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American Public University System

The Ultimate Advantage is an Educated Mind

School of Science and Technology
Department of Information Technology
ISSC364: IT Security: Access Control and Authentication
3 Credit Hours
8 Week Course
Prerequisite(s): None

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Instructor Information

Instructor: [\(Bio\)](#)
Email:
Phone:
Office hours:

Course Description (Catalog)

This course examines a broad range of network security issues. It explores how access controls protect resources against unauthorized viewing, tampering, or destruction and serves as a primary means of ensuring privacy, confidentiality, and prevention of unauthorized access and disclosure. It focuses on access control, such as components, processes, controls, and authentication, as well as security breaches, organizational behavior and social engineering, physical security, remote access control, public key infrastructure and encryption, cryptography, testing, and information assurance.

Course Scope

This course introduces the concept of access control to information systems. Applications, authentication, and accounting for end users and system administrators will be covered. In addition, security controls for access control including tokens, biometrics, and use of public key infrastructures (PKI) will be covered.

Course Objectives

The successful student will fulfill the following learning objectives:

CO-1: Explain how to access risk and its impact on access control:

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CO-2: Describe Access Control Policies, Standards, Procedures, and Guidelines:

CO-3: Define Unauthorized Access and Security Breaches

CO-4: Discuss Human Nature, Organizational Behavior and Social Engineering

CO-5: Describe Access Control for Information Systems

CO-6: Identify Planning Considerations for Physical Security and Access Control

CO-7: Implement Access Control Systems

CO-8: Identify Access Control Solutions for Remote Worker

CO-9: Discuss Public key infrastructure, Encryption and Cryptography

CO-10: Describe the Elements of Information Assurance

Course Delivery Method

This course is designed to promote learner-centered activities and support the development of cognitive strategies and competencies necessary for effective task performance and critical problem solving. The course utilizes individual and group learning activities, performance-driven assignments, problem-based cases, projects, and discussions. These methods focus on building engaging learning experiences conducive to development of critical knowledge and skills that are applicable in professional contexts

Resources

Required eBook – provided in the online classroom, under Resources

Access Control, Authentication, and Public Key Infrastructure by B. Ballard, T. Ballard & E. Banks, JBL (Sep 10, 2010)

Web-based Readings – if these links are no longer available, conduct a web search on the topics

Software Requirements

1. Microsoft Office (MS Word, MS Excel, MS PowerPoint)
2. MS Office Visio – <http://microsoft.com/office/visio> (Visio will be used for diagramming networks)
3. Adobe Acrobat Reader ([Click here for free download](#))

Evaluation Procedures

The grading will be based on 6 graded assignments, 4 Peer Discussion Forum postings, an individual project proposal paper with acknowledgement, outline, presentation and final project proposal, as well as one open book quiz.

1. There will be **Case Assignments (5 cases worth 5% and the last case worth 10%) counting a total of 35% of the final grade**. The assignments will follow each of the major milestones of the course. These assignments will be problems/cases based on the text. They are a combination of assignments and or case study based problems. They are selected to provide the student with information to understand the concepts discussed. Assignments should be prepared in Microsoft Word and uploaded into the student folder by the due date. Any diagrams to support your paper should be incorporated within the Word document as part of the document.
2. There will be **4 graded Peer Discussions**. For graded forums, answers should be 3-4 paragraphs with a **topic sentence** that **restates the question** and **supporting sentences** using the terms,

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concepts, and theories from the required readings. Each answer should be a **minimum of 250 - 400 words** (about 6 to 8 good sentences). You may **attack, support, or supplement** other students' answers using the terms, concepts, and theories from the required readings. All responses should be a **courteous paragraph** that contains a **topic sentence** with good **supporting sentences**. You must respond to at least 2 of your classmates with value added comments for full credit consideration throughout the graded week. You may respond multiple times with a continuous discussion with points and counter points. The key requirement is to express your idea and then **support your position** using the terms, concepts and theories from the required readings to demonstrate to me that you understand the material. The Forum postings will count as 20% (5% for each graded discussion posting) of the final grade.

3. There will be a **Course Access Control Project (15%)** with **Project Acknowledgement (4%)**, **Project outline (8%)**, and **Presentation (8%)**, all totaling 35% of your final grade. There will 1 one hour long and non-proctored quiz in Week 3 which counts as 10% of the final grade. It will be a combination of multiple-choice and true-false and will be open book and open note.

