# CS 450/650: Fundamentals of Integrated Computer Security

# 3 credits (Lecture 3 + Lab 0)

# Fall 2018

## Instructor: Ahmet Aksoy

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Office: SEM 211 (CNL Computer Networking Lab)

Office hours: Mon, Wed: 4:00pm-5:30pm

## Lectures:

Mon, Wed: 5:30pm-6:45pm, AB 106

## Recommended Textbook:

* William Stallings, Lawrie Brown, "[Computer Security: Principles and Practice](http://williamstallings.com/ComputerSecurity/index.html)", Prentice Hall, 4thedition, 2017.

## Supplemental Books:

* Charles P. Pfleeger, Shari Lawrence Pfleeger, *"*[*Security in Computing*](http://www.informit.com/store/product.aspx?isbn=0132390779)*",* Prentice Hall, 5th edition, 2015.
* Charlie Kaufman, Radia Perlman, Mike Speciner, *"*[*Network Security: Private Communication in a Public World*](http://www.pearsonhighered.com/educator/academic/product/0,,0130460192,00%2Ben-USS_01DBC.html)*",* Prentice Hall, 2nd edition, 2002.
* Mae Bishop, *"Computer Security: Art and Science",* Addison -Wesleyl.
* Richard E. Smith, *"*[*Elementary Information Security*](http://www.jblearning.com/catalog/9781449648206/)*",* Jones&Bartlet Learning, 2015.

## Catalog Course Description:

Network security, database and system security, access control, policy and ethics development, attacks, and counter attack measures, security tools and malicious code, current trends and research.

## Requirement or Elective:

* This course is a technical elective for the BS CSE Program.
* It is a required course for Cybersecurity minor degree

## Student Outcomes:

* Student Outcome 1:  an ability to apply knowledge of computing, mathematics, science, and engineering.
  + Students demonstrate an understanding of various crypto algorithms and security schemes.
* Student Outcome 3: an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs, within realistic constraints specific to the field.
  + Students demonstrate an understanding of the process of encryption/decryption and security schemes
* Student Outcome 6: an understanding of professional, ethical, legal, security and social issues and responsibilities.
  + Students demonstrate an understanding of legal and ethical aspects of computer security
* Student Outcome 7: an ability to communicate effectively with a range of audiences.
  + Students will work in groups on their final projects and present their work to an audience, which will grade the work.
* Student Outcome 8: the broad education necessary to analyze the local and global impact of computing and engineering solutions on individuals, organizations, and society.
  + Students demonstrate the knowledge of local and international security policy and laws
* Student Outcome 10: a knowledge of contemporary issues.
  + Students demonstrate the knowledge of current computer security attacks and defense schemes
* Student Outcome 11: an ability to use current techniques, skills, and tools necessary for computing and engineering practice.
  + Students will develop security scheme design and implementation skills.

## Course Topics:

This is a tentative list of topics, subject to modification and reorganization.

* Introduction to Computer Security
* Computer Security Technology and Principles
  + Cryptographic Tools
  + User Authentication
  + Access Control
  + Database and Data Center Security
  + Malicious Software
  + Denial-of-Service Attacks
  + Intrusion Detection
  + Firewalls and Intrusion Prevention Systems
* Software Security and Trusted Systems
  + Buffer Overflow
  + Software Security
  + Operating System Security
  + Cloud and IoT Security
* Management Issues
  + IT Security Management and Risk Assessment
  + IT Security Controls, Plans and Procedures
  + Physical and Infrastructure Security
  + Human Resources Security
  + Security Auditing
  + Legal and Ethical Aspects
* Cryptographic Algorithms
  + Symmetric Encryption and Message Confidentiality
  + Public-Key Cryptography and Message Authentication
  + Digital Currencies
* Network Security
  + Internet Security Protocols and Standards
  + Internet Authentication Applications
  + Wireless Network Security
  + Anonymous Communication

## Course Activities:

* Lectures, homework assignments, individual programming projects, one mid-term examination, one final exam, group presentations.
* Graduate students will also do a paper presentation.

## Course Grading:

* The final grade will be based on (Tentative, subject to change):

|  |  |  |
| --- | --- | --- |
| **Section** | **450** | **650** |
| Attendance/Participation/Homework | 20% | 20% |
| Mid-term exam | 35% | 35% |
| Final exam | 40% | 35% |
| Paper Presentation | 0% | 8% |
| Presentation Evaluations | 5% | 2% |

* A : 87 - 100   
  B : 75 - 86   
  C : 63 - 74   
  D : 51 - 62   
  F : 0 - 50 (or caught cheating)

## Course Policies:

* Students are expected to attend, and be on time, for every class. This demonstrates professionalism and consideration for your fellow students and your instructor. While the course does not have an attendance policy, students who miss class and/or are late for class may experience an impact on their grade by missing classroom activities.
* Students are expected to turn in all assigned materials in a timely manner.
* Students are expected to demonstrate professionalism and courtesy by either silencing or turning off all cell phones and/or other alarm or audible indicator devices.
* The instructor reserves the right to add to, and/or modify any of the above policies as needed to maintain an appropriate and effective educational atmosphere in the classroom. In the case that this occurs, all students will be notified in advance of the implementation of the new and/or modified policy.

**UNR Athletics:**

* If you are involved with any university-sponsored athletic activities that will have an impact on your attendance, please provide your instructor with a letter from your coach and/or the UNR Athletic Department as soon as possible, but no later than the end of the second week of classes. This should include the official schedule of your activities which will impact your attendance throughout the semester.

## Academic Dishonesty:

Cheating, plagiarism or otherwise obtaining grades under false pretenses constitute academic dishonesty according to the code of this university. Academic dishonesty will not be tolerated and penalties can include filing a final grade of "F"; reducing the student's final course grade one or two full grade points; awarding a failing mark on the coursework in question; or requiring the student to retake or resubmit the coursework. For more details, see the University of Nevada, Reno General Catalog.

## Disability Services:

Any student with a disability needing academic adjustments or accommodations is requested to speak with the Disability Resource Center as soon as possible to arrange for appropriate accommodations.

## Academic Success Services:

Your student fees cover usage of the University Math Center (775) 784-4433, University Tutoring Center (775) 784-6801, and University Writing Center (775) 784-6030. These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

## Audio and Video Recording:

Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may be given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.