



DIGITAL FORENSICS
INFORMATION ASSURANCE

COURSE SYLLABUS

FSC 605- Forensic Digital Imaging

CRN: 3291- 3 CR HRS.

Instructor: [Prof. Josh Brunty](#)
Office: WAEC 2001
Phone: 304-696-5602
Email: josh.brunty@marshall.edu

Class Meets: TR 8:00-9:15AM
Classroom: WAEC 1232
Office Hours: MWF 9:00-10:00AM
TR 9:30-11:00AM

Course Description (from catalog):

Introductory course in digital image processing. Covers techniques used in forensic laboratory to enhance, analyze, and catalog digital images. Instruction in lab setting.

More Description:

This three (3) credit hour Forensic Digital Imaging course is intended to provide the student with the basic use of digital images and digital video in a forensic setting. This includes the use of best practices to exceed the requirements of court, utilizing various industry standard tools such as Adobe Photoshop and other commonly used software/hardware tools, and developing a workflow from archiving to courtroom testimony. Students will be provided methodology to perform imaging tasks that are commonly faced in the law enforcement community today.

Course Format:

Class will meet on Tuesday and Thursday each week from 8:00-9:15AM, 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 laboratory assignments, and take in-class quizzes and exams.

Required Texts, Additional Reading, & Other Materials:

- No Required Texts
- This course is heavily focused around hands-on learning. In this course we use tools that are part of the Adobe Creative Suite (specifically Adobe Bridge and Photoshop) and other additional plugins that you will be required to have for the course. Most of This software is available on any on-campus machines at Marshall University, however, there are options for students who do not have the ability to commute to campus on a regular basis. The Adobe Creative Cloud has a heavily discounted student and teacher plan that allows you to utilize the tools available in the Adobe Creative Suite by enrolling in monthly or yearly plans (whichever you choose). This will give you access to the Adobe tools required for this course. For more information on subscription to the Adobe Creative Cloud visit: <http://www.adobe.com/ca/products/creativecloud.edu.html>

- There are a variety of software and multimedia files available for download in the course introduction page (Module 0). These files will also be made available on laboratory computers as well. These image, video, and software files, including files needed to complete projects and course practice exercises are compressed using the free utility 7zip. Therefore, you will need to install 7zip in order to properly view these downloaded archives. In addition, you will be submitting a few of your laboratory projects using 7zip. To download 7zip visit <http://7-zip.org/>
- Assigned readings and laboratory exercises 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, lab exercises, etc.) will be posted to the MUOnline <http://www.marshall.edu/muonline>

Desired Objectives/Outcomes:

This course is designed to apply the concepts of digital forensic analysis to that of forensic image analysis and enhancement. This course places a strong emphasis on digital forensic procedures, digital forensic tools, and legal issues relating to digital imaging and forensic video analysis. This course uses advanced forensic tools and hands on exercises to emphasize the procedures that students will utilize in the field as forensic investigators.

Upon completion of this course students will be able to:

Course Learning Outcome	How Practiced in this class	How assessed in this Course
▪ Identify and define professionally and legally accepted methodologies, standards, and best practices for the forensic processing of video and image evidence.	▪ Identification and explanation of SWGDE, SWGIT, LEVA, and NIST standards and best practices.	▪ Completion of Module 1- Introduction to Forensic Image & Video Analysis
▪ Analyze and apply the correct forensic tool, technique, or methodology to enhance, archive, and print a digital mage without compromising its authenticity as evidence. Analyze and apply the correct advanced tool, technique, or methodology to enhance, archive, and print a digital mage without compromising its authenticity as evidence	▪ Application of various forensic enhancements to forensic images using various forensic tools and software	▪ Completion of Module 2- Forensic Image Analysis
▪ Analyze and properly apply the correct forensic tool, technique, or	▪ Application of various advanced-level forensic enhancements to forensic	▪ Completion of Module 3- Forensic Video Analysis

methodology to enhance, investigate, and generate/render enhanced video evidence without compromising its authenticity as evidence	video using various forensic tools and software	
Compare and contrast image and video evidence utilizing scientific methodologies, standards, and best practices.	Comparison of questioned vs. known images and patterns and articulating findings of that comparison.	Completion of Module 4- Forensic Image & Video Comparison
- Develop and articulate forensic image and video enhancements and comparisons in a forensic report format. - Construct a courtroom presentation that is legally acceptable in a court of law	- Creation of a comprehensive forensic report that adheres to certain forensic best practices and standards. - Construction of a courtroom presentation that illustrates forensic comparisons made in an investigation	Completion of Module 5- Forensic Reporting & Courtroom Presentations- Putting it All Together, Final Laboratory Project

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:

Regular attendance in this class is crucial to your success as a student. The only way to benefit from class discussions and hands-on learning activities is to be here. Being present and on time for all class meetings is expected. Period. Excused absences include: 1) University-sponsored academic activities (performing arts, debate and individual events, honors classes, ROTC); official athletic events; other university activities (student government). 2) Student Illness or Critical Illness/Death in the Immediate Family:” Immediate Family” is defined as a spouse/life partner, child, parent, legal guardian, sibling, grandparent or grand- child. *Routine doctor appointments are not excused. Appointments should be scheduled around your classes. 3) Short-Term Military Obligation. 4) Jury Duty or Subpoena for Court Appearance and 5) Religious Holidays. It is the student’s responsibility to provide appropriate documentation to Dean of Student Affairs or the instruction for excused absence. Learn how the process works here: <http://www.marshall.edu/student-affairs/excused-absence-form/> The student should also request opportunity to complete missed work immediately upon return to class. Be aware that excessive absences—whether excused or unexcused—may affect your ability to earn a passing grade. Regardless of the nature of the excused absence, you are responsible for completing all

coursework prior to the end of the semester.

