CSC 302 Computer Security II

INSTRUCTOR
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Office hours: Mo: 2:00-3:00pm; TuTh: 2:15-4:15pm; or by appointment.

PREREQUISITES
CSC301 Computer Security I

TEXTBOOK

RECOMMENDED BOOK (NOT REQUIRED)

COURSE DESCRIPTION
This course will provide an introduction to critical and diverse topics in computer security, such as security requirements, attack models, cryptography, authentication, system security, etc.

Students will also learn practical knowledge through a hand-on lab experience. Students will work on teams to administrate and meanwhile to compromise computers administrated by the instructor and the other teams. Each team will also need to detect and trace all unauthorized access for the computers that it manages and monitors.

COURSE OBJECTIVES
The basic objective of this course is to provide a broad exposure to important topics of computer security. Students will learn security concepts, principles, components, and architectures. Knowledge of common computer security problems and basic countermeasures will be taught not only in theories but also through hand-on lab activities.

By the end of this course, you should be able to:
1. Explain the following terminologies in your own words:
   1) security, safety, threat, vulnerability, asset, security policy, preventive/detection, risk, intruder, insider threat, risk avoidance, risk management, risk acceptance, accountability, identity theft, physical security, cost/benefit analysis
CSC302 Spring2016 Syllabus

2) confidentiality, integrity, availability, reliability (fault/error/failure, buffer overflow, race condition), authentication, non-repudiation, cryptography, cryptanalysis, symmetric/asymmetric key cryptography, one-time pad, public key cryptography, digital signature, hash, CBC-MAC, HMAC, DES, AES, ECB, CBC, RSA

3) password, dictionary attack, password aging, proactive password checking, password shadow, salt, Unix password security, one-time password

4) access control: MAC (entities, security level, security categories, security labels, subject, object clearance, classification, dominate), authorization policy

6) malicious logics, mobile code, computer virus, Trojan horse, Internet worm, logic bomb, backdoor, traffic analysis, information warfare, social engineering, honeypot, passive/active attacks, DoS, DDoS, SYN flooding, e-mail bombing, spoofing attack (IP spoofing, DNS spoofing, sequence number guessing, session hijacking)

7) signature/knowledge-based network intrusion detection

8) Firewall, packet filtering firewall, application gateway; IPsec, ESP, AH

9) SSL, SSH, HTTPS

10) E-mail security: PGP/GPG, S/MIME

11) network security assessment, IP network scanning

2. Determine appropriate mechanisms for protecting information systems ranging from operating systems to applications.

3. Explain the basic concepts and state the general techniques in intrusion detection

4. State the criteria of evaluating secure network systems.

COURSE TOPICS

PART I: Introduction
   1. Introduction to computer security (terminology, security services, attack models, security architectures, the orange book)

PART II: Cryptography
   2. Public key cryptography and its applications
   3. Secret key cryptography and its applications
   4. Hash algorithms and its applications

PART III: Identification and Authentication
   5. Overview of authentication systems
   6. User authentication
   7. Managing and protecting passwords

PART IV: Security in systems
   8. Unix/Linux security
   9. Windows security

PART V: Authentication in Distributed System
   10. Introduction to Kerberos
   11. PKI(Public Key Infrastructure)
PART VI: Other topics
12. Intrusion detection
13. Introduction to Database security
14. Introduction to Software security

GRADING POLICY
1. One Linux quiz (10%), midterm 20%, final exam 20%.
2. Term project 30%.
3. One programming assignment (6%)
4. Written assignments 8% (2 of them, 4% each).
5. Small out-of-class practices and in-class exercises 6% (6 of them, 1% each).

CLASSROOM ENVIRONMENT AND GRADING
Classes are a relaxed, but serious work environment. Cell phones / texting, iPods, etc. in class, disruptive classroom behavior, inappropriate conversations, leaving/entering class without permission, unexplained and or repeated lateness, equipment / furniture abuse, and other items that may be noted as unacceptable by your instructor will be deductions from your grade.

