

**ICT 550 Section 001 [FALL 2017]
Security Informatics**

Instructor: Sherali Zeadally
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Lectures: Tuesday and Thursday 3.30 PM to 4:45 PM, Room 311
Office hours: Monday: 1 PM to 3 PM; Thursday: 1 PM to 3 PM or at other times by appointment
Preferred method of contact: Email
I usually respond as soon as possible. Maximum: 12 hours any day of the week including weekends/holidays.

Course Description

This course introduces students to policy concerns relating to security informatics, and highlights theoretical and practical approaches to designing secure Information and Communication Technology (ICT) systems. It addresses key issues such as authentication, risk analysis, access control, database and network security, and information assurance.

Prerequisites

Preferably Technology Security (ICT 351-001)

Student Learning Outcomes

By the end of this course, you will:

- Understand the basic terminologies and definitions used in information security.
- Be able to deploy and implement access control and authentication techniques.
- Be able to design and implement different types of security policies.
- Be able to apply security management (identity management, change management, etc.) principles, security audit principles and practices, and procedures involved in handling security incidents.
- Perform risk assessment and apply risk mitigation techniques.
- Understand operating system security and know how to secure operating systems.
- Be able to maintain security control of the networks and systems
- Have strong hands-on practical skills and experience through various projects undertaken throughout the course.

Required Materials

Lecture notes and peer-reviewed publications. Lecture materials will be provided to all students on a weekly basis throughout the semester.

Reference Textbooks

- M. Ciampa, Security + Security Guide to Network Security Fundamentals, 4th edition, ISBN-13: 978-1-111-64012-5.
- T. Howlett, Open Source Security Tools, ISBN 0-321-19443-8, Pearson Education Ltd.
- M. Solomon and M. Chapple, Information Security Illuminated, ISBN-13: 9780763726775, Jones and Bartlett Learning.
- ACM/IEEE/Springer peer-reviewed conference and journal publications

Grading Parameters for Graduate Students

- 4 projects: 60%
- Midterm exam (20%) [covers the first half of the course]
- Final exam (20%) [covers the second half of the course]. However, the instructor reserves the right to retest on material that was not appropriately understood. Such material will be highlighted before the final exam

Grading Parameters for Undergraduate Students

- 2 projects: 20%
- Hands-on labs: 30%
- 2 Homeworks: 10%
- Midterm exam (20%) [covers the first half of the course]
- Final exam (20%) [covers the second half of the course]. However, the instructor reserves the right to retest on material that was not appropriately understood. Such material will be highlighted before the final exam

Course Grading for Graduate Students

[90% – 100%] = **A (Exceptional Achievement)**
[80% – 89%] = **B (High Achievement)**
[70% – 79%] = **C (Average Achievement)**
[0% – 69%] = **E (Failing)**

Course Grading for Undergraduate Students

[90% – 100%] = **A (Exceptional Achievement)**
[80% – 89%] = **B (High Achievement)**
[70% – 79%] = **C (Average Achievement)**
[60% – 69%] = **D (Below Average Achievement)**
[0% – 59%] = **E (Failing)**

Tentative Course Topics

Information security terminologies, attackers and types of attacks, malware types
Common security principles
Access control models and authentication services
Security policy design and types of security policies
Business Continuity (BC) planning, disaster recovery
Security management, security audit principles and practices, security incident handling
Network Security
Wireless security
Operating system security
Risk assessment methods and risk mitigation techniques
Vulnerability assessment: policies, procedures, tools

Lecture notes cover important materials that need a thorough understanding by the students. Homework assignments are intended to reinforce the material in the text and will often require external materials outside the book to be consulted. Quizzes will help ensure students stay up with the materials being taught. Midterm and final exams may be preceded by short reviews of the materials to be tested.

Final Exam Information

During the final exam week in the lecture room

Mid-term Grade (for 100-400 level courses, and for undergrads in 500-level courses)

Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar (<http://www.uky.edu/registrar/calendar>).

Submission of Assignments

1. All assignments, homeworks, and project reports must be typed and printed. Only **hard copies** must be submitted to the instructor by the due date and time.
2. All times specified for submission deadlines are Eastern Standard Time (EST).
3. All submitted work must be typed [12 point, Time Roman, single line spacing, 1 inch margins] using **Microsoft WORD (.doc, .docx, .rtf)** and be thoroughly spellchecked and free of grammatical mistakes.

4. All sources used during the preparation of all submitted works must be clearly identified in a separate list of ordered [e.g., [1], [2], [3], etc.] references (in a **Reference** section placed after the main document). These references must be cited within the text of the submission where appropriate. Please avoid using Wikipedia, blogs, white papers as direct sources for cited references in your submitted papers or reports.
5. Late assignments are only acceptable under exceptional circumstances or if the instructor has been notified ahead of time. For all other cases, submissions handed in after the submission deadline will be assessed with a penalty of 5% per day.

Group Work and Collaboration

All assignments should be undertaken individually. For projects requiring group work, detailed instructions will be outlined in the project description. When group work is performed, each member of the group must state his/her contributions very clearly and all members of the group must agree on each member's contributions before the start of the project and inform the instructor (in writing) about the expected efforts of each member of the group.

Classroom Policy

All electronic equipment must be either **switched off** or in **silent mode** before the start of each lecture. Please kindly avoid sleeping, eating, talking (unless permission is granted by the instructor) etc. once the lecture has started. Students should refrain from disruptive behavior such as entering the classroom late or departing before the end of the lecture without the instructor's permission. For more information on prohibited student conduct, students are advised to consult the UKY's Code of Student Conduct (<http://www.uky.edu/studentconduct/code-student-conduct>).