All assignments, Forum question responses, and the quiz are due by 12:00 midnight Eastern Time Sunday of the week assigned.

| Grade Instruments | % of Final Grade |
|--|------------------|
| Weekly Case Assignment (Weeks 1, 2, 4, 5, 6) (5% each) Week 7 Case Assignment (10%) | 35% |
| Graded Forum Posts (Weeks 1, 3, 5, 7) (5 points each) | 20% |
| Quiz (Week 3) | 10% |
| Project Proposal Acknowledgement (Week 2) | 4% |
| Project Proposal Outline (Week 4) | 8% |
| Project Proposal Presentation (Week 7) | 8% |
| Project Proposal Final Report with Presentation (Week 8) | 15% |
| TOTAL | 100% |

Project Paper (Proposal Acknowledgement, Outline, PowerPoint Presentation, and Paper) Topics:

Week 2: Project Proposal Acknowledgement due

Week 4: Project Proposal Outline due

Week 7: PowerPoint Presentation due

Week 8: Project Proposal Final report and Revised Presentation (if revision required)

Course Project (15%)

This course project is intended to assess your ability to comprehend and apply the basic concepts related to information security management, such as the following:

- The ability to discern when a risk assessment should be performed and carrying out the task
- Understanding user or customer access requirements, whether remote or local
- Using a layered security approach to establish and maintain access controls
- Working with other departments, such as the human resources department, to identify and implement methods to prevent unwarranted exposure to information by inappropriate personnel

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Your ability to execute the tasks within these information security domains and others will be evaluated against the learning objectives as identified and described in previous lessons of instruction for this course.

Required Source Information and Tools

You will require the following resources to complete this project:

- Text sheet: Integrated Distributors Incorporated (provided in Week 1)
- A computer with:
 - Access to the Internet
 - Microsoft Office Suite—Word, PowerPoint, and Visio or any other comparable editing, presentation, and drawing software

Introduction

User identification, authentication, and authorization are essential in developing, implementing, and maintaining a framework for information system security. The basic function of an information system security framework is to ensure the confidentiality and the integrity, as well as the availability of systems, applications, and data. Certain information security implementation and management knowledge is required of network administrators, IT service personnel, management, and IT security practitioners, such as information security officers, security analysts, and domain administrators.

Scenario

You are provided with the text sheet named “Integrated Distributors Incorporated” (Project.TS1.doc) to complete this project. You play the dual role of an IT architect and IT security specialist working for Integrated Distributors Incorporated (IDI), a multi-national organization with offices in several countries. Your instructor for this course plays the role of the chief information officer (CIO). Your peers play the role of selected technology staff. Each of the organization’s locations is operating with different information technologies and infrastructure—IT systems, applications, and databases. Various levels of IT security and access management have been implemented and embedded within their respective locations.

Tasks

Your goals as the IT architect and IT security specialist are to:

- Develop solutions to the issues that the specified location of IDI is facing.
- Develop plans to implement corporate-wide information access methods to ensure confidentiality, integrity, and availability.
- Assess risks and vulnerabilities with operating IT facilities in the disparate locations where IDI now functions and develop mitigation plans and implementation methods.
- Analyze the strengths and weaknesses in the current systems of IDI.
- Address remote user and Web site user’s secure access requirements.

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- Develop a proposed budget for the project—consider hardware, software, upgrades/replacements, and consulting services.
- Prepare detailed network and configuration diagrams outlining the proposed change to be able to present it to the management.
- Develop and submit a comprehensive report addressing the learning objectives and your solutions to the issues within the scenario.
- Prepare a 10- to 15-slide PowerPoint presentation that addresses important access control, infrastructure, and management aspects from each location.

Grading Scale

Please see the

<https://mailbox.apus.edu/exchweb/bin/redirect.asp?URL=http://www.apus.edu/student-handbook> student handbook to reference the University's grading scale.

Course Outline

| Week | Topic | Learning Objectives | Reading(s) | Assignment(s) (*Graded) |
|------|---|---------------------|---------------------------------------|---|
| 1 | Access Control and Assessing Risk | CO1 | Lesson 1 Ch1 & 2 Presentation | Forum: DQ#1* Week 1 Assignment |
| 2 | Business Drivers and Access Control Policies Standards, Procedure, and Guidelines | CO2 | Lesson 2 Ch 3 & 4 Presentation | Week 2 Assignment* Week 2 Project Paper Topic* |
| 3 | Unauthorized Access - Security Breaches and Mapping Business Challenges | CO3 | Lesson 3 Ch 5 & 6 Presentation | Forum: DQ#3* Week 3 Assignment* |
| 4 | Human Nature - Organizational Behavior and Access Control for Information Systems | CO4 & 5 | Lesson 4 Ch 7 & 8 Presentation | Pre-assessment 4 & Activity 4-1 Week 4 Assignment* Quiz* Week 4 Project Paper Outline* |
| 5 | Physical Security and Access Control in the Enterprise | CO6 | Lesson 5 Ch 9 & 10 Presentation | Forum: DQ#5* Week 5 Assignment* |
| 6 | Access Control implementation | CO7 & 8 | Lesson 6 Ch 11 & 12 | Week 6 Assignment* |

