

Instructor

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Required Text(s)

AccessData Mobile Forensics Academic Manual w/ CD (Available only through Marshall University Bookstore)

Recommended Texts

Hoog, A. (2011). *Android Forensics*. ISBN 978-1597496513
Hoog, A. & Strzempka, K. (2007). *iPhone & iOS Forensics*. ISBN 978-1597496599
Hosmer, C. (2014). *Python Forensics*. ISBN 978-0124186767

Course Description

This three (4) credit hour Mobile Device Forensics course (CRN #3752), through discussion, reading, and practical "hands-on" training, is designed to provide students theories and practices of identification, preservation, collection, analysis, and reporting techniques and tools used in the forensic examination of mobile devices such as cell phones and GPS units.

Prerequisites

IST 264- Technology Foundations
IST 449- Data Recovery & Analysis

Computer & Software Requirements

Software:

This course is designated as an online course, with much of the learning focused around hands-on learning. This course focuses around AccessData's Mobile Phone Examiner (MPE+) and other tools such as FTK Imager.

If you are working remotely you will need to install this software on your own PC. You can find downloads of MPE+ from the following link:

<http://accessdata.com/product-download>

**I would recommend downloading and installing MPE+ version 5.3.3 or above to avoid any compatibility issues.

In addition to MPE and FTK software, you will need to download & run the MUVPN remote client in order to validate the network license (MPE WILL NOT RUN OFF-CAMPUS without executing the VPN client).

The VPN download and help files can be found from the following link:

<http://muvpn.marshall.edu>

For those of you who wish to work on campus, MPE+ can also be run by means of a virtual machine in ML 121. Please see me if you wish to do so. You will need to complete an IST Department Conduct agreement and return it to me before giving you access to the MPE virtual machine.

I have also posted the links found above in Module 0 of this course on how to setup this software for the course.

The IST department maintains agreements with various software publishers to provide software for its computer labs as well as for its faculty, staff, and students. Students enrolled in IST department courses are eligible to receive a variety of software applications at no cost for use in their academic endeavors. This includes many of the same applications used in IST courses, such as Windows 7 and VMware. You can find this information and more on the IST Web site at <http://www.marshall.edu/isat/software/>. Since

MPE+ is driver-intense and can be slowed down and/or blocked by antivirus and firewalls I strongly encourage you to run the software within a virtual environment.

Some course modules have specific tutorial videos that I have personally put together to help gain a deeper understanding of the content and how to set things up. These videos will work in Internet Explorer, Firefox, and Chrome (although I've had best success with the course in Mozilla Firefox). For students with impairments (hearing, sight, etc.), please feel free contact me and I will make provisions for alternate content delivery methods to help you fully engage in this course.

All students are responsible for knowing the University Computing Services' Acceptable Use Policy (see policy below)

Students will receive emails via Marshall email (Please setup your Marshall account if you have not done so). E-mail will be used to make any general announcements, last minute changes, etc. It is mandatory that you monitor both your email and MUOnline messages at least once a day. **PLEASE ONLY SEND TO MY MARSHALL EMAIL ADDRESS FOR QUICK CORRESPONDENCE.** Messages left on MUOnline may result in delayed responses.

Course Objectives/Outcomes

This course is designed to build on the material learned in previous foundational courses and apply those concepts. This course places a strong emphasis on utilization of mobile forensic tools and techniques and hands on exercises to emphasize the procedures that students will utilize in the field when analyzing mobile devices.

Upon completion of the Mobile Device Forensics course, students will be able to:

