Indiana University Southeast
CSCI C407 Introduction to Digital Forensics
Course Syllabus

Course Information:

Course Number: CSCI-C407
Course Name: Introduction to Digital Forensics
Section Number:
Course Credit Hours: 4
Course Prerequisite: CSCI C202 or CSCI A202 or equivalent

Instructor Information:

Instructor: Ronald Finkbine, Ph.D.
Office Location: LF 124
Telephone: 812-941-2264
Email: rfinkbin@iu.edu (official)
Office Hours: TBA

Course Description:

This course presents an overview of the principles and practices of digital forensics. The objective of this class is to emphasize the different techniques and procedures that enable them to analyse physical storage media and volume analysis. Students will study underpinnings of common operating systems and the various formats for file storage and transmission, including secret hiding places unseen by the end user or even the operating system.

Course Textbook:

Digital Forensics with Open Source Tools
ISBN-13: 978-1597495868

Practical Binary Analysis, Dennis Andriesse, No Starch Press, ISBN 978-1-59327-912-7.

Note: IUS Bookstore has a price matching policy that is fully described at **http://bit.ly/2apR59Q**. And it can also be found on the Facebook page at facebook.com/IUSBookstore.

Performance Evaluation: Probable Points

Exam	40 %
Labs, writing, presentation	55
Attendance/participation	5

Grade Scale:

90-100	A
80-89	B
70-79	C
60-69	D
0-59	F
	* +/- for upper/lower two points

Course Outcomes:

Students will be able to:

- Describe digital forensics and relate it to an investigative process.
- Perform basic digital forensics.
- Demonstrate use of digital forensics tools.
- Guide a digital forensics exercise.

Course Schedule (tentative):

Week	Topics
1	– Digital Forensics Review - Investigative Process - Analysis Methodologies - Tools and techniques
2	Lab Setup and Network Overview - Setting up the investigative software - More forensic review Assignment/Lab Lab:: Windows review (windows standalone) case
3	FAT32 Filesystems - History and background on FAT - Allocation Tables - Directory Entries - Bitmaps - Deleted files and unallocated space Lab :: FAT analysis
4	NTFS File Systems - History & background of NTFS - Master File Table (MFT) - MFT Entries - Deleted Entries - Unallocated space Lab:: NTFS analysis

5	Filesharing and Peer-to-Peer - Popular file sharing protocols and applications - Filesharing logs - Network logs - Advanced BitTorrent Analysis Lab :: BitTorrent Lab
6	Executable File Analysis - Static Analysis - Dynamic Analysis - Virtualization Lab :: VMWare and Forensic Analysis
7	Viruses, Rootkits and Rootkit Detection - The “virus defense” - Malware - Rootkits - Rootkit analysis Lab:: Rootkit analysis
8	Email and Internet Analysis - Web cache, history, bookmarks - Mail header analysis - Email server analysis - Building timelines
9	Windows Registry - Registry locations - Windows registry keys and values - Useful registry keys - Automated tools for registry analysis Lab :: Registry Analysis
10	– Incident Response and Live Analysis - Live analysis of systems - Collecting volatile data - Analyzing Log Files
11	Memory Analysis - Dumping physical memory - Analyzing physical memory Lab :: Live analysis & memory analysis

Course Policies:

- All material for this course will be within Canvas. I will continually update the Canvas site with the current schedule, all homework assignments, handouts list, and grade sheet.

- Attendence is required for a face-to-face or hybrid course. All courses (including online) require continually logging into Canvas.
- Plan on spending a good period of time (on average about 10-12 hours a week) directly working on solutions to lab assignments. This is very important for the you to learn this material effectively.
- Cooperative efforts are not permitted in exams or any lab assignments unless otherwise stated.
- Your @ius.edu email account is the official email of the IU system. This is where your instructors and the university will notify you of any pertinent announcements. Check it regularly. I cannot send any private information to an off-campus email.
- No grade less than C (2.0) will be accepted in any required School of Natural Science course for a degree or a minor in this school.
- All electronic communication devices in class are to be turned to silent. Any device requiring keyboard operation is to be turned off. It is very disconcerting to most people in the room to have bells, whistles, songs and keyboarding done while during presentations by faculty and/or students.
- IUWare is a software distribution service for Indiana University. As a student, you can download and install many useful programs for free. The University pays the license fees in order for you to use this software. Some of the helpful software items include Adobe Acrobat and Microsoft Word. To download from IU Ware, visit IUware.IU.edu.
- Indiana University subscribes to Turnitin.com, a tool that confirms that you have used and cited sources accurately in your paper. All non-programming writing in this course will be submitted and a 'originality report' will be generate and reviewed by me.
- When asked questions on test/quizzes/homework, please design a reasoned argument. Points will be taken off for answering too much information, unrelated information, or incorrect information even when extraneous.
- Exams taken late (or early) only with prior personal approval of instructor. All other assignments accepted for full credit until time/date due, then 50% for one week, and zero thereafter. Students are warned that some assignments build upon prior assignments, so gaming the system can get tricky.

