|  |  |
| --- | --- |
| block m_cropped.gif | **Digital Forensics and Information Assurance 454Network DefenseCourse Syllabus**  |

 **Spring 2017**

**Instructor:** Bill Gardner, Assistant Professor
**Office:** WAEC 2005
**Email**: gardner62@marshall.edu
**Phone:** 304-696-2658
**Office Hours**: **10:00 am – 11 am and 1:00 pm – 2:00 pm MWF, 10:00am – 12:00 pm TTh**
 **Textbooks**

# *The Dissecting The Hack: The Forb1dd3n Network*. Jayson Street, Kent Nabors, Brian Baskin. Syngress; 1st edition (July 15, 2010). ISBN-13: 978-1597495684

# *Building an Information Security Awareness Program*. Bill Gardner Valerie Thomas. Syngress; 1st edition (August 7, 2014). ISBN-13: 978-0124199675

**Course Description**

DFIA 454 examines the basics of Network Defense. During the semester we will take an in-depth look at the components that make up Network Defense, as well the steps and technical tools used by network attackers and network defenders, as well as case studies to illustration the techniques used by both groups.

**Credit**The course is four (4) credit hours.

**Pre/co-requisites**
None

**Computer Requirements:** Students will need to install virtualization software on their computers to complete this course. Students should also have a basic knowledge of Linux and basic Linux commands.**Course Learning Objectives**

|  |  |  |
| --- | --- | --- |
| **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** |
| Students will **Apply** the principles the principles the Network Defense to properly secure networks. | Learning Modules 5, 7, 8, 9, 12, 14: Low Stakes writing assignments, Lab exercises, and Class forums | Module 5 - Lab 5; Module 7 – Hacking 3DNF Project; Module 8 – Writing Assignments, Lab 8, Midterm; Module 9 – Writing Assignment, Lab 9, Final; Module 12 – Writing Assignment, Lab 12, Final; Module 14 – Writing Assignment, Final. |
| Students will effectively **identify** and **explain** the network attacks and proper defenses.  | Learning Modules 4, 5, 8, 11, 12, 13, 14, 15: Low Stakes writing assignments, Lab exercises, and Class forums | Module 4 – Lab 4, Midterm; Module 5 - Lab 5, Midterm; Module 8 – Writing Assignments, Lab 8, Midterm; Module 11 – Discussion Board, Lab 11, Final; Module 12 – Writing Assignment, Lab 12, Final; Module 13 – Writing Assignment, Lab 13, Final; Module 14 – Final; Module 15 – Writing Assignment, Lab 15, Final. |
| Students will effectively **identify** and react to network attacks | Learning Modules 4, 5, 8, 11, 12, 13, 14, 15: Low Stakes writing assignments, Lab exercises, and Class forums | Module 4 – Lab 4, Midterm; Module 5 - Lab 5, Midterm; Module 8 – Writing Assignments, Lab 8, Midterm; Module 11 – Discussion Board, Lab 11, Final; Module 12 – Writing Assignment, Lab 12, Final; Module 13 – Writing Assignment, Lab 13, Final; Module 14 – Final; Module 15 – Writing Assignment, Lab 15, Final. |
| Students will **demonstrate** the ability to identify best practices and tools used to defend networks. | Learning Modules 4, 5, 6, 7, 8, 11, 12, 13, 14, 15: Low Stakes writing assignments, Lab exercises, and Class forums | Module 4 – Lab 4, Midterm; Module 5 - Lab 5, Midterm; Module 6 – Discussion Board, Lab 6, Midterm; Module 7 - Hacking 3DNF Project; Module 8 – Writing Assignments, Lab 8, Midterm; Module 11 – Discussion Board, Lab 11, Final; Module 12 – Writing Assignment, Lab 12, Final; Module 13 – Writing Assignment, Lab 13, Final; Module 14 – Final; Module 15 – Writing Assignment, Lab 15, Final. |
| Students will **identify**, **defend**, and **manage** threats against digital information. | Learning Modules 1, 2, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15, 16: Low Stakes writing assignments, Lab exercises, and Class forums | Module 1 – Quiz 1, Lab 1, Midterm; Module 2 – Lab 2, Quiz 2, Midterm; Module 3 – Writing Assignment, Lab 3, Midterm, Module 4 – Lab 4, Midterm; Module 5 - Lab 5, Midterm; Module 6 – Discussion Board, Lab 6, Midterm; Module 7 - Hacking 3DNF Project; Module 8 – Writing Assignments, Lab 8, Midterm; ; Module 9 – Writing Assignment, Lab 9, Final; Module 11 – Discussion Board, Lab 11, Final; Module 12 – Writing Assignment, Lab 12, Final; Module 13 – Writing Assignment, Lab 13, Final; Module 14 – Final; Module 15 – Writing Assignment, Lab 15, Final; Module 16 – Writing Assignment, Final. |
| Students will **Identify** key figures, conferences and concepts in hacker culture | Learning Modules 2,16: Low Stakes writing assignments | Module 2 – Lab 2, Quiz 2, Midterm; Module 16 – Writing Assignment, Final. |