Course Student Learning Outcome	How Practiced in This Class	How Assessed in This Course
<ul style="list-style-type: none"> Explain and understand the underlying technology of mobile devices and wireless networks, emphasizing how the data they contain can be used as evidence. 	<ul style="list-style-type: none"> Required course reading, Forensic Forum Discussion Posts, End-of-Module Review Questions 	<ul style="list-style-type: none"> Completion of Modules 1-2, Forensic Forum Discussion posts for Modules 1-2, End of module review questions for modules 1-2.
<ul style="list-style-type: none"> Utilize and gain proficiency of specialized mobile forensic tools such as Mobile Phone Examiner+, and other mobile forensic software tools. 	<ul style="list-style-type: none"> Required course reading, Laboratory Projects, Forensic Forum Discussion Posts, End-of-Module Review Questions 	<ul style="list-style-type: none"> Completion of Modules 5-9, Laboratory Projects for Modules 5 & 9, Forensic Forum Discussion posts for Modules 5-9, End of module review questions for modules 5-9.
<ul style="list-style-type: none"> Understand core forensic methodology as it relates to mobile devices. Understand proper evidence handling procedures for mobile devices 	<ul style="list-style-type: none"> Required course reading, Laboratory Projects, Forensic Forum Discussion Posts, End-of-Module Review Questions 	<ul style="list-style-type: none"> Completion of Modules 1-4, Laboratory Projects for Modules 3 & 4, Forensic Forum Discussion posts for Modules 1-4, End of module review questions for modules 1-4.
<ul style="list-style-type: none"> Be able to create physical and logical acquisitions of various mobile devices. 	<ul style="list-style-type: none"> Required course reading, Laboratory Projects, Forensic Forum Discussion Posts, End-of-Module Review Questions 	<ul style="list-style-type: none"> Completion of Modules 6, 7, & 9, Forensic Forum Discussion Posts for Modules 6, 7, & 9, Laboratory Project 9, End of module review questions for Modules 6, 7, & 9.

<ul style="list-style-type: none"> Be able to extract data from SIM cards in a forensically sound manner 	<ul style="list-style-type: none"> Required course reading, Laboratory Projects, Forensic Forum Discussion Posts, End-of-Module Review Questions 	<ul style="list-style-type: none"> Completion of Module 5, Forensic Forum Discussion post for Module 5, Module 5 Laboratory Project, End of Module review questions for Module 5.
<ul style="list-style-type: none"> Understand the underlying technologies and be able to extract data from various mobile operating systems and platforms such as Android, iOS, Blackberry, Nokia, Windows Mobile, and GPS Devices 	<ul style="list-style-type: none"> Required course reading, Laboratory Projects, Forensic Forum Discussion Posts, End-of-Module Review Questions. 	<ul style="list-style-type: none"> Completion of Module 6 & 9, Laboratory Project 9, Forensic Forum Discussion post for Modules 6 & 9, End of Module review questions for Modules 6 & 9.
<ul style="list-style-type: none"> Students will be confident in analyzing and examining digital evidence that will stand up to standards required for criminal and/or civil cases. 	<ul style="list-style-type: none"> Required course reading, Laboratory Projects, Forensic Forum Discussion Posts, End-of-Module Review Questions 	<ul style="list-style-type: none"> Completion of Module 3 & 11, Forensic Forum Discussion post for Modules 3 & 11, End of Module review questions for Modules 3 & 11.
<ul style="list-style-type: none"> Students will obtain knowledge that will allow successful completion of the AccessData Mobile Examiner (AME) & Mobile Phone Seizure Certification (MPSC) 	<ul style="list-style-type: none"> Required course reading, Laboratory Projects, Forensic Forum Discussion Posts, End-of-Module Review Questions 	<ul style="list-style-type: none"> Completion of Modules 1-11, Laboratory Projects for Modules 1-11, Forensic Forum Discussion post for Modules 1-11, End of Module review questions for Modules 1-11.

A variety of methods will be used to evaluate learning of each of the above outcomes. These include: online discussions (a.k.a Forensic Focus Discussions), Laboratory projects for select modules, and end-of-module review questions

This course is split up into 11 specific Modules with each Module required readings, Module discussions (Forensic Forum Discussions). Laboratory Projects are issued for Modules 3,4,5,9,& 11.

Evaluation of student's performance will be based on the quality and completion of your performance on laboratory projects, Forensic Forum discussion content, and end-of module questions. I have provided a grading rubric in the course introduction that will assist you in what I am looking for and how I grade those projects and discussions.

