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## American Public University System

*The Ultimate Advantage is an Educated Mind*

School of Science and Technology  
Department of Information Technology  
ISSC 351: Computer Forensics  
Credit Hours: 3  
Length of Course: 8 Weeks  
Prerequisite(s): None

### Table of Contents

<a href="#">Instructor Information</a>	<a href="#">Grading Scale</a>
<a href="#">Course Description</a>	<a href="#">Course Outline</a>
<a href="#">Course Scope</a>	<a href="#">Policies</a>
<a href="#">Course Objectives</a>	<a href="#">Academic Services</a>
<a href="#">Course Delivery Method</a>	<a href="#">Selected Bibliography</a>
<a href="#">Resources</a>	<a href="#">Grading Rubric</a>
<a href="#">Evaluation Procedures</a>	

### Instructor Information

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

[Table of Contents](#)

### Course Description (Catalog)

The explosion in the use of the Internet and the ensuing growth in cybercrime have given rise to the field of computer forensics (also called digital forensics). Digital forensics is used to assemble digital evidence to prosecute cybercrime, analyze intrusions, mitigate risk, and for data recovery. This course examines the theory, best practices, and methodologies to conduct computer forensics investigations; it includes the ethical issues, data presentation, and chain-of-evidence procedures. It also appraises current tools and technologies to analyze, acquire, and organize digital evidence. This course maps to the general objectives of the International Association of Computer Investigative Specialists (IACIS) certification.

[Table of Contents](#)

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## Course Scope

This course presents methods to properly conduct a computer forensics investigation. Students will be provided with an overview of digital investigations and data recovery with emphasis on data presentation techniques and chain-of-evidence procedures. Current computer forensic tools are presented along with controls required for digital evidence acquisition.

[Table of Contents](#)

## Course Objectives

The successful student will fulfill the following learning objectives:

1. Expand upon the principles and practices of conducting responsible and ethical computer forensics investigation.
2. Explain and elaborate upon the process to prepare and conduct a computer investigation.
3. Examine the file structures, formats, and technical protocols in storage subsystems encountered in gathering digital evidence.
4. Develop a plan to analyze the processes and practices to seize and secure digital evidence at a crime scene and to collect evidence in both the private and public sectors.
5. Analyze the steps and processes used to identify, secure, catalog, and store digital evidence.
6. Explain the need for generating and maintaining audit trails.
7. Discuss the hardware and software tools used in computer forensics.
8. Apply this knowledge to construct a portfolio of digital evidence and develop a strategy to provide effective testimony

## Course Delivery Method

This is an 8 week course that will be delivered online in the APUS e-classroom via distance learning. Resources and access to an online learning management system will be made available to each student. **Online assignments are due by the last day of each week** and include Forum questions (accomplished in groups through a threaded Forum), examinations (graded electronically), individual assignments and a term paper.

[Table of Contents](#)

## Resources

Author	Book Title	Publication Info	ISBN
Rudolph, Vacca	System Forensics, Investigation & Response	Jones & Bartlett	9780763791346

[Table of Contents](#)

## Evaluation Procedures

**Course Requirements:** Your final grade will be based on the following course requirements and percentages:

Course Requirement	Percent
1. Forum Activities ( 8 weekly forums)	32
2. Weekly Assignments ( 8 weekly assignments)	40
4. Term Paper Outline	3
5. Term Paper	25

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**Total**

**100**

Submit your Case Study assignments to your student folder, and make sure you select the correct assignment association. Please name your submitted document with your last name as the first part of the file name. For example, Case Study #1 could be named, Lastname\_Casestudy1.doc. Forum assignments only need to be posted on the Forum. It is not necessary to submit a word document containing your Forum posts. Simply submit your discussion posts using the submit button and I will review them and update your assignment grade accordingly.