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| | | | | |
|---|--|------|--|--|
| | for systems and Remote Workers | | Presentation | |
| 7 | PKI Infrastructure and Encryption | CO9 | Lesson 7 Ch 13 Presentation | Forum: DQ#7* Week 7 Assignment* Project Presentation |
| 8 | Testing Access Control Systems and Assurance | CO10 | Lesson 8 Ch14 & Ch 15 Presentation | Final Project Due* |

Policies

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Please see the [student handbook](#) to reference all University policies. Quick links to frequently asked question about policies are listed below.

[Drop/Withdrawal Policy](#)

[Plagiarism Policy](#)

[Extension Process and Policy](#)

WRITING EXPECTATIONS

All written submissions should be submitted in a font and page set-up that is readable and neat. It is recommended that students try to adhere to a consistent format, which is described below.

- Typewritten in double-spaced format with a readable style and font and submitted inside the electronic classroom (unless classroom access is not possible and other arrangements have been approved by the professor).
- Arial 11 or 12-point font or Times New Roman styles.
- Page margins Top, Bottom, Left Side and Right Side = 1 inch, with reasonable accommodation being made for special situations and online submission variances.

CITATION AND REFERENCE STYLE

Assignments completed in a narrative essay or composition format must follow APA guidelines. This course will require students to use the citation and reference style established by the American Psychological Association (APA), in which case students should follow the guidelines set forth in *Publication Manual of the American Psychological Association* (6th ed.). (2010). Washington, D.C.: American Psychological Association.

LATE ASSIGNMENTS

Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. As adults, students, and working professionals I understand you must manage competing demands on your time. Should you need additional time to complete an assignment please contact me before the due date so we can discuss the situation and determine an acceptable resolution. Routine submission of late assignments is unacceptable and may result in points deducted from your final course grade. Assignments submitted late without a prearranged extension will be subject to a 10% late penalty per day. **No late assignments will be accepted after the last day of the course.**

Academic Services

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ONLINE LIBRARY RESEARCH CENTER & LEARNING RESOURCES

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The Online Library Resource Center is available to enrolled students and faculty from inside the electronic campus. This is your starting point for access to online books, subscription periodicals, and Web resources that are designed to support your classes and generally not available through search engines on the open Web. In addition, the Center provides access to special learning resources, which the University has contracted to assist with your studies. Questions can be directed to orc@apus.edu.

- **Charles Town Library and Inter Library Loan:** The University maintains a special library with a limited number of supporting volumes, collection of our professors' publication, and services to search and borrow research books and articles from other libraries.
- **Electronic Books:** You can use the online library to uncover and download over 50,000 titles, which have been scanned and made available in electronic format.
- **Electronic Journals:** The University provides access to over 12,000 journals, which are available in electronic form and only through limited subscription services.
- **Turnitin.com:** Turnitin.com is a tool to improve student research skills that also detect plagiarism. Turnitin.com provides resources on developing topics and assignments that encourage and guide students in producing papers that are intellectually honest, original in thought, and clear in expression. This tool helps ensure a culture of adherence to the University's standards for intellectual honesty. Turnitin.com also reviews students' papers for matches with Internet materials and with thousands of student papers in its database, and returns an Originality Report to instructors and/or students.
- **Smarthinking:** Students have access to 10 free hours of tutoring service per year through Smarthinking. Tutoring is available in the following subjects: math (basic math through advanced calculus), science (biology, chemistry, and physics), **accounting, statistics, economics, Spanish**, writing, grammar, and more. Additional information is located in the Online Research Center. From the ORC home page, click on either the "Writing Center" or "Tutoring Center" and then click "Smarthinking." All login information is available.

Selected Bibliography

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Brocade; Survey Results Demonstrate Need for Integrated Approach to Network Security; Point Products Fall Short", *Network Business Weekly*, Apr 5, 2010.

Bruce J.Fried, et al, *Human Resources in Healthcare: Managing for Success*, 2nd ed. (Chapter 4)

Certified Ethical Hacker is Big News for Local Small Business: The Academy of Computer Education", *Business Wire*, Dec 22, 2008.

