

IST 456: Information Security Management

Syllabus - Spring 2017

Course Description:

Communication technologies have become key components in supporting critical infrastructure services in various sectors of our society. In an effort to share information and streamline operations, organizations are creating complex networked systems and opening their networks to customers, suppliers, and other business partners. Increasing network complexity, greater access, and a growing emphasis on the Internet have made information systems and network security a major concern for organizations.

IST 456 focuses on security and risk management. Students will learn:

- Contemporary security issues
- Security management processes
- Architecture and models
- Risk analysis and management
- Security planning
- Analysis and safeguards
- Security policies, development, and administration
- Contingency planning
- Incidence handling and response
- Security standards and certification processes
- Security certification and accreditation
- Security inspections
- Security processing mode
- System certification

Major components of the course will be several case studies and a team-based project. Emphasis will be placed on developing and practicing writing and speaking skills through application of the concepts, theories, and technologies that define the course. **IST 220 and SRA 221** are the prerequisite for the course.

Course Objectives:

Upon completion of this course, students will be able to:

- Understand the issues, techniques, and technologies for security and risk management
- Discuss various system vulnerabilities and mitigation strategies
- Understand the role of security inspections, security certification/accreditation, and system certification
- Understand the interactions between systems design, systems management, social factors, and the socio-political environment as it pertains to security and risk management

- Have an understanding of the emerging ISO/IEC Information Security Management Systems (ISMS) standards - the ‘ISO-27000 series’

Quizzes are normally given *In Class on Tuesday* or the date that are specified; Discussion activities are normally due by *Saturday at 11:55 PM ET* on the date that they are specified unless otherwise stated. Problem or Exercise reports are normally due by *Thursday at 11:55 PM ET* on the date that they are specified unless otherwise stated.

Course Information:

Days & Times:	Tu/Th 9:05 AM - 10:20 AM
Class Room:	208 IST Building

About Your Instructor:

Dr. Chao-Hsien Chu is a Professor of Information Sciences and Technology and Professor of Management Science (affiliated with the Smeal College of Business). He is the Director of the Smart Sensing/Radio Frequency Identification (*RFID*) Lab and the Co-director of the Center of Cyber Security, Information Privacy and Trust at Penn State. He is also the co-director of the *Joint Smart Sensing Lab* between Penn State and Peking University (PKU), China. He has led to develop the Security and Risk Analysis (*SRA*) major, the Masters of Professional Studies (*MPS*) in Information Sciences and the Homeland Security, and the Virtual Security Lab. Before joined Penn State, he taught at Iowa State University for 13 years and at Baruch College, City University of New York for two years; both are with College of Business. He has served as a Visiting Professor at Singapore Management University (Singapore), Peking University (China), Hebei University of Technology (China), Yunnan University (China), and University of Tsukuba (Japan).

Chu’s current research focuses on (1) *Information Assurance and Security*, especially in wireless security, privacy preserving, cyber forensics and risk management; (2) *Smart Sensing (Internet of Things) Technologies and Applications* (since 2005), especially in systems integration, middleware (data management and complex event processing (CEP)), security and privacy issues, and their applications in healthcare, environmental monitoring, supply chains, and smart spaces; (3) *Intelligent Technologies*, especially for stress detection, financial fraud detection and communication networks design; and (4) *Operations and Technology Innovation* including lean thinking, strategic quality management, process reengineering, and supply chain integration and management.

Dr. Chu have published more than 190 papers, many of them are in top-tier journals and major conference proceedings such as *INFORMS Journal on Computing*, *IEEE Transactions on Dependable and Secure Computing*, *IEEE Transactions on Information Forensics & Security*, *IEEE Transactions on Evolutionary Computation*, *IEEE Sensors Journal*, *IEEE Internet of Things (IoT) Journal*, *IEEE Security & Privacy*, *Journal of Medical Systems*, *Decision Sciences*, *Decision Support Systems*, *European Journal of Operational Research*, *Journal of Operations Management*, *IIE Transactions*, *International Journal of Production Research*, *International Conference on Information Systems (ICIS)*, *ACM Conference on Electronic Commerce*, *ACM Conf. on Computer and Communication Security (CCS)*, *IEEE Global Telecommunications Conference (GLOBECOM)*, and other high-quality of outlets. Four of his papers received the best paper award and one of the dissertations he supervised received honorable mentioned from Decision Sciences Institute. His research was funded by the US National Science Foundation (NSF), National Security Agency (NSA), Department of Defense (DoD), Marine Corp. Research University (MCRU), *Cisco Systems* and *Hewlett-Packard Company (HP)* and *Japan Society for the Promotion of Sciences (JSPS)*.