Attendance Policy

This class is a community whose success depends on everyone's participation, and it is vital for you to attend class in order to be successful. Attendance will be taken at the beginning of class. If you miss this, it is your responsibility to let me know you arrived late. If you are absent on a day when an assignment is due, you will be allowed to hand in or make up that work **only** if the absence is **officially excused**. You will be asked to provide official written documentation for excused absences the next time you are in class in order for your absence to be excused. If you know ahead of time that you will be absent from class with an excused absence, please discuss this with your instructor and turn in any assignments ahead of time. Excuses for university-sponsored activities must be made *prior* to such absences. For any emergency situation that arises, **email your instructor** as soon as you know about the situation when possible. **No make-up work is available for in-class exercises or quizzes unless approved in advance by your instructor.** Students have one week to complete a missed assignment or quiz due to an excused absence upon their return without penalty.

Excused Absences

Students need to notify the professor of absences prior to class when possible. *Senate Rules 5.2.4.2* defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit “reasonable cause for nonattendance” by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737, <http://www.uky.edu/Ombud/ForStudentsExcusedAbsences.php>).

Course Withdrawal

Students are expected to withdraw from the class **if more than 20% of the classes scheduled for the semester are missed (excused)** per University policy. Please reference the definition of excused absences in the current edition of *Student Rights and Responsibilities* or on the web at http://www.uky.edu/Faculty/Senate/rules_regulations/Rules%20Versions/MASTER%20RULES%20from%20February%202012_clean.pdf

Per *Senate Rule 5.2.4.2*, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

Verification of Absences

Students may be asked to verify their absences in order for them to be considered excused. *Senate Rule 5.2.4.2* states that faculty have the right to request “appropriate verification” when students claim an excused absence because of illness, or death in the family. Appropriate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

Academic Integrity

Per University policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in

all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the University may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Senate Rules 6.3.1 (see <http://www.uky.edu/Faculty/Senate/> for the current set of *Senate Rules*) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording, or content from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work (including, but not limited to a published article, a book, a website, computer code, or a paper from a friend) without clear attribution. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work, which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations due to disability

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in

this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at drc@uky.edu. Their web address is <http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/>.

Policies concerning academic integrity, excused absences and academic accommodations due to disability are available online at:
<https://ci.uky.edu/sis/sites/default/files/policies.pdf>

TECHNOLOGY INFORMATION & RESOURCES

Distance Learning Students are expected to have a minimum level of technological acumen and the availability of technological resources. Students must have regular access a computer with a reliable Internet connection and audio capabilities. Internet Explorer 7 (IE) or Firefox 2.x are the recommended browsers for those using a Windows-based PC. Those using Firefox 3.x may encounter problems with assignment uploads. Those using an Apple computer with MAC OS X (10.5.x) may use Firefox 3.x or Safari 3.x.

Please be certain that your computer and/or browser allow you to view Adobe Reader documents (.pdf). Microsoft Office and other software products are free for students:
<http://download.uky.edu/>.

As your instructor, I am your first go-to person for technology problems. If you need more immediate assistance, please contact UKIT.

Information Technology Customer Service Center (UKIT)

<http://www.uky.edu/UKIT/>; 859-218-4357

Library Services & Distance Learning Services

<http://www.uky.edu/Libraries/DLLS>

- Carla Cantagallo, DL Librarian
- Local phone number: (859) 257-0500, ext. 2171; long-distance phone #: (800) 828-0439 (option #6)
- Email: dllservice@email.uky.edu
- DL Interlibrary Loan Service:
http://www.uky.edu/Libraries/libpage.php?lweb_id=253&llib_id=16

For more resources about online classes and student resources, visit
<http://www.uky.edu/ukonline/>

The School of Information Science has a page with a comprehensive list of technology resources here: <http://ci.uky.edu/sis/students/techtips>

Military Members and Veterans

We recognize the complexities of being a member of the military community and also a student. If you are a member of the military or a military veteran or dependent, please inform your instructor if you are in need of special accommodations. Drill schedules, calls to active duty, mandatory training exercises, complications with GI Bill disbursement, and other unforeseen military and veteran related developments can complicate your academic life. If you are aware of a complication, we will work with you and put you in contact with university staff members who are trained to assist you. Please contact the Coordinator of the University of Kentucky Veterans Resource Center at (859) 257-1148 for additional assistance. Visit <http://www.uky.edu/veterans> for more available resources.

Course Calendar

Graduate Students

Lecture Material, Projects, Exams	
Lecture Material	Posted <i>weekly</i> on canvas
Hands-on Labs	Several distributed throughout the semester
Project 1	Due 3.30 PM (EST) on September 14, 2017
Project 2	Due 3.30 PM (EST) on October 10, 2017
Mid-term exam	October 17, 2017
Project 3	Due 3.30 PM (EST) on November 9, 2017
Project 4	Due 3.30 PM (EST) on November 30, 2017
Final exam	During final exam week [Dec 11-Dec 15]

Undergraduate Students

Lecture Material, Projects, Hands-on Labs, Homeworks, Exams	
Lecture Material	Posted <i>weekly</i> on canvas
Hands-on Labs	Distributed throughout the semester
Homework 1	Due 3.30 PM (EST) on September 21, 2017
Project 1	Due 3.30 PM (EST) on October 5, 2017
Mid-term exam	October 17, 2017
Homework 2	Due 3.30 PM (EST) on November 9, 2017
Project 2	Due 3.30 PM (EST) on November 30, 2017
Final exam	During final exam week [Dec 11-Dec 15]

NOTE: Please contact me as early as possible to make the appropriate arrangements in case you cannot take the exams on the dates specified above.

NOTE: *This syllabus may be changed at any time at the discretion of the instructor.*