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| block m_cropped.gif | **Digital Forensics and Information Assurance 357Network Penetration and AttackCourse Syllabus**  |

 **Fall 2018
Instructor:** Bill Gardner, Assistant Professor
**Office:** WAEC 2005
**Email**: gardner62@marshall.edu
**Phone:** 304-696-2658
**Office Hours**: Monday 8 am - 11pm, Tuesday 11 am - 12 pm and 1 pm – 2 pm, Wednesday 9 am – 11 pm, Thursday 11 am - 12 pm and 1 pm – 2 pm, Friday 8 am – 11 am.

**Lab: Noon - 1:50 am, Lecture 9:30 pm – 10:45 pm, WEAC 1232**

**Course Description:**

Students will explore tools and techniques used to penetrate, exploit and exfiltrate data from computers and networks. – *Four (4) credit hours*

**Course Learning Objectives**

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| **Course Student Learning Outcomes** | **How students will practice each outcome in this Course** | **How student achievement of each outcome will be assessed in this Course** |
| **Demonstrate** the use of common tools used in penetration testing. | Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course. | Module 0, Laboratory Exercise 2, Laboratory Exercise 3, Quiz 1, Exercise 3, Exercise 4, Midterm Project, and Final Project |
| **Explain** what a penetration test is and how it is used to secure networks. | Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course. | Writing Assignment 1, Laboratory Exercises, Midterm Project, and Final Project |
| **Describe** how vulnerabilities are found and how they can impact the financial bottom line of a typical organization | Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course. | Module 4, Laboratory Exercise 2, Exercise 3, Exercise 4, Midterm Project, and Final Project |
| **Demonstrate** the use of the Penetration Testing Execution Standard in penetration testing. | Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course. | Module 4, Laboratory Exercise 2, Laboratory Exercise 3, Quiz 1, Exercise 3, Exercise 4, Midterm Project, and Final Project |
| **Recognize** the difference between penetration testing and vulnerability assessment. | Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course. | Laboratory Exercise 3, Module 4, Exercise 4, Midterm Project, and Final Project |

**Required Textbooks:** Penetration Testing: A Hands-On Introduction to Hacking, First Edition by Georgia Weidman, No Starch Press (June 2014), ISBN: 978-1-59327-564-8

Google Hacking For Penetration Testers, Third Edition by Johnny Long, Bill Gardner, and Justin Brown, Syngress (December 2015), ISBN: 978-0-12-802982-4

# Required Software

# We will be using the Top Hat ([www.tophat.com](http://www.tophat.com/)) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message.

# You can visit the Top Hat Overview (<https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide>) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

An email invitation will be sent to you by email, but if don’t receive this email, you can register by simply visiting their course website:

# Note: our Course Join Code is 789918

# Top Hat will require a paid subscription, and a full breakdown of all subscription options available can be found here: [www.tophat.com/pricing](http://www.tophat.com/pricing).

# Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in-app support button, or by calling 1-888-663-5491.

**Topics and Methodologies:**

The following outline delineates the tentative class schedule with topics to be addressed during the course.

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| **Week** | **Topics** |
| Week 1 | Module 0 - Introduction and Virtual Machines |
| Week 2 | Module 1- What is Penetration Testing – Industry 4.0 with RCBI |
| Week 3 | Module 2- Recon |
| Week 4 | Module 2­ Recon |
| Week 5 | Module 3­Scanning |
| Week 6 | Module 4­ Exploitation |
| Week 7 | Module 4­ Exploitation  |
| Week 8 | **Midterm Exam**, Module 4­ Exploitation – DerbyCon  |
| Week 9 | Module 5­ Social Engineering |
| Week 10 | Module 6­ Web-Based Exploitation |
| Week 11 | Module 7­ Maintaining Access |
| Week 12 | Module 7­ Maintaining Access |
| Week 13 | Module 8- Wrapping up the Penetration Test |
| Week 14 | Module 8- Wrapping up the Penetration Test |
| Week 15 | Module 8- Wrapping up the Penetration Test |

**Assignments:**

Students are expected to keep up with all assignments.