Craig S.Wright *The IT Regulatory and Standards Compliance Handbook: How to Survive Information Systems Audit and Assessments* (Chapter 3)

Dobromir Todorov *Mechanics of User Identification and Authentication: Fundamentals of Identity Management* (Chapter 1, 2 and 3)

e-DMZ Security Selected as 2010 SC Magazine Best Regulatory Compliance Solution", *Business Wire*, Mar 8, 2010.

Eric Cole, et al *Network Security Bible* (Chapter 5)

Harold F.Tipton, et al *Information Security Management Handbook*, 6th ed. (Chapters 19, 30, 87 and 106)

Harold F.Tipton, et al *Official (ISC)² Guide to the CISSP CBK*(Domains 1 and 2)

Jay Kelley, et al *Network Access Control for Dummies* (Chapter 15)

Jeremy Moskowitz *Group Policy: Management, Troubleshooting, and Security: For Windows Vista, Windows 2003, Windows XP, and Windows 2000*(Chapter 1)

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John R. Vacca *Public Key Infrastructure: Building Trusted Applications and Web Services* (Chapter 1)

Joseph Steinberg, et al *SSL VPN: Understanding, Evaluating, and Planning Secure, Web-Based Remote Access*

M.E. Kabay "Extensive Catalog Provides Security Controls for Contemporary Security Requirements", *Network World (Online)*, Nov 2, 2009.

Michael Coles, et al *Expert SQL Server 2008 Encryption* (Chapter 1)

Neil Wyler, ed. *Juniper Networks Secure Access SSL VPN Configuration Guide* (Chapter 9)

NetworkedPlanet: "50 Percent of Employees Admit to Losing Documents on the Company Network", *M2 Presswire*, Apr 12, 2010.

Peter Stephenson "Applying Evolved Policy", *SC Magazine*, Oct 2009, Vol. 20 Issue 10, (Page 39)

Poonam Khanna "Two-Factor Authentication is Key to Sound ID Management: Schmidt", *Computing Canada*, Jun 17, 2005, Vol. 31 Issue 9, (Page 10)

Robert E. Larson, et al *CCSP: Cisco Certified Security Professional Certification All-in-One Exam Guide*(Chapter 4)

Secure Computing Shares Research Innovations and Best **Practices** In Email, Web and **Domain** Authentication; Technologists Discuss Reputation Systems and Authentication Protocols at 2007 Authentication Summit", *PR Newswire*, Apr 17, 2007.

Seymour Bosworth, et al *Computer Security Handbook*, 5th ed. (Chapters 23, 67 and 69)

Steve Manzuik, et al *Network Security Assessment: From Vulnerability to Patch* (Chapter 2)

Yan Zhang, et al *Handbook of Research on Wireless Security* (Chapter XLIV)

Appendix A – Grading Rubric

All written assignments will be assessed according to this rubric. Note that a score of 0 may be assigned in any category where your work does not meet the criteria for the beginning level.

| APUS Assignment Rubric Undergraduate Level 300-400 | EXEMPLARY LEVEL 4 | ACCOMPLISHED LEVEL 3 | DEVELOPING LEVEL 2 | BEGINNING LEVEL 1 | TOTAL POINTS |
|---|---|---|---|---|---------------------|
| FOCUS/THESIS | Student exhibits a defined and clear understanding of the assignment. Thesis is clearly defined and well-constructed to help guide the reader throughout the assignment. Student builds upon the thesis of the assignment with well-documented and exceptional supporting facts, figures, and/or statements. | Establishes a good comprehension of topic and in the building of the thesis. Student demonstrates an effective presentation of thesis, with most support statements helping to support the key focus of assignment. | Student exhibits a basic understanding of the intended assignment, but the thesis is not fully supported throughout the assignment. While thesis helps to guide the development of the assignment, the reader may have some difficulty in seeing linkages between thoughts. While student has included a few supporting facts and statements, this has limited the quality of the assignment. | Exhibits a limited understanding of the assignment. Reader is unable to follow the logic used for the thesis and development of key themes. Introduction of thesis is not clearly evident, and reader must look deeper to discover the focus of the writer. Student's writing is weak in the inclusion of supporting facts or statements. | 10 |
| CONTENT/SUBJECT KNOWLEDGE | Student demonstrates proficient command of the subject matter in the assignment. Assignment shows an impressive level of depth of student's ability to relate course content to practical examples and applications. Student provides comprehensive analysis of details, facts, and concepts in a logical sequence. | Student exhibits above average usage of subject matter in assignment. Student provides above average ability in relating course content in examples given. Details and facts presented provide an adequate presentation of student's current level of subject matter knowledge. | The assignment reveals that the student has a general, fundamental understanding of the Resource. Whereas, there are areas of some concern in the linkages provided between facts and supporting statements. Student generally explains concepts, but only meets the minimum requirements in this area. | Student tries to explain some concepts, but overlooks critical details. Assignment appears vague or incomplete in various segments. Student presents concepts in isolation, and does not perceive to have a logical sequencing of ideas. | 20 |