POLICIES ON LATE ASSIGNMENTS
Homework and project deadlines will be enforced. Late homework will be accepted with a 10% reduction in grade for each class period they are late by. However, once a homework assignment is discussed in class or the solution is posted, submissions will no longer be accepted. All assignments must be turned in before the start of class on the due date.

POLICIES ON ABSENCES AND MAKEUP WORK
1. Students are allowed to take excused absence. However, evidence, such as university excuse letter or doctor's note, must be shown. The instructor will NOT discuss the content of missed classes with students who take unexcused absence.
2. Students are responsible for discussing makeup exams if they miss exams due to excused absence. The instructor will choose a mutually agreed date and time for the makeup exam. The makeup exam must be taken before the exam keys are distributed or the exams are discussed in class.
3. Late submission of assignments due to excused absences is not subject to the policies on late assignments.

IMPORTANT DATES

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<thead>
<tr>
<th>Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>First Day of Classes</td>
<td>January 19</td>
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<tr>
<td>Last day to drop/add</td>
<td>January 26</td>
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<tr>
<td>Course Withdrawal Period Begins</td>
<td>January 27</td>
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<tr>
<td>Spring Break</td>
<td>March 7 - March 11</td>
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<tr>
<td>End of Course Withdrawal period. Term Withdrawals only after this date.</td>
<td>March 25</td>
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<tr>
<th>End of term withdrawal period.</th>
<th>April 25</th>
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<tr>
<td>Last Day of Classes</td>
<td>May 2</td>
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<tr>
<td>Final Examination (Project Presentation)</td>
<td>6-8pm, Tuesday, May 3, 2016</td>
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ACADEMIC INTEGRITY

COMPUTER SCIENCE ACADEMIC DISHONESTY POLICY

The Computer Science Department has adopted the following policies in regard to academic dishonesty in Computer Science classes:

1. A student found to be academically dishonest in an assignment will receive zero for that assignment if it is his/her first offense in that class, but an F for the course if it is for his/her second offense in that class.

2. A student found to be academically dishonest in a test will receive the grade of F in that class.

3. For the purposes of this document on academic dishonesty, every form or method of evaluation in a class will be considered as being of one of two types: an assignment or a test. Assignments include homework assignments, and short quizzes. Tests include final exams and major exams. An instructor has, subject to these guidelines, the discretion to determine the type of any other form of evaluation, such as a project, in his/her class.

4. A student who has received the grade of F in a course because of academic dishonesty and who wants or is required to repeat that course may re-take that course only as a regularly scheduled course that is open to the student community in general. In exceptional circumstances, this condition may be revoked, but only by an explicit action to that effect by the full Computer Science Committee, and only then on a case by case basis.

5. The term academic dishonesty is used throughout in the sense provided by the rules and regulations of West Chester University.

The following is taken from The Ram's Eye View of 1997-1998:

Academic dishonesty as it applies to students includes but is not limited to academic cheating; plagiarism; the sale, purchase, or exchange of term papers or research papers; falsification of information which includes any form of providing false or misleading information, written, electronic, or oral; or of altering or falsifying official institutional records. Plagiarism is defined as copying another's work or portion thereof and/or using ideas and concepts of another and presenting them as one's own without giving proper credit to the source.

STUDENTS WITH DISABILITIES

Please see [http://www.wcupa.edu/admin/social.equity/ADA.htm](http://www.wcupa.edu/admin/social.equity/ADA.htm) for AMERICANS WITH DISABILITIES ACT POLICY

According to the statement, "...A student who wants to request an accommodation and/or receive..."
specialized services should contact the Director of the OSSD Office. The policies and procedures used by the OSSD Office are contained in the West Chester University Handbook on Disabilities, which is available in the OSSD Office, located at 105 Lawrence Center, V/TDD 610-436-3217."

**EMERGENCY PHONE NUMBER**

For any emergency incident, contact WCU’s Department of Public Safety: 610-436-3311.