**Grading Rubric**

90-100%          = A     = sustained creative and critical inquiry of subject

90-89%            = B     = usually creative and critical inquiry of subject

70-79%            = C     = substantial understanding and integration of material

60-69%            = D     = adequate general understanding of material

00-59%            = F     = below what is expected of a undergraduate student

In this course you will be given hands-on exercise and writing exercises to complete. In some cases you might have problem completing the assignment because of technical issues. It is important that you document all the steps in the exercise and document what didn’t work for you as well as what did work for you. Complete and well-written documentation is a key part of this course.

**Exams:**

There are two exams: the Midterm and the Final. They cover all the course material to that particular point.

**Evaluation Method:**

Course grades will be based on a total points system. Your grade will be based on a percentage of the total points possible.

**Course Point Distribution**

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| Midterm Project | 200 pts |
| Final Project | 200 pts |
| Lab Exercises/Quizzes | 200 pts |

**Total Points Possible: 600 points**

**Grading Policy:**

Instructor reserves the right to adjust these values based on the overall class performance. Student materials and grades will be returned as soon as graded to the student and can be viewed via MUOnline

**Example:**

**Total 578 points**

**578 divided by 600 = 0.961. In the example your grade would be 96%**

**Grading: Final letter grades will be based on the following scale:**

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

**In the above example your final grade would be 96, which would be a A.**

**Grading Policy:**

Instructor reserves the right to adjust these values based on the overall class performance.

**UNIVERSITY POLICIES:** [**http://www.marshall.edu/academic-affairs/policies/**](http://www.marshall.edu/academic-affairs/policies/)

**Important Dates:** <http://www.marshall.edu/academic-calendar/academic/spring2018/>

**Attendance Policy**

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| 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**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 Obligation4. Jury Duty or Subpoena for Court Appearance5. Religious Holidays**Student’s Responsibility**· Provide appropriate documentation to Dean of Student Affairs for excused absence. Learn how the process works here: <http://www.marshall.edu/student-affairs/excused-absence-form/>· 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**. **Make-up work for Excused Absences** Because this course is an interactive class, students who miss class due to University-excused activities will be provided with an alternative assignment that connects to the activities in the missed class session.**UNEXCUSED ABSENCES**· If you miss two classes, I will issue a warning.· If you miss a third class you will receive an automatic letter grade deduction in the course.· Subsequent missed classes will result in an additional letter grade deduction for each absence.· You are responsible for keeping track of your attendance for the course. · If you have questions or problems please contact me.  |

**Class Grade Appeals:**

Should you wish to appeal a grade, test question, etc, you MUST follow this procedure. You should send an email to me. The title of the email must read “GRADE APPEAL – Assignment Name” (i.e. Storage Quiz, Mid-Term, 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 Blackboard, 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.

**Electronic Submission Format:**

File Names: All electronic submissions must follow this file naming convention: DFIA357\_Last Name\_First Initial\_Assignment Name.doc Example: DFIA357\_gardner\_b\_researchpaper.doc

**Communications**

Private E-mail will be used to make any general announcements, last minute changes, etc. It is ***mandatory*** that you monitor your email messages at least once a day. ***PLEASE ONLY USE MY MARSHALL EMAIL ADDRESS FOR CORRESPONDENCE:*** gardner62@marshall.edu.

**Disclaimer**

The instructor reserves that right to modify the course schedule and evaluation system should it become necessary for the effective conduct of the course.

**COS IT Agreement**

You must agree to the COS IT Agreement to access the labs in the course: [http://www.marshall.edu/cosweb/agreements/?a=j3qw3](http://www.marshall.edu/cosweb/agreements/?a=j3qw3" \t "_blank).

**COS Software Store**

The College of Science and Marshall University 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 COS 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 COS courses. You can find this information and more on the COS Web site at <http://www.marshall.edu/cos/software/>

**Social Networking:**

Follow me on: Facebook: https://www.facebook.com/oncee Twitter: @oncee Linkedin: www.linkedin.com/in/304blogs/

**Other Twitter accounts to follow:**

Twitter:: @MUDigForensics and @AppyIDE

**Other websites of interest:**

Appalachian Institute of Digital Evidence - <http://www.appyide.org>

Department of Forensic Sciences - <http://www.marshall.edu/forensicsciences/>