DIGITAL FORENSICS
INFORMATION ASSURANCE

COURSE SYLLABUS
FSC 632- Foundations & Fundamentals of Digital Evidence
CRN: 2400- 3 CR HRS.

Instructor:	Prof. Josh Brunty	**Class Meets:**	MW 1:30-3:00PM
Office:	WAEC 2001	**Classroom:**	MUFSC W02
Phone:	304-696-5602	**Office Hours:**	MWF 10:00-11:00AM
Email:	josh.brunty@marshall.edu		TR 9:30-11:00AM

Course Description (from catalog):

The course provides fundamental information to lay the foundation for the Digital Forensics Area of Emphasis. A range of topics includes laws and regulations relating to stored digital data, quality assurance and ethics in a digital laboratory, basic terminology, computer hardware and various storage media, software, including operating and file systems, and basics concepts of computer security. The course is taught primarily in a lecture format. Class discussions and participation in practical exercises supplement lectures.

More Description:

This course will give a fundamental foundation for students new to the digital forensics field. This course will discuss what digital forensics is, the methodologies used, key technical concepts, and the tools needed to perform examinations. Details on digital forensics for computers, networks, the internet, the cloud, and mobile devices are also discussed.

Course Format:

Class will meet on Monday and Wednesday each week from 1:30-3:00PM, unless otherwise specified by the instructor or course schedule. Materials will be presented using lectures, in-class discussions, and class projects and presentations. Students will be expected to attend class and participate in class discussions, complete written assignments, and take in-class quizzes and exams.

Required Texts, Additional Reading, & Other Materials:

Required texts:

- Sammons, J. (2015). *The Basics of Digital Forensics 2nd Edition*. Waltham, MA: Syngress Publishing Inc. ISBN: 978-0-12-801635-0
- Other readings as assigned and provided by the instructor.

Assigned readings are an essential component of this course and provide students with a baseline of knowledge that will be expanded upon through more detailed and complex in-class lectures and discussions. Students will be required to complete assigned readings prior to the class period in which the material will be discussed. Supplemental course materials (e.g., handouts, reading assignments, etc.) will be posted to the MUOnline: http://www.marshall.edu/muonline

Desired Objectives/Outcomes:

Course Student Learning Outcome	How Practiced in This Class	How Assessed in This Course
Provide core knowledge necessary for students to have a basic understanding of Digital Forensics & the value of digital evidence in solving crimes **(objective)**	In-class lecture & hands on laboratory exercises.	Classroom Discussion, In-Class Laboratory Exercises, Midterm Exam, Final Exam
Students will be able to evaluate digital devices for evidence important in solving criminal & civil cases **(expectation)**	In-class lecture & hands on laboratory exercises.	Classroom Discussion, In-Class Laboratory Exercises, Midterm Exam, Final Exam
Provide concepts & knowledge to students who decide to further their understanding of Digital Forensics by pursuing this area of emphasis and, possibly, as a future career **(objective)**	In-class lecture & hands on laboratory exercises.	Classroom Discussion, In-Class Laboratory Exercises, Midterm Exam, Final Exam
Students will actively participate & discuss the topics at hand during class and implement them in in-class lab exercises **(expectation)**	In-class lecture & hands on laboratory exercises.	Classroom Discussion, In-Class Laboratory Exercises, Midterm Exam, Final Exam
Students will gain an understanding of laws governing search & seizure of digital evidence & laws that govern access to stored data will be analyzed. Factors that allow & impact the admissibility of evidence will be explored & debated **(objective)**	In-class lecture & hands on laboratory exercises.	Classroom Discussion, In-Class Laboratory Exercises, Midterm Exam, Final Exam

Students will gain understanding that federal & state laws are in flux & court decisions related to privacy and the availability of digital data to law enforcement is currently being decided. State & county courts differ on such interpretations so students will be expected to understand how these laws will impact cases involving digital evidence **(expectation)**		Classroom Discussion, In-Class Laboratory Exercises, Midterm Exam, Final Exam

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/policies/
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

Attendance Policy and Make-up Work:

In-class participation is an essential component of this course and students will be expected to attend each class unless they have a valid university-approved excuse (see university excused absence policy). I will be happy to meet with students who miss class with a valid excuse to discuss course material and how missed work can be made up. However, I will not re-lecture to students who miss class during office hours, and it will be the students' responsibility to catch up on missed material (e.g., readings, in- class exercises, etc.).