### **Assignment Requirements**

This course has a strong writing component. The goal is to organize, synthesize, and demonstrate your comprehension of core concepts investigated during this course by applying a combination of the terms, concepts, and details you have learned in a systematic way. As important as "the details" that you analyze and arrange in your writing, however, are the conclusions you draw from those details, and your predictions, responses to, and ultimate interpretation of those details.

### **Written Assignments**

- a. Download the asnWeekxx.doc, where xx is the week number, from the **Resources** section of the e-classroom. For example, asnWeek01.doc is the filename for week one assignments.
- b. After downloading the document, open it and enter your answers directly in the document.
- c. After answering the questions, save and upload the document in the **Assignments** section of the e-classroom.
- d. You may work ahead on assignments if you wish.

**Assignments are due by Sunday 11:59 p.m. ET of the week in which they are assigned. If you need an extension, please contact me via email to discuss your circumstances.**

### **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 prearranged extension will be subject to a 10% per day late penalty. **No late assignments will be accepted after the last day of the course.**

### **FORUM ACTIVITIES:**

During the 8 weeks of this course, you will participate in a Forum activity. Each Forum activity will consist of one or more threads/topics. The assignments may involve discussion or debate. The questions are designed to allow you to apply what you have learned in the chapter to real-world scenarios or hypothetical, but realistic, situations. Post your answers to the questions in each thread prior to **11:59 p.m. ET on Wednesday**. Please do not be late with this post because your classmates will be relying on you to post on time to give them a post to respond to later in the week. A discussion period will then ensue from Thursday through Sunday. Read your classmates' posts and post at least **two** follow-up messages to your classmates' posts in **each** thread prior to **11:59 p.m. ET on Sunday**. Some threads may require you to post more than two replies, so make sure you read the directions carefully. Of course,

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you may always post more than the required number of replies and you are encouraged to continue participating in the discussion even after you have met the minimum number of posts required. Your Forum participation will be considered at the end of the semester if your grade is on the borderline. Borderline grades will only be rounded up if you have exceeded the minimum requirements on the Forum and shown insight and critical thinking in all of your posts and replies. Your follow-up posts must contain substance and should add additional insight to your classmates' opinions or challenge their opinions. It is never sufficient to simply say, "I agree with what you wrote" or "I really liked your post." You must use your follow-up posts as a way to continue the discussion at a high level of discourse. Be sure to read the follow-up posts to your own posts and reply to any questions or requests for clarification, including questions posted by your professor. You will be expected to log into the classroom several times each week to participate in the class discussion. Forum postings are a large part of your grade and I will be looking for quality and depth in your postings. I will also expect you to list your references at the end of each post. References should be in APA citation format.

### **Term Paper:**

You will be required to write one term paper this semester. The specifications are as follows:

1. You must write a 4-6 page term paper on a computer related crime which can be solved by using computer forensics. You must detail the procedures used in discovering and investigating the evidence. Discuss the case, the investigation process, data recovery, securing the evidence and chain of custody. Remember to explain the types of software you would use to complete the case. You may use the cases noted in the book for guidance or may use one of your own.
2. Your term paper outline is due at the end of Week 2.
3. Your term paper is due at the end of Week 7.
4. In addition to the 4-6 pages of the paper itself, you must include a title page and a reference page.
5. Your title page must include the title of your paper, the date, the name of the course, your name, and your instructor's name.
6. Your reference page must be written in APA citation style, Arial or Time New Roman styles, 12-point font.
7. Page margins Top, Bottom, Left Side, and Right Side = 1 inch, with reasonable accommodation being made for special situations.
8. Your paper must be in your own words, representing original work. Paraphrases of others' work must include attributions to the authors. **Limit quotations to an average of no more than 3-5 lines, and use quotations sparingly.** It is always better to write the information in your own words than to directly quote.
9. Papers must be submitted to [www.turnitin.com](http://www.turnitin.com) for review. PAPERS WITH AN ORIGINALITY REPORT FROM TURNITIN OVER 15% OR OVER 2% FROM A SINGLE SOURCE WILL RESULT IN A SIGNIFICANT POINT REDUCTION.
10. PER THE STUDENT HANDBOOK, YOU CANNOT SUBMIT A PAPER THAT HAS BEEN SUBMITTED IN ANOTHER COURSE.