| | | | | | |
|--|--|--|---|--|----|
| CRITICAL THINKING SKILLS | Student demonstrates a higher-level of critical thinking necessary for 300-400 level work. Learner provides a strategic approach in presenting examples of problem solving or critical thinking, while drawing logical conclusions which are not immediately obvious. Student provides well-supported ideas and reflection with a variety of current and/or world views in the assignment. Student presents a genuine intellectual development of ideas throughout assignment. | Student exhibits a good command of critical thinking skills in the presentation of material and supporting statements. Assignment demonstrates the student's above average use of relating concepts by using a variety of factors. Overall, student provides adequate conclusions, with 2 or fewer errors. | Student takes a common, conventional approach in guiding the reader through various linkages and connections presented in assignment. However, student presents a limited perspective on key concepts throughout assignment. Student appears to have problems applying information in a problem-solving manner. | Student demonstrates beginning understanding of key concepts, but overlooks critical details. Learner is unable to apply information in a problem-solving fashion. Student presents confusing statements and facts in assignment. No evidence or little semblance of critical thinking skills. | 20 |
| ORGANIZATION OF IDEAS/FORMAT | Student thoroughly understands and excels in explaining all major points. An original, unique, and/or imaginative approach to overall ideas, concepts, and findings is presented. Overall format of assignment includes an appropriate introduction (or abstract), well- developed paragraphs, and conclusion. Finished assignment demonstrates student's ability to plan and organize research in a logical sequence. Student uses at least of 5-7 references in assignment. | Student explains the majority of points and concepts in the assignment. Learner demonstrates a good skill level in formatting and organizing material in assignment. Student presents an above average level of preparedness, with a few formatting errors. Assignment contains less than 5 resources. | Learner applies some points and concepts incorrectly. Student uses a variety of formatting styles, with some inconsistencies throughout the paper. Assignment does not have a continuous pattern of logical sequencing. Student uses less than 3 sources or references. | Assignment reveals formatting errors and a lack of organization. Student presents an incomplete attempt to provide linkages or explanation of key terms. The lack of appropriate references or source materials demonstrates the student's need for additional help or training in this area. Student needs to review and revise the assignment. | 20 |
| WRITING CONVENTIONS (GRAMMAR & MECHANICS) | Student demonstrates an excellent command of grammar, as well as presents research in a clear and concise writing style. Presents a thorough, extensive | Student provides an effective display of good writing and grammar. Assignment reflects student's ability to select appropriate word usage | Assignment reflects basic writing and grammar, but more than 5 errors. Key terms and concepts are somewhat vague and not completely explained by | Topics, concepts, and ideas are not coherently discussed or expressed in assignments. Student's writing style is weak and needs | 20 |

| | | | | | |
|---|---|---|---|--|-----|
| | understanding of word usage. Student excels in the selection and development of a well-planned research assignment. Assignment is error-free and reflects student's ability to prepare a high-quality academic assignment. | and present an above average presentation of a given topic or issue. Assignment appears to be well written with no more than 3-5 errors. Student provides a final written product that covers the above-minimal requirements. | student. Student uses a basic vocabulary in assignment. Student's writing ability is average, but demonstrates a basic understanding of the subject matter. | improvement, along with numerous proofreading errors. Assignment lacks clarity, consistency, and correctness. Student needs to review and revise assignment. | |
| USE OF COMPUTER TECHNOLOGY/ APPLICATIONS | Student provides a high-caliber, formatted assignment. Learner exhibits excellent use of computer technology in the development of assignment. Quality and appropriateness of stated references demonstrate the student's ability to use technology to conduct applicable research. Given assignment includes appropriate word processing, spreadsheet and/or other computer applications as part of the final product. | Assignment presents an above-average use of formatting skills, with less than 3 errors. Students has a good command of computer applications to format information and/or figures in an appropriate format. Student uses at least two types of computer applications to produce a quality assignment. | Student demonstrates a basic knowledge of computer applications. Appearance of final assignment demonstrates the student's limited ability to format and present data. Resources used in assignment are limited. Student may need to obtain further help in the use of computer applications and Internet research. | Student needs to develop better formatting skills. The student may need to take additional training or obtain help from the Educator Help Desk while preparing an assignment. Research and resources presented in the assignment are limited. Student needs to expand research scope. The number of formatting errors is not acceptable. | 10 |
| TOTAL POINTS | | | | | 100 |