

ITP486 - Securing & Auditing ERP Systems

Instructor: Richard W. Vawter
Office: OHE 530B
E-Mail: vawter@usc.edu
Phone: (213) 740-9541

Class Web Page:
<http://www-rcf.usc.edu/~vawter/classes.html>
or
<http://blackboard.usc.edu/>

Objective:

Introduction to the security, audit and control features of ERP Systems. Coverage of both management and technical issues relating to the security of ERP Systems.

Course Description:

This course highlights security issues and raises awareness of security requirements in an ERP Environment. Students will learn how to apply concepts, strategies, and various tools to promote security of an ERP System. They will configure, monitor, and trace various aspects of ERP vulnerability, evaluating security of database tables, identifying separation of duty concerns and isolating critical authorizations that pose risks to system security. As a final project, the student will learn to configure an audit information system in order to conduct a total ERP system security audit.

Recommended Textbooks:

1. SAP Security and Authorizations: Risk Management and Compliance with Legal Regulations in the SAP Environment, by Mario Linkies, SAP PRESS America, MD, ©2006. ISBN 1-59229-062-0
(visit: <http://www.sap-press.com>)
2. Security, Audit and Control Features SAP R/3: A Technical and Risk Management Reference Guide, 2nd Edition, by Deloitte Touche Tohmatsu Research Team, ISACA, Rolling Meadows, IL, ©2006. ISBN: 1-933284-30-7
(visit: <http://www.isaca.org/bookstore>)

Class Schedule:

Week	Topic	Assignment
Week 1.	Course Overview <ul style="list-style-type: none">• Intro to ERP systems• Concepts and trends in system security	No project this week
Week 2.	Overview of ERP Systems <ul style="list-style-type: none">• 3-tier architecture defined• ERP systems and functionality• Future of 3-tier and ERP systems – changing security requirements	Project #1 – SAP R/3 Introduction, due week 3.

Week	Topic	Assignment
Week 3.	Network Security Basics <ul style="list-style-type: none"> • Network Ports • Firewalls • Securing Network Communic. • Intrusion detection 	Project #2 – Analyze and identify system vulnerabilities in a Network - Setting up an SAP Router, due week 5
Week 4.	Continue with Network Basics <ul style="list-style-type: none"> • Review last week’s discussion • Firewalls and the SAP Router 	Continue working on Project #2
Week 5.	Introduction to Cryptography <ul style="list-style-type: none"> • Encryption methods • Digital certificates & signatures 	Project #3 – Setting user Authorizations - Cryptography, due week 6
Week 6.	Securing ERP Systems <ul style="list-style-type: none"> • Defining RFC destinations • Establishing trusted sites 	Project #4 – Evaluating Authorization Components - Remote Function Call, due week 7.
Week 7.	Exam 1 User Settings in SAP <ul style="list-style-type: none"> • Components of the user master • User Types 	No assignment
Week 8.	Authentication of Users and Group Security in SAP <ul style="list-style-type: none"> • Fundamentals/goals of system security • User authentication, passwords and policies • Roles and Profiles 	Project #5 – User Authentication, due week 9.
Week 9.	Using the Profile Generator to establish roles <ul style="list-style-type: none"> • Assigning Authorizations • Creating Roles • Role maintenance 	Project #6 – The Profile Generator, due week 10.
Week 10	Specialized Roles <ul style="list-style-type: none"> • Standard vs Specialized Roles • Reference vs Derived Roles • Mass maintenance 	Project #7 – Specialized Roles, due week 11.
Week 11.	Exam 2 Auditing ERP Systems <ul style="list-style-type: none"> • Basics of auditing ERP systems • Configuring AIS • Audit Logging • Monitoring 	Project #8 – AIS Introduction, due week 12.

Week	Topic	Assignment
Week 12.	Auditing ERP Systems (cont.): Configuring and Using Security Audit Tools <ul style="list-style-type: none"> • Tools for general auditing • Auditing separation of duties (roles) • Identifying risky transactions 	Project #9 – Monitoring users and establishing security alerts, due week 13 Final Project assignment handed out, due week 15
Week 13.	Controlling and Monitoring User Access <ul style="list-style-type: none"> • Protecting tables & programs • Monitoring transaction usage 	Project #10 – Establishing secure system services, due week 14
Week 14.	Securing Users and Group Administration <ul style="list-style-type: none"> • Centralized vs. Decentralized Security • Monitoring using trace tools • Securing standard users and setting parameters 	Project #11 – Securing and Monitoring Users, due week 15. Continue working on the final project
Week 15.	Securing the Production System <ul style="list-style-type: none"> • Protecting system services • Protecting background and spool processes 	Final Project due.