 **Course Schedule**

**Week 1 - Learning Module 1 – Why Defend Networks (Threats)**

**Week 2 - Learning Module 2 – The Forb1dd3n Network**

**Week 3 - Learning Module 3 – Recon – Social Networking**

**Week 4 - Learning Module 4 – Recon – Google Hacking and Learning Module 5 – Recon – Deep Web Searching**

**Week 5 - Learning Module 6 – Recon – Physical Surveillance**

**Week 6 - Log Analysis and Module 7 - Recon - Do It Yourself: Hacking 3DNF (Project) Week 7 - Module 8 - Scan – Wardriving**

**Week 8 - Module 9 - Scan - Scanning Tools**

**Week 9 - Midterm and Module 10 - Explore - Authentication Security**

**Week 10 - Module 11 - Explore - Physical Security**

**Week 11 - Module 12 - Explore - Network Traffic Sniffing**

**Week 12 – Module 13 – Exploit - Social Engineering, Module 14 - Exploit - Email Security**

**Week 13 and Week 14 - Module 15 - Exploit - Metasploit**

**Week 14 and Week 15 - Module 16- Hacker Culture**

**Week 16 – Final Exam**

**Course Point Distribution**

|  |  |
| --- | --- |
| Midterm Exam  |  200 |
| Final Exam  |  400 |
| Project |  100 |
| Quizzes |  200  |
| Low Stakes Writing Assignments |  1,000 |
| Lab Exercises |  1,200 |
| **Total**  |  **3,100** |
|  |  |
|  |  |

Final letter grades are determined based on the following grading scale:

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

The following grading symbols are commonly used at Marshall University and will be used in this course:

|  |  |
| --- | --- |
| Grades | Description |
| **A** | Achievement of distinction |
| **B** | Competent and acceptable work |
| **C** | Below average performance, minimally competent work |
| **F** | Failure, given for unsatisfactory work |
| **“I”** | Incomplete |
| **“W”** | Withdraw |

**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

**COMMUNICATION**

The best way to contact me is via my email address: gardner62@marshall.edu. I will respond within 24 hours.

**UNIVERSITY POLICIES**

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs.

**Policy for Students with Disabilities**

Marshall University is committed to equal opportunity in education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disabled Student Services (DSS) in Prichard Hall 117, phone 304 696-2271 to provide documentation of their disability. Following this, the DSS Coordinator will send a letter to each of the student’s instructors outlining the academic accommodation he/she will need to ensure equality in classroom experiences, outside assignment, testing and grading.

The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, please visit http://www.marshall.edu/disabled or contact Disabled Student Services Office at Prichard Hall 11, phone 304-696-2271.

**Attendance Policy**

|  |
| --- |
| 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/catalog/undergraduate/ug_10-11_published.pdf>· 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 one letter grade deduction in the course.· We will conference to discuss your standing and develop a plan of improvement. If you meet its criteria, you may have the chance to earn back the letter grade deduction.· If you miss a fourth class, the previous letter grade deduction stands, regardless of improvement plan results.· Subsequent missed classes will result in an additional letter grade deduction for each absence.  |

# 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 our course website: https://app.tophat.com/e/442283

# Note: our Course Join Code is 442283

# 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.

**About Me**

My name is Bill Gardner, and I am an Assistant Professor at Marshall University where I teach in the Digital Forensics and Information Assurance program in the Integrated Science and Technology in the College of Science.  I am the coauthor of “Building an Information Security Awareness Program: Defending Against Social Engineering Hacks and Technical Threats”, and I am also the co-founder and an organizer of Hack3rcon based in Charleston, WV and past-president of the Appalachian Institute of Digital Evidence (AIDE) based in Huntington, WV.

I am an active member of the Information Security community where I'm known as oncee.

My goal in this and my other classes is to teach you the skills that you would need if you where applying for a job at my company. In this course you will learn real world skills that are in demand in today's job market.

For more detailed information me please visit my Linkedin profile at [https://www.linkedin.com/in/304blogs](https://www.linkedin.com/in/304blogs%22%20%5Ct%20%22_blank)

**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 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