Instructor Contact Information:

Name:	Chao (Chao-Hsien) Chu
Office:	301K IST Building
Office Hours:	Tuesday and Thursday 1:00 – 2:30 PM or by appointment
Phone/Fax:	(814) 865-4446; (814) 865-6426
e-mail:	Use ANGEL email. If ANGEL is down, then use: chu@ist.psu.edu
Web Site:	https://ist.psu.edu/directory/faculty/chc4 ; http://net1.ist.psu.edu/chu

TA Contact Information:

Name:	Guanjie Huang
Office:	306 IST Building
Office Hours:	W/F 1:30-2:30 PM or by Appointment or by appointment
e-mail:	Use ANGEL email. If ANGEL is down, then use: ypl5142@psu.edu

Grading Weights:

Evaluation of knowledge and understanding of materials will be by presentation, hands-on exercises, project, and class participation.

Assignment	# of Course Assignments	Individual or Team	% of Total Grade
Mini-Problems and Exercises	5	Teams	35%
Quizzes	7 (8 total and drop the lowest)	Individual	28%
Project Proposal	1	Team	5%

Project Presentation	1	Team	5%
Final Project Report	1	Team	15%
Discussion Activities (DA)	DAs (For DA1 Intro - must make at least 1 post for full credit. For DA2, DA3, and DA4 - must make at least 2 posts in a DA for full credit for that DA)	Individual	6%
Participation / Attendance		Individual	6%

Grading Scale:

Grade	Percentage
A	93% to 100%
A-	90% to 92.9%
B+	87% to 89.9%
B	83% to 86.9%
B-	80% to 82.9%
C+	77% to 79.9%
C	70% to 76.9%
D	60% to 69.9%
F	Less than 60%

Course Materials:

- Whitman, M., & Mattord, H. (2016). *Management of information security* (5th ed.). Stamford: Cengage Learning. ISBN 9781305501256
- Other readings:
 - [NIST Contingency Planning Guide for Information Technology systems \(Links to an external site.\)](#)
 - NIST Special Publication 800-46: Guide to Enterprise Telework, Remote Access, and Bring Your Own Device (BYOD) Security.
 - NIST Special Publication 800-50: Building an Information Technology Security Awareness and Training Program.

Course Schedule:

This schedule may be revised at any time. Please check back.

Chapter x = Chapter from the textbook; Rx = Supplementary Reading

Topic 0: Introduction to the Course

Class 1:	Tuesday, January 10
Readings:	<ul style="list-style-type: none">• Syllabus• Topic 0 Slide
Activities:	<ul style="list-style-type: none">• Review the syllabus
Assignments:	<ul style="list-style-type: none">• <u>DA 1</u>: Introduce Yourself (Due January 17 - Tuesday)

Topic 1: Management of Information Security

Class 2	Thursday, January 12
Readings:	<ul style="list-style-type: none">• Chapter 1• Topic 1 Slide
Assignments:	<ul style="list-style-type: none">• Form project team (Due January 19 - Thursday)
Class 3	Tuesday, January 17
Activities:	<ul style="list-style-type: none">• Team Building
Readings:	<ul style="list-style-type: none">• Chapter 1• Topic 1 Slide

Topic 2: Security Laws and Ethics

Class 4	Thursday, January 19
Readings:	<ul style="list-style-type: none">• Chapter 2• Topic 2 Slide
Assignments:	<ul style="list-style-type: none">• <u>DA 2</u>: Responsibilities and Skills of Security Related Personnel (Due January 28 – Saturday)

Topic 3: Governance and Strategic Planning for Security

Class 5	Tuesday, January 24
Readings:	<ul style="list-style-type: none">• Chapter 3• Topic 3.1 Slide
Activities:	<ul style="list-style-type: none">• <u>Quiz 1</u> (Chapters 1 and 2) In Class