Assignment Submission & Late Policy:

All homework assignments must be turned in **at the beginning of class** on the specified due date. Except under special circumstances with written justification, assignments turned in after the due date will be penalized with a 10% reduction in points for each day late, including Saturdays and Sundays (i.e., one day late = 90% highest possible score, two days late = 80% highest possible score, etc.). Assignments will not be accepted more than one week after the original due date.
In-class quizzes and lab assignments will not be accepted late (i.e., there will be no opportunity to make up any missed in-class quizzes or lab exercises), except under special circumstances with written justification and prior approval. If your absence is unexcused, you will not be given an opportunity to make up any missed in-class assignments. In order to receive an excused absence, you must visit the office of academic affairs to obtain a written excused absence form.

Course Requirements & Grading Policy:

Students will be evaluated in this course based on their performance in the following categories:

Quizzes – Students are required to attend and actively participate in each class throughout the semester. Students are also expected to complete reading assignments prior to the class period in which the materials will be discussed. In order to assess compliance with these expectations, I will be administering several unannounced, in-class pop-quizzes related to course material at random throughout the semester. Students who miss a class period without having a university approved excused absence will receive a score of zero for any quiz given during that class period. However, I will drop the lowest quiz score for each student before determining his/her overall course grade (i.e., the results of your worst quiz will not affect your overall grade). This policy will be beneficial to students who complete readings and attend class on a regular basis.

Labs/In-Class Exercises – Students will be required to complete several hands-on lab exercises during class. These labs will be essential for demonstrating how to conduct digital forensics examinations in a laboratory environment. Lab exercises must be handed in during class. Late or make-up labs will not be accepted, except under special circumstances with written justification.

Homework Assignments – Students may be required to complete written homework assignments throughout the course of the semester. The content and format will vary and will be specified for each assignment. Grading of written assignments will be based both on what is presented (content) as well as the style and adequacy of the presentation (process). Written assignments should be neat, succinct, and clear. All homework assignments must be typed (12 – point font, double-spaced), printed, and are due at the **beginning** of class on the date the assignment is due (see Late Policy for more detail). All homework assignments will be submitted via MUOnline

Examinations – There will be two written examinations that will be administered during specified class periods this semester (midterm and final examination). Any student who misses an exam due to an unexcused absence will receive a 0% for that exam (see make-up exam policy).

The above categories will be graded as follows:

Homework/Out-of-Class Labs/Quizzes	10%
In-class Exercises/Labs	10%
Exam #1	40%
Exam #2	40%
Total	**100%**

This class will employ a weighted grading system. To determine your grade in this course, fill in your percentage score for each evaluation category below, multiply each score by its weight, and then add the values in the final grade column to find your overall grade out of 100. In addition to handing graded assignments back to you in class, I will post grades for individual assignments and exams on blackboard. However, please remember that you **must** use the weighted grading system shown below to determine an accurate portrayal of your overall course grade. I am happy to meet with you to discuss your course progress/grade during office hours throughout the semester.

Evaluation Category	Your Score (Out of 100)	Weight	Contribution to Final Grade
Homework/Out-of-Class Labs, Quizzes (average)		X .10 =	
In-Class Exercises/Labs (average)		X .10 =	
Exam #1		X .40 =	
Exam #2		X .40 =	
Final letter grades are calculated using the following scale: 90-100 A 80-89 B 70-79 C 60-69 D Below 60 F		**Final Grade (out of 100)**	

Communication:

I will post course content on MUOnline (e.g., syllabus, assignments, readings, etc.), so be sure to check for new materials regularly. Your MU e-mail address will be used to make any general announcements, last minute schedule changes, etc. I recommend that you monitor your MU email and MUOnline accounts at least once a day. Also, I will only respond to emails that you send me from your official MU email address – it is the only way for me to be sure that I am responding to you (and not someone else pretending to be you).

