



Integrated Science & Technology 454
Network Defense
Course Syllabus

Fall 2015

M 12:00 – 12:50, MWF 1:00 – 1:50

WEAC 1232

Instructor: Bill Gardner, Assistant Professor

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Office Hours: MWF 2 pm – 3 pm, WF 11 am – Noon, TTH 2 pm – 3 pm

Course Start Date August 24, 2015

Course End Date December 4, 2015

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: Defending Against Social Engineering and Technical Threats. Bill Gardner, Valerie Thomas. Syngress; 1st edition (July 7, 2014). ISBN-13: 978-012419967

Course Description

IST 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 three (4) credit hours.

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 10 - Module 12 - Explore - Network Traffic Sniffing
Week 11 – Module 13 – Exploit - Social Engineering, Module 14 - Exploit - Email Security
Week 11 and Week 14 - Module 15 - Exploit - Metasploit
Week 12 and Week 15 - Module 16- Hacker Culture
Week 12 – 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

Academic Dishonesty

All students should be familiar with the university’s policy concerning academic dishonesty. This policy can be found on pp. 66 - 68 of the undergraduate catalog http://www.marshall.edu/catalog/undergraduate/ug_10-11_published.pdf, or on pp. 61 – 63 in the 2009 online graduate catalog http://www.marshall.edu/catalog/graduate/S2009/gr_sp09_published.pdf. (Faculty are encouraged to add any additional information specific to their expectations and/or rules regarding academic dishonesty in their class).

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.

University Computing Services' Acceptable Use Policy:

All students are responsible for knowing this policy, which can be found on the web at <http://www.marshall.edu/ucs/CS/accptuse.asp>.

Affirmative Action Policy:

This course will follow Marshall University's policy on Affirmative Action, which can be found on p. 63 of the undergraduate catalog http://www.marshall.edu/catalog/undergraduate/ug_10-11_published.pdf, or on pp. 16-17 of the 2008 graduate catalog http://www.marshall.edu/catalog/graduate/S2009/gr_sp09_published.pdf. Specifically, all students will be afforded equal opportunity without regard to race, color, sex, religion, age, disability, national origin, or sexual orientation.

Important Dates: <http://www.marshall.edu/calendar/academic/fall2015.asp>

Absence from Final Exams Students are required to take all regular examinations. If a student attends a course throughout the semester and is absent from the final examination without permission, the instructor counts the examination as zero and reports the final grade of F. If the absence is the result of illness or some other valid reason beyond the student's control, the instructor reports a grade of I. In all cases, the student must verify the reason for the absence. (See "Incomplete" under Grades and Quality Points).

Rescheduling of Final Exams If a student has final exam conflicts or has three or more final exams scheduled for the same day, he/she should follow these steps:

- pick up a "Final Examination Rescheduling Form" from the major department or the college office;
- fill in the top part of the form in which he/she must show his/her complete final exam schedule;
- take this to the dean for verification;
- take the verified form to one of his/her class instructors and attempt to make a rescheduling agreement (date, time, place);
- if the student and instructor reach an agreement, the instructor should sign the form, keep a copy, and send a copy to the dean of the student's college;
- if an agreement cannot be reached, the instructor should note this fact and sign the form. In this case, the student should try to reach an agreement with the instructor of another class in conflict;
- if no instructors agree to reschedule and the student has all comments and signatures on the form, take the form to the Provost and Senior Vice President for Academic Affairs (OM 110);
- the Provost or designee will determine if an exam should be rescheduled and if so, the time, date, and place—the student and the instructor will receive written notice of any rescheduling;
- the Provost's ruling can only be modified by an agreement between the instructor and the student;
- if the student rejects a ruling by the Provost, he/she thereby agrees to take each exam at the scheduled time.

Note: the Provost will not consider any form submitted less than one week before the first day of finals, or any form that is incomplete. An instructor is not required to reschedule a final exam at the student's request.