Tutorials, forensic forum discussions, laboratory projects, and additional course materials will be available via MUOnline for download. You can log into the course website using your 901 student number at the following address: www.marshall.edu/muonline

Students will sit for the Mobile Phone Seizure Certification (MPSC) which focuses proficiency testing in the collection, documentation and preservation of cell phones and related evidence. The questions focus on basic elements of collection, preservation and documentation of mobile phones and related equipment. The score obtained in this examination will count towards your midterm exam grade.

At the end of the semester/completion of the course, students will sit for the AccessData Mobile Examiner (AME) certification, which consists of approximately sixty (50) multiple choice questions that covers all of the knowledge points covered throughout the semester. The score obtained in this examination will count as your final exam grade.

University Policies

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802

Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Netiquette Policy

As future forensic scientists/digital forensics/criminal justice professionals your ability to articulate information is of key importance. Internet etiquette, better known as "netiquette" guides us in proper behavior on the Internet. There are widely accepted rules of behavior to follow when you're online. It is very important to learn and follow these rules. Sometimes the online world can feel "pretend" because you cannot see the person with whom you are communicating. Therefore, it is very important to remember that you are dealing with "real" people online and you should use your very best manners - just as you would at home, at college, the forensic lab, or even in the courtroom. As a noob (someone new to the Internet) you do not want to begin posting in the Forensic Forum Discussions in the "until you are familiar with the acceptable rules of Internet behavior. There are a few tips that can help you feel more comfortable with the new and content this digital forensic course will throw at you.

Here are some things to remember anytime you are online: Do unto others, as you'd have others do unto you. Be polite and courteous at all times. Remember that you're not communicating with a computer screen, but with a human being (your professor and your classmates) who has thoughts and feelings just like you. So, always think of the person on the receiving end of your messages. Do not TYPE IN ALL CAPITAL LETTERS for emphasis. IT LOOKS LIKE YOU ARE SHOUTING. If you need to emphasize a word, use asterisks, like ***this*** or lines, like **_this_**. Remember that the written word is hard to interpret (especially when writing case reports). When you speak to someone, that person can hear the tone of your voice. If they can see you, they can take visual clues from your face and body to better understand your meaning. All of this is lost in text, and sometimes responses can come across as mean or rude, even when you did not intend them this way. This is the reason some people use emoticons (visual clues) in their e-mails, it saves a lot of confusion. Be careful not to use rude or bad language online. Many providers will terminate your account.

Don't break any laws. When you are on the Internet, follow the same rules of behavior that you would in real life. Remember, if it is against the law in the real world, it is against the law in cyberspace. Be universal. Other users have different Web browsers, different online services, different email programs, etc. So don't, for example, send out email with text formatting -- boldface, italics, indentations, etc. -- because many other programs will not be able to read the formatting and the recipients will receive your email filled with muddled codes.

Your MU student email account must be used to communicate with me (your professor). However, you can post to the general discussion forum if you have any general course questions as well. Be brief whenever possible. No one wants to read through a lot of unnecessary information. If you are replying to a discussion thread, try editing out unimportant information and anything that is repeated. Don't flame. Do not post rude, condescending, or offensive postings. It is bad manners and can get seriously out of hand (don't start a flame war). So do not flame others and if you are flamed, do not respond: you will never win. Never send email without including your name at the bottom of the email.

Here's my golden rule that is a key component of all of my digital forensics courses: make a good impression and articulate yourself well. Remember that the written word is the only way you can represent yourself online, be patient with newcomers. Once you have become an Internet expert, it is easy to forget that you started out. Remember that one day you might be on the stand testifying to a jury on someone's fate. Your testimony and/or report may be a key component of the case.

Spelling and grammar count. If you are going to be writing a large amount of text for other people to see, make sure you break it up using paragraphs, it will make it easier on the eye for those that will read it. Learning the rules of cyberspace and the forensic science community is much like learning a new language; it takes practice, and includes making mistakes. So if you come across someone else's mistakes or lack of depth, don't put them down, just politely point them in the right direction for guidance.