Assignment Submission & Late Policy:

Laboratory Exercises and other in-class labs 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.

All electronic submissions MUST follow this file naming convention:

FSC605_LastName_FirstInitial_Assignment Name.7z ("FSC605_brunty_j_lab1.7z")

Course Requirements & Grading Policy:

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

Laboratory Projects (50%) – There are a total of five (5) laboratory projects due during this course. Every Module (with the exception of Module 0) has an associated laboratory project. These projects are due on the Module due date (see below). Laboratory projects 1-4 are worth 50 points. The Final Laboratory Project is worth 100 points. The final laboratory project will be a capstone case-based scenario that will require the submission of both a report and court testimony.

Exams 1 & 2- Written Midterm Examination (50%) – There are a total of two (2) exams administered during the semester (please see syllabus for exam date). Each of these exams will be worth 100 points and 25% of your overall grade. Study guides will be given in advance of each exam.

The above categories will be graded as follows:

Laboratory Exercises (x 5)	50%
Exam #1	25%
Exam #2	25%
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										
Laboratory Exercises (average)		X .50 =											
Exam #1		X .25 =											
Exam #2		X .25 =											
Final letter grades are calculated using the following scale:		Final Grade (out of 100)											
<table><tr><td>90-100</td><td>A</td></tr><tr><td>80-89</td><td>B</td></tr><tr><td>70-79</td><td>C</td></tr><tr><td>60-69</td><td>D</td></tr><tr><td>Below 60</td><td>F</td></tr></table>				90-100	A	80-89	B	70-79	C	60-69	D	Below 60	F
90-100	A												
80-89	B												
70-79	C												
60-69	D												
Below 60	F												

There will be a number of out-of-class labs and in-class hands-on assignments as part of this course. As such, you will be given card access to the Digital Forensics Laboratory (WAEC 1232) to work on assignments and practice labs when classes aren't in session. Open lab schedules will be posted during the first or second week of classes. If you do not have an RFID-enabled access card you can obtain your first one free-of-charge from the campus ID office located on the first floor of Drinko Library. In addition, you will also need to complete the required COS IT Conduct form before the end of the first week of classes online by visiting <http://www.marshall.edu/cosweb/agreements/?a=j3qw3> Usage of the computers and course files will not be permitted until the online form is completed.

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).

If you need to schedule an office-hours appointment with me (career guidance, help with lab projects, etc.) you can stop by during my office hours or you can schedule an appointment with me anytime by visiting: <https://calendly.com/joshbrunty/studentmeeting>

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 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 and/or classes are cancelled. Lab Projects, etc. are listed in the notes section. Labs must also be completed by 11:59PM on the Friday as they appear on the schedule below.

Module 0: Course Introduction	
Module 1: Introduction to Forensic Image & Video Analysis (1/8-1/12)	
Lab	No Lab Due
Module 1: Introduction to Forensic Image & Video Analysis Cont. (1/15-1/19)	
Lab	Lab Project 1 Distributed
Module 2: Forensic Image Analysis- Basic Enhancements (1/22-1/26)	
Lab	No Lab Due
Module 2: Forensic Image Analysis- Advanced Enhancements (1/29-2/2)	
Lab	Lab Project #1 Due
Module 2: Forensic Image Analysis- Advanced Enhancements Cont. (2/5/2/9)	
Lab	Lab Project #2 Distributed
Exam #1	
Module 3: Forensic Video Analysis (2/12-2/16)	
Lab	No Lab Due
Note:	Exam #1- Tuesday 2/13

No Class- AAFS Meeting (2/19-2/23)	
Note:	No Class 2/20 & 2/22 (AAFS Meeting)
Module 3: Forensic Video Analysis Cont. (2/26-3/2)	
Lab	Lab Project #2 Due
Module 3: Forensic Video Analysis Cont. (3/5-3/9)	
Lab	Lab Project #3 Distributed
Module 4: Forensic Image & Video Comparison (3/12-3/16)	
Lab	No Lab Due
Spring Break (3/19-3/23)- No Class	
Module 4: Forensic Image & Video Comparison (3/26-3/30)	
Lab	Lab Project #3 Due
Module 4: Forensic Image & Video Comparison (4/2-4/6)	
Lab	Lab Project #4 Distributed
Exam #2	
Module 5:	
Forensic Reporting & Courtroom Presentations- Putting it all Together (4/9-4/13)	
Lab	No Lab Due
Note:	Exam #2- Tuesday 4/10
Module 5:	
Forensic Reporting & Courtroom Presentations- Putting it all Together (4/16-4/20)	
Lab	Lab Project #4 Due
Module 5:	
Forensic Reporting & Courtroom Presentations- Putting it all Together (4/23-4/27)	
Lab	Lab Project #4 Due
Final Exam Week (4/30-5/4)	
Final Exam	Final Presentations & Testimony (Time & Location TBA)