Lab Policies

- The SAP GUI is installed on the computers in the ITP labs in OHE 540, KAP 107 and KAP 267. In the second week of class I will post the hours of these labs.
- Lab assistants are not familiar with SAP, nor with class assignments, so please don't expect them to be able to help answer questions with regard to the projects.
- **Note:** Before logging off a lab computer, you must ensure that you have either emailed or saved your work created during the lab session. Any work saved to the computer **will be erased** each evening and after restarting the computer. The School of Engineering is not responsible for any work lost.

Lab Projects:

- On the second week of class, each of you will be given an account on an R/3 system for researching security issues and working on the projects.
- The Projects will be available via the "Assignments" section of the class web site.
- It is **your** responsibility to submit the lab projects, via the class web site, before the **beginning** of lecture on the dates indicated above.
 - You are to submit your project's "Answer sheet / Summary" document via the "Assignments" section of the class web site (from where you originally obtained the project write up).

- You are to also verify that your document is in the class “assignment box” AND double-click on it to open it up. If *you* can’t see, or open the document, then neither can the grader!
- **Failure to correctly submit projects will result in a 5% penalty.**
- Answers to the projects will be posted on the class web page after the due date of the projects for your review.

Late Projects

- The “Assignments” section of the class web site “closes” after the due date and time.
 - You will no longer be able to submit your project and your project will be considered late.
 - Late projects must be e-mailed to me directly (vawter@usc.edu).
 - I will then make a note of receiving your late project and then forward the project on to the class grader for grading.
- **Projects that are turned in after the deadlines will automatically have ½ of the possible points deducted prior to grading.** So, please turn in your projects at the beginning of lecture on the dates indicated above!
- **No projects will be accepted for credit after 2 weeks beyond the project’s original due date nor after the last day of the semester.**

Handling Project Questions

1. Re-read the instructions carefully and try referring to: <http://help.sap.com>
2. Review the “Discussion Board” section of the class web site’s forum for other students’ questions and comments or post a question yourself to begin the forum.
3. E-mail the class TA your question, being sure to be clear in your question and detailed in your explanation of the situation. Replies may take some time, since e-mail is really not an efficient method for working a “help desk”.
4. And, of course, you’re always welcome to stop by my office during my office hours or contact me and arrange for an appointment.

Please note: **I do not address “project problems” via e-mail.** I am happy to discuss the problems with you in person, and guide you to solving them yourself during my office hours; but **my e-mail address is not to be used as a simple “help desk”.**

Examinations: Exams cover material from the reading assignments, lectures, and lab projects. They will be of the form: short answer, short essay, short problem solving. The exams are all closed book and closed notes. The exams will include material presented up to the date of the exam. The “Final” exam is not considered cumulative, though knowledge of the material presented during the first half of the semester will be helpful in answering some of the questions on the exam.

Exam 1:	Week 7.
Exam 2:	Week 11.
Final Exam:	as scheduled by the University

Note: No make-up exams will be offered nor will there be any changes made to the Final Exam schedule as established by the University.

Grading:

Grading will be on a straight scale (as opposed to a class curve/average).

The final grades will be based upon the following standard:

94% and above	A
90% - 94% (not including 94%)	A-
87% - 90% (not including 90%)	B+
83% - 87% (not including 87%)	B
etc.	

The grades are calculated by the weighing the following work as described here:

Average of Lab Projects Scores	20%
Exam 1	15%
Exam 2	20%
Final Project	20%
Final Exam	<u>25%</u>
	100%

Students with Disabilities:

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your lab assistant) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Student Conduct:

The use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tension accompanying examinations. When the professor determines that a violation has occurred, appropriate action, as determined by the instructor, will be taken.

Although working together is encouraged, all work claimed as yours must in fact be your own effort. Students who plagiarize the work of other students will receive zero points and possibly be referred to Student Judicial Affairs and Community Standards (SJACS).

All students must read, understand, and abide by the University Student Conduct Code listed in SCampus, and available at:

<http://www.usc.edu/student-affairs/SJACS/nonacademicreview.html>

Excerpts taken from *SC Campus Student Guidebook, 04/05*:

§11.00 Behavior Violating University Standards and Appropriate Sanctions

“...individual work will be submitted [by the student], and [it’s the student’s] obligation both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own.”

§11.11 Plagiarism (Definition)

“The submission of material authored by another person but represented as the student’s own work, whether that material is paraphrased or copied in verbatim or near verbatim form.”

§11.14 Plagiarism (Definition continued)

“Obtaining for oneself or providing for another person a solution to homework a project or other assignments, or a copy of an exam or exam key without the knowledge and expressed consent of the instructor.”

Any violation will be immediately reported to the Office of Student Judicial Affairs and Community Standards. The alleged violation will then be reviewed by the board. If the student is determined to be responsible for the violation, appropriate disciplinary action will be determined and then implemented by the University.