Standard IUS/IU Policies:

You're probably used to seeing many policy statements on a syllabus. Faculty include these statements to ensure you understand course expectations so that you can succeed in your courses. At IU Southeast, we have placed all university policies on a single website easily accessed from every Canvas course site. Simply look at the left navigation bar and click on Succeed at IU Southeast. You can find links to sites with a great deal of useful information including:

- How to avoid plagiarism and cheating
- Disability Services
- FLAGS
- Tutoring centers
- Canvas Guides
- Financial Aid
- Sexual Misconduct
- Counseling
- Writing Center and much more!

My expectation is that you review university policies carefully to ensure you understand the policy and possible consequences for violating the policy. Please contact me if you have any questions about any university policy.

Course Level Outcomes:

Nr	Course Level Outcome	Program Outcomes
1	Demonstrate an understanding of the core concepts, tools and methods of computer forensics	1A
2	Identify and present indicators that a cybersecurity incident has occurred	2C
3	Apply criminal justice methods to computer forensics investigations	2C
4	Collect, process, analyze, and present computer forensics evidence	2C
5	Demonstrate ability to communicate effectively with a range of audiences	2C
6	Demonstrate familiarity with professional, ethical, legal, security and social issues and responsibilities	2C

Assessment Tools:

1. Module 5, Quiz-Concepts, Passing 70%
2. Module 5, Project A, Passing 70%
3. Module 6, Quiz-Legal Issues, Passing 70%
4. Module 8, Project B, Passing 70%
5. Module 10, Expository Writing Lab A, Passing 70%
6. Module 13, Student Presentation
7. Module 14, Expository Writing Lab B, Passing 70%

INDIANA UNIVERSITY POLICY ON DISCRIMINATION, HARASSMENT, AND SEXUAL MISCONDUCT:
As your instructor, one of my responsibilities is to create a positive learning environment for all students. IU policy prohibits sexual misconduct in any form, including sexual harassment, sexual assault, stalking, sexual exploitation, and dating and domestic violence. If you have experienced sexual misconduct, or know someone who has, the University can help. If you are seeking help and would like to speak to someone confidentially, you can make an appointment with the campus Deputy Title IX Coordinator, James Wilkerson].

It is also important that you know that because of my role, University policy requires me to share information brought to my attention about potential sexual misconduct with the campus Deputy Sexual Misconduct & Title IX Coordinator or the University Sexual Misconduct & Title IX Coordinator. In that event, those individuals will work to ensure that appropriate measures are taken and resources are made available. Protecting student privacy is of utmost concern, and information will only be shared with those that need to know to ensure the University can respond and assist. I encourage you to visit stopsexualviolence.iu.edu to learn more.

Indiana University also prohibits discrimination on the basis of age, color, disability, ethnicity, sex, gender identity, gender expression, genetic information, marital status, national origin, race, religion, sexual orientation, or veteran status.

If you feel like you have experienced discrimination, harassment, or sexual misconduct and wish to make a report, please contact the campus Director of Equity & Diversity, James Wilkerson] or make a report through the online reporting form here.

BIAS INCIDENT REPORTING

Indiana University is committed to creating welcoming, inclusive, and respectful campus communities where everyone can thrive and do their best work—a place where all are treated with civility and respect. If you experience or witness an incident of bias, you should report it. For more information, see Bias Incident Reporting.

ACCESSIBILITY & ACCOMMODATIONS

Indiana University is dedicated to ensuring that students with disabilities have the support services and reasonable accommodations needed to provide equal access to academic programs. To request an accommodation, you must establish your eligibility by working with Accessible Educational Services (AES) on your campus [mtspring@ius.edu *]. Additional information can be found at accessibility.iu.edu. Note that services are confidential, may take time to put into place, and are not retroactive; captions and alternate media for print materials may take three or more weeks to get produced. Please contact your campus AES office as soon as possible if accommodations are needed.*