HACS 100

Foundations of Cybersecurity I

Fall 2013

Tuesday (lecture), 4:00 pm – 4:50 pm, BPS 0283
Thursday (discussion – 2 sections), 4/5:00 pm – 4/5:50 pm, PLS 1111

2 credits

Course Syllabus

Course Description: HACS 100 is the first interdisciplinary foundational course of the ACES program. Through lectures, lab activities, and discussions, students will learn and practice various aspects of cybersecurity. Weekly technical lectures will introduce students to the operating system UNIX. As a final project, students will partner with the Department of Information Technology to engage the University of Maryland community in a cyber-hygiene and cyber-ethics campaign based on the concepts learned in class.

Instructors: Dr. Michel Cukier

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Office hours: Tuesdays: 2:00pm-3:00pm or by appointment

Dr. Jandelyn Plane

Office: 1113 AV Williams

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Office hours: Wednesdays: 1:30-3:30 or by appointment

Readings:

On-line material – references provided during the semester.

Class Web Site:

Communication between instructor and students outside the classroom will take place primarily through CANVAS (http://elms.umd.edu/). Please visit the site regularly for assignments and announcements.

Backgrounds:

Students will come to ACES with a variety of backgrounds and academic interests. We see this as a tremendous strength and the key to solving the most challenging problems in cybersecurity. In practical terms, this means, however that students may be starting the course with different technical and non-technical skills. Part of our course agenda will be learning how to effectively work in teams with people who have different strengths and talents.

Schedule:

The class schedule is posted online. It is subject to updates as the semester proceeds. When the schedule is changed, an announcement will be posted.

Assessment:

The course grade will be calculated as follows:

Active engagement	15%
UNIX tools and cryptology exercises	40%
Ethics exercises	15%
Cyberhygiene campaign	20%
Service-based learning:	10%
TOTAL	100%

Homework Assignments:

There will be homework assignments on several class topics. Further instructions will be provided.

In exceptional circumstances (illness, university business, religious observances) extensions may be granted for assignments. However, all extensions must be approved by the instructor BEFORE the due date. Work that is handed in late without a university-accepted excuse will not receive credit and will not be graded.

Homework assignments will be posted online. Students should view homework assignments as learning experiences. You may consult with your classmates, but you must work on your homework individually. As a courtesy to the professor and the teaching assistant, solutions should be written neatly. It is important that you show all your work in order to receive full credit.

Project:

As part of a small group, students will select a cyberhygiene or cyberethics issue, and develop educational material (such as a poster or video) to inform the public about this issue. Students will present their project to the class, and the material will be made public to the UMD community. As part of the project, students must demonstrate their understanding of the ethics, policies, and technology surrounding the topic. The goal of the project is for students to engage with the community and communicate cybersecurity issues in a way that is relatable for students on campus.

Academic Integrity:

The University of Maryland, College Park has a nationally recognized code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduates and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information, please visit http://www.shc.umd.edu/.

Academic integrity is a foundation for learning. The University has approved a Code of Academic Integrity available on the web at http://www.testudo.umd.edu/soc/dishonesty.html. The Code prohibits students from cheating on exams, plagiarizing papers, forging signatures, etc. The Code is administered by a Student Honor Council, which strives to promote a community of trust on the College Park campus. Allegations of academic dishonesty can be reported directly to the Honor Council (314-8206) by any member of the campus community.

The University Senate requires that students sign this statement if it is included on an exam or assignment:

"I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment)."

Students with Disabilities:

If a student is eligible for and requesting academic accommodations due to a disability, the student is requested to provide to the instructor a letter of accommodation, prepared by the Office of Disability Support Services (DSS), before the end of the add/drop period of the semester. Visit http://www.counseling.umd.edu/DSS/ for more information on disability support.

Attendance:

Students are expected to attend all classes throughout the semester. Missing class will result in a loss of Active Engagement points. In special cases of medical emergencies and illnesses, religious observances, or University-approved participation in a University event, absences may be excused with no penalty.

Students who miss a single class for a medical reason must make a reasonable effort to contact their instructor in advance. If a prolonged absence of two or more weeks is expected due to an illness or medical emergency, the student must provide the instructor with medical documentation of the situation.

Students will not be penalized for participation in religious observances, and students will be allowed to make up academic assignments that are missed due to this type of absence. Students are responsible for notifying the instructor within the first two weeks of the semester, by email or in person during office hours, of projected absences during the semester.

For more information on UMD's attendance policies, refer to the Undergraduate Catalogue section on attendance.

Preliminary Course Calendar

WEEK 1

September 3
- Course intro, cybersecurity at UMD

September 5
- What is a honeypot; why are we learning UNIX

WEEK 2

September 10
- Cryptography basics (Freemason and other single substitution ciphers)

September 12
- Ways to explore cryptography, think about using UNIX to solve crypto

Visit Cryptography museum Saturday, Sept 14

WEEK 3

September 17
- Cryptography continued

September 19
- Ethics basics—why learn ethics; applying ethics to cybersecurity
- *Read: George Reynolds, Introduction, Ethics in Information Technology*

WEEK 4

September 24
- Introduction to UNIX

September 26
- NEThics guest lecture

WEEK 5

October 1
- UNIX command and directory structure

October 3
- Online privacy, social networks, web archives
- *Read: Reynolds, Case study in Ch. 9, Ethics in Information Technology*
- *Read: Yaverbaum, "Privacy? What's That?"*

WEEK 6

October 8
- Emacs editor

October 10
- Research tools with librarian

WEEK 7

October 15
- Emacs editor continued

October 17 Discussion
- Freedom of speech/expression, censorship online
- *Read: Reynolds, Case study in Ch. 5, Ethics in Information Technology*
- *Read: Viktor Mayer-Schonberger and Teree Foster, "A Regulatory Web: Free Speech and the Global Information Infrastructure" Borders in Cyberspace, Brian Kahin and Charles Nesson, 235-254*

WEEK 8

October 22
- I/O redirection

October 24 Discussion
- Freedom of information, intellectual property
- *Read: Boler, Megan, Digital Media and Democracy, intro*

WEEK 9

October 29
- Shell and controlled child processes

October 31 Discussion
- Academic planning and advising, project brainstorming
- *Bring 4-year plan worksheet*

WEEK 10

November 5
- Variables in C-shell programming

November 7
- In-class debate on cyber-law or court case, topic to be decided

WEEK 11

November 12
- C-shell programming continued

November 14
- Cyber crime, cyber protest
- Internet restrictions in U.S. and other cultures
- *Read: Karatzogianni, Athina, <u>The Politics of Cyberconflict</u> (chapter TBD)*

WEEK 12

November 19
- Conditionals in C-shell programming

November 21
- Presentation and communication skills workshop
- Work on projects in class

WEEK 13

November 26
- C-shell programming continued

November 30: Thanksgiving Break

WEEK 14

December 3
- Encrypting and Decrypting with UNIX

December 5 Discussion
- Project presentations

WEEK 15

December 10
- UNIX cryptology tools continued

December 12 Discussion
- Project presentations