Classroom Learning Environment:

To foster the best possible environment for learning, we will follow “Brunty’s Maxims” They are as follows:

- Don’t Lie…
- Don’t Cheat…

- Don't Steal…
- Don't play on your cellphone unless directed to do so.
- Don't have conversations that distract the class.
- Don't disparage other students- Treat everyone with respect.
- Don't be late for class.
- ALWAYS be professional. Take advantage of your time in here. Ask questions. Participate

Students who violate these maxims will be asked to leave class.

Course Schedule and Due Dates:

NOTE: This is a tentative schedule and it may change as the class progresses. Chapter readings should be completed prior to class.

Date	Day	Topic	Notes
8/21	M	Course Intro, Syllabus, Chapter 1 Introduction	
8/23	W	Chapter 1 Introduction	
8/28	M	Chapter 2- Key Technical Concepts (Binary & Hexidecimal)	
8/30	W	Chapter 2- Key Technical Concepts (File Extensions & File Signatures)	
9/4	M	**Labor Day University Holiday- No Class**	
9/6	W	Chapter 2- Key Technical Concepts (Storage & Memory)	
9/11	M	Chapter 2- Key Technical Concepts (File systems)	
9/13	W	Chapter 3- Labs and Tools (Forensic Laboratories, Quality Assurance)	
9/18	M	**Conference Travel- No Class**	
9/20	W	Chapter 3- Labs & Tools (Digital Forensics Tools & Accreditation)	DerbyCon (Louisville, KY) 9/22-9/24
9/25	M	Chapter 4- Collecting Evidence (Collecting Evidence, documenting the scene, chain of custody)	
9/27	W	Chapter 4- Collecting Evidence (cloning, imaging, & hashing, final reporting)	
10/2	M	Chapter 5- Windows System Artifacts (Windows Registry)	
10/4	W	Chapter 5- Windows System Artifacts (Metadata)	
10/9	M	Chapter 5- Windows System Artifacts (Restore Points & Shadow Copy)	
10/11	W	Chapter 5- Windows System Artifacts (LNK Files)	

10/16	M	Exam #1 Review	
10/18	W	**Exam #1**	**Exam #1- Covers chapters 1-5**
10/23	M	Chapter 6- Anti-Forensics (Encryption & Algorithms)	
10/25	W	Chapter 6- Anti-Forensics (Steganography & Data Destruction)	
10/30	M	Chapter 7- Legal (Warrants & Searches)	
11/1	W	Chapter 7- Legal (Expert Testimony)	
11/6	M	Chapter 8- Internet & Email (Internet & Web Browsers)	
11/8	W	Chapter 8- Internet & Email (Email, Chat, Social Networking)	
11/13	M	Chapter 9- Network Forensics (Network Fundamentals, Tools, Attacks, & Evidence)	
11/15	W	Chapter 9- Network Forensics	**HackerCon8/SecureWV Nov. 17-19**
11/20	M	**Thanksgiving University Holiday- No Class**	
11/22	W	**Thanksgiving University Holiday- No Class**	
11/27	M	Chapter 10- Mobile Device Forensics	
11/29	W	Chapter 10- Mobile Device Forensics	
12/4	M	**No Class- Instructor Travel** Chapter 11- Looking Ahead: Challenges & Concerns	
12/6	W	Exam #2 Review Chapter 11- Looking Ahead: Challenges & Concerns	
12/11	M	**Exam #2- Final Exam (1:30-3:30PM W02)**	**Exam #2- Covers Chapters 6-11**