Undergraduate Attendance Policy

Policy Statement:

Students are expected to attend punctually all class meetings, laboratory sessions, and field experiences and to participate in all class assignments and activities as described in the Course Syllabus. Absences are counted from the first class meeting after the student registers. Students registering late are expected to make up all missed assignments in a manner determined by the instructor. Students should be aware that excessive absences, whether excused or unexcused, may affect their ability to earn a passing grade.

The instructor of each class shall establish a policy on class attendance and make-up work, and provide the policy to students in the Course Syllabus. This policy must not conflict with university policies, including this policy. Class attendance may be a criterion in determining a student's final grade in the course if the instructor provides a statement to this effect in the course syllabus.

Students must promptly consult with their instructors about all class absences. Instructors will work with students to identify appropriate documentation and discuss any missed class time, test, or assignments.

Except in the case of University Excused Absences, it is the decision of the instructor to excuse an absence or to allow for additional time to make up missed tests or assignments. A student may not be penalized for an excused absence, provided that the student, in a manner determined by the instructor, makes up the work that has been missed.

Instructors are required to honor valid University Excused Absences and to provide reasonable and equitable means for students to make up work missed as a result of those absences. Academic obligations that cannot be made up should be addressed by the course instructor in consultation with the student to ensure that continued enrollment is feasible while there is still an opportunity to drop the course within the established withdrawal period.

This policy excludes academic endeavors that require the completion of a specific number of clock hours, such as clinical experiences and internships. For those courses, the department chair or program supervisor will determine the maximum number of absences. This policy does not supersede program accreditation requirements.

This policy also excludes laboratory courses that require significant preparation and monitoring. For such courses, departments will determine the minimum number of laboratories a student must complete to pass the course. If a student cannot complete this number of labs, the instructor may recommend that the student withdraw from the class.

If the instructor believes that the number of absences accrued under the terms of this policy (whether excused or unexcused) is such that a student cannot fulfill the learning experience and mastery that a course requires, the instructor may recommend that the student withdraw from the class.

University Excused Absences

These are addressed by the instructor or the Dean of Student affairs as described in each item. Appropriate documentation is required for each absence.

The Dean of Student Affairs will notify course instructors of his or her actions using the university e-mail system.

1) *University-sponsored activities.* Student participation in authorized activities as an official representative of the university. Such activities include official athletic events, ROTC, student government and student organization activities, regional or national meetings or conferences when endorsed by an academic or organization faculty advisor, performances, debates, and similar activities. The Dean of Student Affairs addresses these absences.

2) *Medical circumstances.*

a) A student who is briefly ill or injured with fewer than three consecutive hours of class (see (b) below), and is therefore

unable to attend class, should first consult with his or her course instructor about the absence. If necessary, the instructor may refer the student to the Dean of Student Affairs.

b) The Dean of Student Affairs will address absences of three or more consecutive hours of class. This includes absences of three consecutive one-hour class meetings, one three-hour class meeting, etc.

3) Death or critical illness of an immediate family member. Immediate family is defined as parents, legal guardians, siblings, children, spouse or life partner, grandparents, and grandchildren. The Dean of Student Affairs addresses these absences.

4) *Other official activities.*

a) Short-term military obligations. The Dean of Student Affairs addresses these absences. Students who are subject to federal military activation are covered by a separate policy. Please consult the catalog for this policy.

b) Jury duty, subpoenas for court appearance, religious holidays, and other official activities deemed by the Dean of Student Affairs to warrant an excused absence.

5) *Extreme personal emergencies.*

Examples of such events include house fires, serious crimes, and other grave emergencies deemed by the Dean of Student Affairs to warrant an excused absence

Dead Week

The last five class days of the fall and spring semesters are designated as “dead week.” During this period, instructors cannot give exams that count as 15% or more of the final course grade. They can assign major papers and/or projects which count as 15% or more of the final course grade ONLY if the assignment is stated in the course syllabus. Instructors can introduce new material and give make up exams during the Dead Week. Exemptions from this policy include night classes, laboratories, freshman English composition courses, and any classes meeting once a week. Dead Week is not applicable to Intersession or Summer Session.

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 were 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>