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## Grading Scale

Please see the [student handbook](#) to reference the [University's grading scale](#).

[Table of Contents](#)

## Course Outline

<u>Week</u>	<u>Topic(s)</u>	<u>Learning Objectives</u>	<u>Reading(s)</u>	<u>Assignment(s)</u>	<u>Weight %</u>
1	Understanding System Forensics & Cybercrime	CO1	Ch. 1 & 2	Assignment 1 Week 1 Forum	5 4
2	Challenges of Systems Forensics & Methods	CO2	Ch. 3 & 4	Assignment 2 Week 2 Forum Term Paper Outline	5 4 3
3	Forensics Technologies & Investigations	CO3	Ch. 5 & 6	Assignment 3 Week 3 Forum	5 4
4	Collecting Forensic Evidence & Hiding Techniques	CO4	Ch. 7 & 8	Assignment 4 Week 4 Forum	5 4
5	Recovering Data & Investigating Email	CO5	Ch. 9 & 10	Assignment 5 Week 5 Forum	5 4
6	Network Analysis & Live Forensics	CO6	Ch. 11 & 12	Assignment 6 Week 6 Forum	5 4
7	Incident Response & Future Trends	CO7	Ch. 13 & 14	Assignment 7 Week 7 Forum	5 4
8	Systems Forensics Resources	CO8	<b>Ch. 15</b>	Assignment 8 Week8 Forum Term Paper	3 3 20

[Table of Contents](#)

## Policies

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](#)

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### [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* (6<sup>th</sup> ed.). (2010). Washington, D.C.: American Psychological Association.

### **LATE ASSIGNMENTS**

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### **Academic Services [TOC](#)**

### **ONLINE LIBRARY RESEARCH CENTER & LEARNING RESOURCES**

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](mailto: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](http://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.

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- **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.

[Table of Contents](#)

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**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.

<b>APUS Assignment Rubric Undergraduate Level 300-400</b>	<b>EXEMPLARY LEVEL 4</b>	<b>ACCOMPLISHED LEVEL 3</b>	<b>DEVELOPING LEVEL 2</b>	<b>BEGINNING LEVEL 1</b>	<b>TOTAL POINTS</b>
<b>FOCUS/THESIS</b>	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
<b>CONTENT/SUBJECT KNOWLEDGE</b>	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	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	The assignment reveals that the student has a general, fundamental understanding of the Resource. Whereas, there are areas of some concerning in the linkages provided between facts and supporting statements. Student generally explains	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



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	a logical sequence.	matter knowledge.	concepts, but only meets the minimum requirements in this area.		
<b>CRITICAL THINKING SKILLS</b>	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
<b>ORGANIZATION OF IDEAS/FORMAT</b>	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

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<p><b>WRITING CONVENTIONS (GRAMMAR &amp; MECHANICS)</b></p>	<p>Student demonstrates an excellent command of grammar, as well as presents research in a clear and concise writing style. Presents a thorough, extensive 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.</p>	<p>Student provides an effective display of good writing and grammar. Assignment reflects student's ability to select appropriate word usage 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.</p>	<p>Assignment reflects basic writing and grammar, but more than 5 errors. Key terms and concepts are somewhat vague and not completely explained by student. Student uses a basic vocabulary in assignment. Student's writing ability is average, but demonstrates a basic understanding of the subject matter.</p>	<p>Topics, concepts, and ideas are not coherently discussed or expressed in assignments. Student's writing style is weak and needs improvement, along with numerous proofreading errors. Assignment lacks clarity, consistency, and correctness. Student needs to review and revise assignment.</p>	<p>20</p>
<p><b>USE OF COMPUTER TECHNOLOGY/ APPLICATIONS</b></p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>10</p>
<p><b>TOTAL POINTS</b></p>					<p>100</p>