Class 6	Thursday, January 26
Readings:	<ul style="list-style-type: none"> • Chapter 3 • Topic 3.2 Slide
Assignments:	<ul style="list-style-type: none"> • <u>Problem 1</u>: Security Policy (Due February 9 - Tuesday)
Topic 4: Information Security Policy	
Class 7	Tuesday, January 31
Readings:	<ul style="list-style-type: none"> • Chapter 4 • Topic 4.1 Slide
Class 8	Thursday, February 2
Readings:	<ul style="list-style-type: none"> • Chapter 4 • Topic 4.2 Slide
Topic 5: Developing the Security Program	
Class 9	Tuesday, February 7
Readings:	<ul style="list-style-type: none"> • Chapter 5 • Topic 5.1 Slide
Activities:	<ul style="list-style-type: none"> • <u>Quiz 2</u> (Chapters 3 and 4) In Class
Assignments:	<ul style="list-style-type: none"> • Problem 2: Information Gathering (Due February 16 - Thursday)
Class 10	Thursday, February 9
Readings:	<ul style="list-style-type: none"> • Chapter 5 • Topic 5.2 Slide
Topic 6: Risk Management – Identifying and Assessing Risk	
Class 11	Tuesday, February 14
Readings:	<ul style="list-style-type: none"> • Chapter 6 • Topic 6.1 Slide
Class 12	Thursday, February 16
Readings:	<ul style="list-style-type: none"> • Chapter 6 • Topic 6.2 Slide
Assignments:	<ul style="list-style-type: none"> • <u>Problem 3</u>: Finding Vulnerabilities (Due March 2 - Thursday)
Class 13	Tuesday, February 21

Readings:	<ul style="list-style-type: none"> • Chapter 6 • Topic 6.3 Slide
Assignments:	<ul style="list-style-type: none"> • Project Proposal (Due March 16 - Thursday)
Topic 7: Risk Management – Controlling Risk	
Class 14	Thursday, February 23
Readings:	<ul style="list-style-type: none"> • Chapter 7 • Topic 7.1 Slide
Assignments:	<ul style="list-style-type: none"> • <u>DA 3</u>: (Due March 18 - Saturday)
Class 15	Tuesday, February 28
Readings:	<ul style="list-style-type: none"> • Chapter 7 • Topic 7.2 Slide
Activities:	<ul style="list-style-type: none"> • <u>Quiz 3</u> (Chapters 5 & 6) In Class
Topic 8: Security Management Models	
Class 16	Thursday, March 2
Readings:	<ul style="list-style-type: none"> • Chapter 8 • Topic 8.1 Slide
Assignments:	<ul style="list-style-type: none"> • <u>Problem 4</u>: Systems Exploitation (Due March 23 - Thursday)
March 5 – March 11 Spring Break – No Classes	
Class 17	Tuesday, March 14
Readings:	<ul style="list-style-type: none"> • Chapter 8 • Topic 8.2 Slide
Activities:	<ul style="list-style-type: none"> • Project Proposal Preparation
Class 18	Thursday, March 16
Activities:	Short Project Proposal Presentation (<u>5 minutes each team</u>)
Topic 9: Security Management Practice	
Class 19	Tuesday, March 21
Readings:	<ul style="list-style-type: none"> • Chapter 9 • Topic 9.1 Slide

Activities:	<ul style="list-style-type: none"> • Quiz 4 (Chapter 7) In Class
Class 20	Thursday, March 23
Readings:	<ul style="list-style-type: none"> • Chapter 9 • Topic 9.2 Slide
Assignments:	<ul style="list-style-type: none"> • <u>Problem 5</u>: ISO 27001 (Due April 6 - Thursday)
Topic 10: Planning for Contingencies	
Class 21	Tuesday, March 28
Readings:	<ul style="list-style-type: none"> • Chapter 10 • Topic 10.1 Slide
Activities:	<ul style="list-style-type: none"> • <u>Quiz 5</u> (Chapters 8 and 9) In Class
Class 22	Thursday, March 30
Readings:	<ul style="list-style-type: none"> • Topic 10.2 Slide
Class 23	Tuesday, April 4
Readings:	<ul style="list-style-type: none"> • Topic 10.3 Slide
Activities:	<ul style="list-style-type: none"> • <u>Quiz 6</u> (Chapter 10) In Class
Assignments:	<ul style="list-style-type: none"> • <u>DA 4</u> (Due April 15 - Saturday)
Topic 11: Personnel and Security	
Class 24	Thursday, April 6
Readings:	<ul style="list-style-type: none"> • Chapter 11 • Topic 11 Slide
Topic 12: Protection Mechanisms	
Class 25	Tuesday, April 11
Readings:	<ul style="list-style-type: none"> • Chapters 12 • Topic 12.1 Slide
Activities:	<ul style="list-style-type: none"> • <u>Quiz 7</u> (Chapter 11) In Class
Class 26	Thursday, April 13
Readings:	<ul style="list-style-type: none"> • Chapter 12 • Topic 12.2 Slide

