration: _____ Elective: X Service Course: _____

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 compliane 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 to the award of credit hours. 34CFR 600.2 (11/1/2010)*

Credit Hours: 4 (4+0) **Schedule Type:** Lecture **Grade Mode:** Letter

Face-to-Face or Equivalent Hours per course:

Lecture 60 Lab _____ Internship _____ Practicum _____ Other (please specify type and hours):_____

Additional Student Work Hours per course: 120

Variable topics umbrella course: No X **Yes** _____ If Yes, number of credit hours allowed _____

Specified repeatable course: No X **Yes** _____

Prerequisite(s): CS 2400 with a grade of "C" or better, and (CS 3600 with a grade of "C" or better, or CS 3700 with a grade of 'C' or better), or permission of instructor.

APPROVED:

Department Curriculum Committee	Date 9/12/14
Department Chair **OR** Program Director	Date 9.12.2014
Dean **OR** Associate Dean	Date 9/15/14
Associate VP, Academic Affairs	Date 09/17/14

*If crosslisted, attach completed Course Crosslisting Agreement Form

Corequisite(s): None
Prerequisite(s) or Corequisite(s): _____

Banner Enforced Coding:
Prerequisite(s): CS 2400 with a minimum grade of C, and CS 3600 or CS 3700 each with a minimum grade of C
Corequisite(s): _____
Prerequisite(s) or Corequisite(s): _____

Registration restrictions: Level UG **Class** _____ **Program/Major** _____ **Student attribute** _____

Catalog Course Description:
This course will cover how computers are compromised, what one needs to do to build security into every program, how cryptography assists in securing data, how operating systems affect computer security, how networks are secured, and the social and ethical aspects of computer security.

Specific Variable Topics Course Description (if applicable, umbrella course description included above):

Required Reading and Other Materials will be equivalent to:
Stallings, William & Brown , Lawrie. (2015). *Computer Security: Principles and Practice.* 3rd edition. Upper Saddle River, NJ: Prentice-Hall. ISBN- 13 978-0133773927

Specific, *Measurable* Student Behavioral Learning Objectives:
Upon completion of this course the student should be 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 viruses, worms, etc., attack programs and systems.
5. Locate (or create) and evaluate fixes for system and network attacks.
6. Assemble systems and networks that are protected against typical methods of attack.
7. Manage an operating system using proper security controls.
8. Prepare controls to detect host and network intrusions.

Detailed Outline of Course Content (Major Topics and Subtopics) :

I. What is computer security?
II. Basic types of attacks
III. Basic countermeasures
IV. Introduction to cryptography
V. How to secure programs
   A. Sources of errors
   B. Auditing programs by hand and with tools.
   C. Run-time mitigation of program flaws.
VI. Protecting operating systems
   A. Memory protection
   B. User authentication
   C. File protection
VII. Trusted operating systems
VIII. Network security
   A. Firewalls
   B. Network intrusion detection

IX. Security administration
X. Security, privacy, and ethics

Evaluation of Student Performance:

A combination of the following:

1. Final Examination
2. Assignments
3. Quizzes and Examinations
4. Research papers and/or Book Reports
5. Oral Presentations
6. Programming Projects