Material obtained from: http://www.kidsdomain.com/brain/computer/surfing/netiquette_kids.html (modified)

In addition here's a few things to consider when contacting me (your professor): You are more than welcome to contact me via MU email or any of the contact methods listed previously in my syllabus. If you need help, ask!! If you are unclear on laboratory project or some other aspect of the course, ask!! If you have any general questions in regards to digital forensics, ask!! If you need assistance with lab project tasks or software installs, I suggest contacting me to schedule a Blackboard IM or Skype session. Keep in mind that this is what I'm here for. It is my desire that you get as much as possible out of this course. I do, however, have a few limitations on contact. I often receive friend requests from students via Facebook. It is my policy however, not to accept these requests from current students. This is absolutely nothing personal, so please do not take it as such. You are welcome to follow me on Twitter (@joshbrunty) and/or join my network on LinkedIn. You can also follow our department through our MU ISAT or MU Digital Forensics Facebook group pages..

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Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Makeup Policy

The due dates for each module are shown in the course schedule. If you have other plans on any of these dates, please make arrangements now to change them, or inform the instructor of your plans. If for any unforeseen reason you must miss a module due date, you must have a verifiable, well-documented excuse. If the instructor accepts the excuse you will be given a make-up exam. Otherwise, you will be given a zero (0) grade for the missed exam and/or assignment.

Academic Dishonesty Policy

As described in the Marshall University Creed, Marshall University is an "Ethical Community reflecting honesty, integrity and fairness in both academic and extracurricular activities. "Academic Dishonesty is something that will not be tolerated as these actions are fundamentally opposed to "assuring the integrity of the curriculum through the maintenance of rigorous standards and high expectations for student learning and performance" as described in Marshall University's Statement of Philosophy. A student, by voluntarily accepting admission to the institution or enrolling in a class or course of study offered by Marshall University accepts the academic requirements and criteria of the institution. It is the student's responsibility to be aware of policies regulating academic conduct, including the definitions of academic dishonesty, the possible sanctions and the appeal process. For the purposes of this policy, an academic exercise is defined as any assignment, whether graded or ungraded, that is given in an academic course or must be completed toward the completion of degree or certification requirements. This includes, but is not limited to: Exams, quizzes, papers, oral presentations, data gathering and analysis, practical and creative work of any kind. If you are found cheating on projects or plagiarizing answers from the Internet or other sources there will be no second chance. Your penalty is that you will receive a failing grade for the course. In those cases in which the offense is particularly flagrant or where there are other aggravating circumstances, additional, non-academic, sanctions may be pursued through the Office of Judicial Affairs. Notice of an act of academic dishonesty will be reported to the Department Chair, Dean

of the College of Science, and to the Office of Academic Affairs. Please refer to the Marshall University Undergraduate Catalog for a full definition of academic dishonesty.

Laboratory Project Submission Guidelines

The course places much emphasis on the application of knowledge through Laboratory Projects. All Laboratory Projects are due on their respective due date and must be submitted through via MUOnline. **NO LATE LAB PROJECTS AND OR EMAILED PROJECTS WILL BE ACCEPTED** unless prior arrangements were made with the professor. Please do not procrastinate in working on your laboratory projects or trying to submit through MUOnline at the last minute as many others have done in the past. If you wait until the last night to start on the project or the last minute to submit, chances are, you will fall behind and fail. Some of these lab projects are time-intensive so t

All electronic submissions MUST follow this file naming convention:

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IST467_LastName_FirstInitial_Assignment Name.doc ("IST467_brunty_j_project1.doc")

Assignments must be submitted in the format specified by the instructor for a given assignment. I WILL NOT accept projects submitted in non-approved formats or naming conventions.

Laboratory Projects must be submitted in the format above specified by the instructor for a given assignment. I WILL NOT accept projects submitted in non-approved formats or naming conventions. Laboratory Projects must convey information in a clear, concise, and technical matter; hence obvious grammatical mistakes will be deducted (for more information on grading see the grading rubric in the course introduction). Laboratory Projects will be available for download & submitted via MUOnline unless otherwise noted by the instructor.