Term Project Preparation	
Class 27	Tuesday, April 18
Activities:	• <u>Quiz 8</u> (Chapter 12)
Assignments:	• Project Slide (Due April 20 – Thursday Before the class)
Term Project Presentations	
Class 28	Thursday, April 20
Class 29	Tuesday, April 25
Class 30	Tuesday, April 27
Assignments:	• Project Report (Due May 1 - Monday)

Finals Exam Week -- NO CLASSES – May 1 – May 5

All reports related to project are due by the midnight of May 1

Course Policies:

Due Dates:

Assignments and discussion activities (DAs) are due according to the dates listed on this syllabus (see above). Assignments and DAs should be posted to the appropriate location in ANGEL. Naming of assignments should include student or team name and assignment name and number.

Quizzes will be given **IN CLASS** throughout the semester, at a rate of approximately one per chapter. Quizzes will always cover the material in the book. The quizzes will be all multiple choice. There is only one answer for each question, thus, it is important that you select the **most appropriate** answer. **Makeup quizzes will not be given.** However, the lowest quiz grade will be dropped. Any class material missed by the student is the student's responsibility to acquire. Quizzes are timed - students will have less than 20 minutes to take the quiz once the quiz is opened. Quizzes are **closed** book.

Mini-problem or exercises are a major component of the course. Five team-based problems will be assigned. They are due by **specified date (normally Thursday) 11:55 PM.**

No late submission will be accepted. Under special situation (need preapproval), late submission within one week will receive 20% penalty. Later than one week will not be accepted.

Communication:

Use email within ANGEL for all course email communication. Every attempt will be made for the instructor (or a substitute instructor when your instructor is traveling) to respond to email questions within 48 hours.

Office Hours:

Both instructor and TA will host two 1 hours office hours each week according to the scheduled time. Other times can be arranged by appointment.

Academic Integrity:

The College of IST is committed to maintaining academic integrity in this and all other courses it offers. IST takes academic integrity matters seriously. Academic integrity - scholarship free of fraud and deception - is an important educational objective of Penn State. Academic dishonesty can lead to a failing grade or referral to the [Office of Judicial Affairs](#) [3]. Academic dishonesty includes, but is not limited to:

- cheating
- plagiarism
- fabrication of information or citations
- facilitating acts of academic dishonesty by others
- unauthorized prior possession of examinations
- submitting the work of another person or work previously used without informing the instructor and securing written approval
- tampering with the academic work of other students

In cases where academic integrity is questioned, [Penn State's policy on academic integrity](#) [4] requires that the instructor give the student notice of the charge as well as the recommended sanction. Procedures allow the student to accept or contest the charge through discussions with the instructor. If a student chooses to contest, the case will then be managed by the respective College or Campus Academic Integrity Committee. If a disciplinary sanction also is recommended, the case will be referred to the [Office of Judicial Affairs](#) [3].

All Penn State colleges abide by this Penn State policy, but review procedures vary by college when academic dishonesty is suspected. Information about Penn State's academic integrity policy and college review procedures is included in the information students receive upon enrolling in a course.

Additionally, students enrolled at Penn State are expected to act with civility and personal integrity; respect other students' dignity, rights, and property; and help create and maintain an environment in which all can succeed through the fruits of their own efforts. An environment of academic integrity is requisite to respect for self and others, and a civil community.

For more information on academic integrity at Penn State, please visit one of the following URLs:

<http://www.psu.edu/dept/oue/aappm/G-9.html> [5]

<http://www.sa.psu.edu/ja/> [3]

Accommodating Disabilities:

Penn State encourages academically qualified students with disabilities to participate in its educational programs. We are committed to equal opportunity in our admissions policies and procedures and are dedicated to providing reasonable accommodations for qualified students.

Penn State students seeking special services or academic accommodations through Penn State must self-disclose their need for these services or accommodations to the World Campus or Penn State's Office for Disability Services (ODS). [Contact Penn State's Office for Disability Services](#) [6] (ODS).

To be eligible for academic accommodations through ODS, students must have a documented disability as defined by the Rehabilitation Act of 1973 or the Americans with Disabilities Act (ADA) of 1990. [Learn more about the ODS eligibility requirements](#) [7].

