COMP620 Information Privacy and Security

Fall Semester 2018

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office hours: MTWF 3:00 to 5:00, Tuesday 10:00 to 12:00
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COMP620001.201910 **CRN:** 10463

Required Text: *Computer Security: Art and Science*, by Matt Bishop, Addison-Wesley Publishing, 2003, ISBN: 978-0201440997

Lectures: Monday, Wednesday and Friday noon – 12:50pm Graham Hall 210

Communication: The web page for this class is http://williams.comp.ncat.edu/comp620 Assignments and information will also appear on the University's online Blackboard system, http://blackboard.ncat.edu Email messages will be sent to the student's A&T email address. It is the student's responsibility to regularly check their A&T email account.

Description: 3 credits

This course examines the security and privacy issues associated with information systems. There are cost/risk tradeoffs to be made. Topics discussed include technical, physical, and administrative methods of providing security, access control, identification, and authentication. Encryption is examined, including Data Encryption Standards (DES) and public key cryptosystems. Management considerations such as key protection and distribution, orange book requirements, and OSI data security standards are covered. Privacy legislation is covered, as is current cryptographic research.

The topics to be covered include:

- Authentication
- Attack types
  - Buffer overflow
  - Cross site scripting
  - Denial of Service
  - SQL injection
  - URL modification
- Certificates and key exchange
- Computer forensics
- Digital Money
- Electronic voting
- Encryption
- Steganography
- Firewalls
- Privacy issues
  - Facebook
  - Directed advertising
  - Data harvesting
- Secure software development
- Security models
- Security policies
- Security standards

Goals: Upon completion of this course, the student should be able to:

1. Secure a system against common threats.
2. Develop software that avoids known security threats.
3. Develop software systems that use private information while avoiding unnecessary release of information.

Clickers: Response clickers are used in this course. All students are required to have an i>clicker 2 response clicker or purchase the iClicker app for their smart phone, available at https://www.iclicker.com/students Response clickers may be purchased at the A&T bookstore or online.

Grading : A student's grade in the class will be based on their performance on the exams, quizzes, programs and homework assignments. All work will be graded on a numerical scale from 0 to 100. The final grade will be the weighted sum of all work using the following weights:

assignments and quizzes	16 % combined
paper	4 %
3 exams	20 % each
final exam	20 % **Saturday, December 1, 10:00am – 12:00pm**

The lowest homework or quiz grade will be discarded. Homework must be turned in at the beginning of class on the assigned day for full credit, unless accompanied by a valid excuse. Homework turned in within one day of the assigned time will be penalized 20%. Homework turned in within two days of the assigned time will be penalized 25%. **No homework will be accepted after two days. Students who are absent** during a class period when a test is given, **will receive a score of zero** unless previous arrangements are made or a valid written excuse is presented.

Final letter grades will be based on the following scale:

Letter Grade	from	up to but not including
A	87	100
A-	85	87
B+	82	85
B	77	82
B-	75	77
C+	72	75
C	62	72
C-	60	62
D+	57	60
D	50	57
F	0	50

Students will be allowed one and only one 8½ by 11 inch page of notes during the exams. Both sides of the note page can contain information as small as the student desires. You are not allowed to use more than 187 square inches of paper surface to hold your notes. Any additional pages, fold outs, flaps or other means of extending the page of notes will be considered cheating.

Attendance: Students are expected to attend all lectures. The lectures introduce the class material. Some material presented in the lectures is not covered in the text. Students are responsible for all class material covered or assigned in lectures.

Cheating: Instances of cheating will be handled according to College of Engineering policy. Academic integrity is critical to maintaining high standards within the academic community. All students enrolled in the College of Engineering are expected to demonstrate academic integrity when submitting course-related work (e.g., assignments, quizzes, individual projects, and exams). Cheating covers any case in which a student has received unauthorized aid in his/her performance that contributes to a course grade or submits material contributing to a course grade with the intent to deceive the instructor or grader. Plagiarism or submitting material copied from another source without providing a reference to the source is considered cheating. If the unauthorized aid includes help from another student, then that student is considered to have cheated as well. Students are expected to submit assignments that are entirely their own work. A common example of cheating is to copy another person's program or homework assignment.

If a student cheats on a homework or programming assignment, then he/she will receive a grade of zero (a grade of F) for that item as will anyone assisting him/her in an unauthorized way. If a student cheats

on an exam or the final or cheats more than once on an assignment, the violation will be reported to the College of Engineering Academic Integrity Committee with the recommendation of a grade of 'F' for the course, subject to the review and endorsement of the chairperson and the dean. All cases of cheating will be reported to the Director of Undergraduate Studies.
Repeated academic integrity violations may lead to dismissal from the University. To review the University's Academic Dishonesty Policy, please see http://www.ncat.edu/divisions/academic-affairs/bulletin/2016-2017/academic-info-and-regs/academic-dishonesty-policy.html

Special needs: Students with special needs (e.g. hearing, vision, etc.) should inform the instructor at the beginning of the semester. All reasonable accommodations will be made.

University policies
Student Affairs website: http://www.ncat.edu/student-affairs/index.html

Student Handbook: http://www.ncat.edu/student-affairs/student-services/dean/student-handbook.html

Sexual Misconduct Policy: http://www.ncat.edu/student-affairs/student-services/dean/sexual-misconduct.html

Family Educational Rights and Privacy Act: http://www.ncat.edu/registrar/ferpa/

Student Complaint Procedures: http://www.ncat.edu/student-affairs/student-resources/student-complaint-form.html

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Class Schedule

	Wednesday, August 15 Introduction section 1	Friday, August 17 Security Principles
Monday, August 20 Encryption section 2	Wednesday, August 22 Encryption section 3	Friday, August 24 Encryption
Monday, August 27 Key Exchange	Wednesday, August 29 Digital Certificates sections 5.1-5.3	Friday, August 31 Authentication
Monday, September 3 *Labor Day holiday* *(no classes)*	Wednesday, September 5 Steganography section 4	Friday, September 7 Secure software development
Monday, September 10 NP-Complete programs	Wednesday, September 12 *hurricane*	Friday, September 14 *hurricane*
Monday, September 17 *hurricane*	Wednesday, September 19 review	Friday, September 21 **Exam 1**
Monday, September 24 Viruses and Malware chapter 22	Wednesday, September 26 Firewalls	Friday, September 28 Firewalls
Monday, October 1 Buffer Overflow	Wednesday, October 3 Buffer Overflow	Friday, October 5 Cross Site Scripting
Monday, October 8 & 9 *Fall Break* *(no classes)*	Wednesday, October 10 URL modification	Friday, October 12 SQL injection
Monday, October 15 Reverse Engineering	Wednesday, October 17 Reverse Engineering	Friday, October 19 **Exam 2**
Monday, October 22 Computer Forensics	Wednesday, October 24 Malware Analysis	Friday, October 26 Electronic Voting
Monday, October 29 Security models	Wednesday, October 31 Windows Security	Friday, November 2 Data harvesting
Monday, November 5 Directed advertising	Wednesday, November 7 Facebook security	Friday, November 9 Privacy issues
Monday, November 12 Digital Money	Wednesday, November 14 Security policies	Friday, November 16 Security standards
Monday, November 19 **Exam 3**	Wednesday, November 21 *Thanksgiving Holiday* *(no classes)*	Friday, November 23 *Thanksgiving Holiday* *(no classes)*
Monday, November 26 review for final exam	Wednesday, November 28 Final Lecture	Saturday, December 1 10:00am – 12:00pm **Final Exam**