All course assignments will:

- 1) Be completed on time
- 2) Meet guidelines and scoring rubrics for the assignments (see introduction for detailed rubric)

Grading Policy

Student materials and grades will be returned as soon as graded to the student and can be viewed via MUOnline. Should you wish to appeal a grade, test question, etc, you need to follow this procedure. You should send an email via MUOnline to me. The title of the email must read "GRADE APPEAL – Assignment Name" (i.e. Practical 1, Project 2, etc). The body of the email must include the question, question number, your answer, and why you think you deserve credit. For tests and quizzes in MUOnline, this should be done immediately after completion, before you leave class. You can copy and paste this information to make things simple. I will get back to you as soon as possible.

Grading

Final letter grades will be based on the following scale:

90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

Percentage of grades will be distributed as follows:

End-of-Module Review Questions	25%
Laboratory Projects	25%
Forensic Forum Discussion	25%
MPSC/AME Exam	25%

Example:

End of Module Review Questions (86%)	x .25 = 21.5
Laboratory Projects (86%)	x .25 = 21.5
Forensic Forum Discussions (91%)	x .25 = 22.75
MPSC/AME Exam (84%)	x .25 = 21

	86.75 (87% B)

****Please note that I used a weighted scale from the overall points of each category to calculate your grade. Generally this is calculated in MUOnline as a running total and can be viewed as such as grades become available. If you have any questions on grade calculations please feel free to contact me.**

Laboratory Projects (25%)

There are a total of five (5) laboratory projects due during this course (due in Modules 3, 4, 5, 9, and 11). These projects are due on the Module due/drop date (see below). Laboratory Projects are worth 100 points each.

End-of-Module Review Questions (25%)

Each Module (with the exception of Module 0 & 1) has end-of module questions posted that reviews your comprehension of each Module. These end-of-module questions usually range from 5-15 questions and are due at the drop date of each module. End-of-module questions must be completed before the Module due date in order to receive credit. If you run into any issues with these questions please contact me.

Forensic Forum Discussions (25%)

Forensic Forum Discussions are designed to make the student to critically think about mobile device forensic concepts. Each Module has a discussion forum, therefore there are a total of 11 discussions you will be required to complete (not including your introduction). A minimum of two (2) posts are required in order to receive full credit for the thread: 1) you must post your own topic to the thread and 2) you must respond to one of your classmate's or one of my response posts of your choice. However, you are more than welcome to post beyond the 2 post minimum and create deeper discussions on a topic (this is the intention of the forums). These Forensic Forum discussion posts are due before the end of the Module due dates below, so be sure to post as early as possible to avoid losing points.

MPSC/AME Exam (25%)

This course is designed around obtaining the knowledge to successfully obtain two (2) certifications over the course of the semester: the Mobile Phone Seizure Certification (MPSC) and the AccessData Mobile Examiner (AME) certification. Each of these are industry-recognized certifications that will help gain leverage in competing for a job in digital forensics. The MPSC exam will be taken within Module 1 and will be worth roughly 12.5% of your final grade. The AME exam will be taken at the conclusion of the course and will be worth the same weight (12.5%).

Course Schedule & Important Dates

All laboratory projects, forensic forum discussion posts, and end-of-module questions are due at the end of each corresponding module by 11:59PM on the due date specified below. No late quizzes, laboratory projects, or discussion posts will be accepted so it is recommended that you complete everything well in advance before the due date. You are more than welcome and encouraged to work ahead of schedule, but keep in mind that you must stay current with Forensic Forum discussion posts. Be sure to keep up.

Due dates for each module are as follows:

Module	Module Due Date
Module 1 (Mobile Phone Seizure Certification-MPSC)	Friday January 23 rd
Module 2 (History & Cellular Networks)	Friday January 30 th
Module 3 (Legal Issues)	Friday February 13 th
Module 4 (Cellular Records)	Friday February 27 th
Module 5 (SIM Cards & Analysis)	Friday March 13 th
Module 6 (Handsets)	Friday March 27 th
Module 7 (Processing Guidelines)	Friday April 3 rd
Module 8 (Troubleshooting)	Friday April 10 th
Module 9 (Mobile Phone Examiner Plus- MPE+)	Friday April 24 th
Module 10 (Manual Examinations)	Friday May 1 st
Module 11 (Case Presentation & Reporting)	Friday May 8 th



*Syllabus meets requirements set forth by MUBOG Policy AA-14