The University is responsible for making all its programs and services available to all students. The Office for Disability Services acts in an advisory capacity for all Penn State locations, including the World Campus. The World Campus will work with ODS to make reasonable academic adjustments or accommodations for eligible World Campus students.

Penn State's guidelines for appropriate documentation—and the verification forms necessary for each disability category—may be obtained from the "[Documentation Guidelines and General Information for Students with Specific Conditions](#) [8]" section of the ODS Web site. For more information, contact [ODS](#) [6].

Nondiscrimination and Harassment:

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity or veteran status. Discrimination or harassment against faculty, staff or students will not be tolerated at The Pennsylvania State University. You may direct inquiries to the Office of Multicultural Affairs, 332 Information Sciences and Technology Building, University Park, PA 16802; Tel 814-865-0077 or to the Office of Affirmative Action, 328 Boucke Building, University Park, PA 16802-5901; Tel 814-865-4700/V, 814-863-1150/TTY. For reference to the full policy: <http://guru.psu.edu/policies/AD42.html> [9]

Use of Trade Names:

Where trade names are used, no discrimination is intended and no endorsement by the World Campus, Outreach and Cooperative Extension, the College of IST, or The Pennsylvania State University is implied.

Disclaimer:

Please note that the specifics of this Course Syllabus **are subject to change**, and you will be responsible for abiding by any such changes. Your instructor will notify you of any changes.

Special Flu Protocols:

In compliance with Pennsylvania Department of Health and Centers for Disease Control recommendations, students should NOT attend class or any public gatherings while ill with influenza. Students with flu symptoms will be asked to leave campus if possible and to return home during recovery. The illness and self-isolation period will usually be about a week. It is very important that individuals avoid spreading the flu to others.

Most students should be able to complete a successful semester despite a flu-induced absence. Faculty will provide students who are absent because of illness with a reasonable opportunity to make up missed work. Ordinarily, it is inappropriate to substitute for the missed assignment the weighting of a semester's work that does not include the missed assignment or exam. Completion of all assignments and exams assures the greatest chance for students to develop heightened understanding and content mastery that is unavailable through the weighting process. The opportunity to complete all assignments and exams supports the university's desire to enable students to make responsible situational decisions, including the decision to avoid spreading a contagious virus to other students, staff, and faculty, without endangering their academic work.

Students with the flu do not need to provide a physician's certification of illness. However, ill students should inform their teachers (but not through personal contact in which there is a risk of exposing others to the virus) as soon as possible that they are absent because of the flu. Likewise students should contact their instructors as quickly as possible to arrange to make up missed assignments or exams.

If you have questions about academic policy-related issues, please call the Associate Dean/Chief Academic Officer of your college. For health-related questions you can email Dr. Margaret Spear, director, University Health Services, at uhsinfo@sa.psu.edu [10].

In the event of a University-wide emergency:

Course requirements, classes, deadlines and grading schemes are subject to changes that may include alternative delivery methods, alternative methods of interaction with the instructor, class materials, and/or classmates, a revised attendance policy, and a revised semester calendar and/or grading scheme. In the case of a University-wide emergency, please refer to the following about changes in this course:

- Course web page [Angel Course Management System](#)

- Instructor email: chu@ist.psu.edu

For more general information about the emergency situation, please refer to:

- <http://www.psu.edu/> [12]
- PSUTXT (<http://live.psu.edu/psutxt> [13]). This is a service designed to alert the Penn State community via text messages to cell phones when situations arise on campus that affect the ability of the campus - students, faculty and staff - to function normally.

Links:

[1] <http://meeting.psu.edu/>

[2] https://meeting.psu.edu/common/help/en/support/meeting_test.htm

[3] <http://www.sa.psu.edu/ja/>

[4] <http://www.psu.edu/ufs/policies/47-00.html#49-20>

[5] <http://www.psu.edu/dept/oue/aappm/G-9.html>

[6] <http://www.equity.psu.edu/ods/contact.asp>

[7] <http://www.equity.psu.edu/ods/students/eligibility.asp>

[8] <http://www.equity.psu.edu/ods/guidelines.asp>

[9] <http://guru.psu.edu/policies/AD42.html>

[10] <mailto:uhsinfo@sa.psu.edu>

[11] <https://online.ist.psu.edu/ist454/>

[12] <http://www.psu.edu/>

[13] <http://live.psu.edu/psutxt>