

University of Kentucky
School of Information Science (SIS)

[ICT 351-001][Technology Security]
[Spring 2016/2016]
[January 13, 2016 – May 6, 2016]

Instructor

Sherali Zeadally
Associate Professor
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Preferred method of contact: Email

Office Hours

- Tuesdays: 10.00 AM to 12:30 PM
Thursdays: 10.00 AM to 12:30 PM
- How to contact me for an appointment:
Email
- Maximum time frame for response:
Will respond as soon as possible
Maximum: 12 hours any day of the week including weekends
- Office Hours:
I am available anytime by email. I am also available in the office anytime if a prior arrangement is made

Class Information

- Lectures [LCLI 311]
Tuesdays: 12:30 PM – 1:45 PM
Thursdays: 12:30 AM – 1:45 PM
- Final exam date and time
12:30 PM, May 3, 2016

COURSE INFORMATION

Course Description

ICT 351 Section 001 – Technology Security

This course presents an introduction to the various technical and administrative aspects of Information Security and Assurance. We cover the foundation for understanding the key issues associated with protecting information assets, determining the levels of protection and response to security incidents, and designing a consistent, reasonable information security system with appropriate intrusion detection and reporting features.

Course Objectives

- Be able to explain basic terminologies and definitions used in information security.
- Develop a strong understanding of various types of attacks, attackers, and hardware/software defense solutions that can protect assets from attacks.
- Develop an understanding of access control fundamentals and authentication techniques.
- Gain a basic understanding of security protocols, techniques, tools and technologies that are deployed to protect different types of assets.
- Be able to apply the fundamentals of security management (identity management, change management, etc.), security audit principles and practices, and procedures involved in handling security incidents.
- Gain an understanding of vulnerability assessment techniques and tools, system security assessment, and be familiar with various security scanning tools.

Course Overview

- Fundamental information security definitions, concepts, and techniques used to secure information, computer security laws, risk analysis and mitigation.
- Different types of attacks, attacker profiles, security principles and practices.
- Security technologies (including cryptographic technologies, intrusion detection systems, etc.) security tools and software (e.g., vulnerability scanners, spam filters etc.).
- Host/Application/Network security, mobile security (wireless network security, mobile device security).
- Business continuity, disaster recovery, security audit techniques.
- Strong hands-on practical security experience.

Required Reading

Lecture notes. Lecture materials will be provided to all students on a weekly basis throughout the semester.

Relevant 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.

STUDENT EVALUATION

Grading Parameters

- 2 projects: 20%
- 2 Homework assignments: 10%
- 3 quizzes (30%)
- 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

Late Work

Late work will **NOT** be accepted. Any work submitted after the deadline will receive **ZERO** points. Late work will only be accepted if it has been pre-approved by the instructor (at least 72 hours notice).

Grading Scale

- [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)**

Absences/Attendance

The instructor's policies on academic integrity, excused absences, incompletes, accommodations due to disability are described in the general course policies of SLIS described at <https://ci.uky.edu/sis/sites/default/files/policies.pdf>

Submission of Course Assignments

- All assignments and project reports must be submitted electronically.
- All times specified for submission deadlines are Eastern Standard Time (EST).
- 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.

- All files submitted must have the following text “**firstname_lastname<day-month submitted>**” as part of the filename.
- 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.

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.

Student Behavior

All students must arrive to class on time and stay for the entire duration of the lecture. We will maintain a respectful and pleasant classroom environment. To achieve this, all students must put away all their electronic devices once in the classroom. Side conversations should not occur. Students who do not adhere to this code of conduct in the classroom and engage in disruptive behavior may be asked to leave the class for the remainder of the lecture period. If there is any issue about the classroom you want to discuss with me, please let me know after the lecture.

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 Tony Dotson, 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.

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:
<https://iweb.uky.edu/MSDownload/>.

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 number: (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

Course Reserves

<http://libraries.uky.edu/YLReserves>

GENERAL COURSE POLICIES

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>

COURSE CALENDAR

Lecture Material, Homework Assignments, Quizzes, Projects, Exams	
Lecture Material	Posted <i>weekly</i> on blackboard
Homework Assignments	Due 12.30 PM on the following dates: February 4, April 7
Quiz 1	February 2, 2016
Quiz 2	February 23, 2016
Project 1	Due 12.30 PM on March 1, 2016
Mid-term exam	March 3, 2016
Quiz 3	April 21, 2016
Project 2	Due 12.30 PM on April 26, 2016
Final exam	May 3, 2016

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

Tentative topics to be covered in this course include:

Week 1	Information security terminologies, computer security laws
Week 2	
Week 3	Attackers and types of attacks
Week 4	Malware types
Week 5	Fundamental security principles
Week 6	Access control techniques and authentication methods
Week 7	
Week 8	Security policies, physical security
Week 9	Firewalls: types, topologies, rules
Week 10	Intrusion detection systems
Week 11	Business continuity, Incident handling
Week 12	Cryptography
Week 13	Digital certificates
Week 14	Wireless Security
Week 15	Security management
Week 16	Security audit principles and practices
Week 17	Vulnerability assessment: policies, procedures, tools

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

COURSE ASSIGNMENTS

The hands-on projects will require students to apply their knowledge and skills to design solutions and answer questions of varying difficulty for realistic business scenarios. In addition, as part of the homework assignment or project, students will often need to develop their critical thinking skills for given realistic scenarios: they must be able to identify the problem, analyze the options available, and develop an appropriate solution to meet the requirements of the given project scenario.

Homework Assignments and Projects	Due Dates
Homework Assignments	<u>Due 12:30 PM on the following dates:</u> February 4, April 7
Project 1	Due 12.30 PM on March 1, 2016
Project 2	Due 12.30 PM on April 26, 2016

As mentioned earlier in the syllabus, all assignments and project reports must be submitted electronically by the date and time due.

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