



CyberWatch Overview



Sponsored by the National
Science Foundation



CyberWatch: An Advanced Technological Education (ATE) Center

- ▶ National Science Foundation
- ▶ Several supplemental grants
- ▶ Consortium members in 18 states + DC:
 - Community Colleges
 - Universities
- Numerous Agency/Industry partners





CyberWatch Mission and Goals

Mission: To improve the quality and quantity of the information assurance workforce

Goals:

- Curriculum Development
- Faculty Development
- Student Development
- K-12 Pipeline
- Dissemination and Outreach



Curriculum Development

- ▶ Virtual Lab –
Montgomery College
- ▶ Digital Forensics Lab
– University of Maryland
- ▶ CyberWatch
Underground – Bowie
State University



Online Access

- Virtual Lab, VMware, other virtual machines
- Online course modules
- Course sharing based on the MarylandOnline Quality Matters model
- Adoption of the Quality Matters rubric and regimen



Welcome to the Prince George's Community College
MHEC BRAC Information Security Grant.

The BRAC-Preparation Partnership for Expanding Information Security Capacity in Maryland provides a unified effort between education, government and community partners to increase the number of qualified individuals in the field of Information Assurance - Information Security. This collaborative venture between CyberWATCH Regional Center, Prince George's Community College, and MarylandOnline consists of three major components:

1. Converting current Information Security program courses to a MarylandOnline approved online format;
2. Developing an Information Security Management certificate program; and
3. Developing MarylandOnline approved courses for the Information Security Management certificate program.

These programs will provide participants with nationally-recognized credentials in Information Security that can be used at Fort Meade, Aberdeen Proving Ground, and other BRAC-impacted organizations.

The online distance education Information Security Certificate program and the NEW Information Security Management Certificate program at Prince George's Community College caters to the needs of working professionals.

Three IS certificates can be completed enroute to receiving the Prince George's Community College Information Security A.A.S. Degree.

Faculty Development



- ▶ Workshops/Institutes /Conferences, e.g.:
 - Certified Ethical Hacking
 - FTK/EnCase
 - Wireshark
 - Secure Programming
 - CISSP Training
- ▶ Island in Second Life for faculty training
- ▶ Faculty Graduate Program



Student Development

- ▶ Internships, Scholarships, Career Placements
- ▶ Student Competitions:
 - Mid-Atlantic Regional Collegiate Cyber Defense Competition (CCDC)
 - Digital Forensics Cup
 - Security Awareness Contest- IHE & K12



CCDC





Security Awareness Contest



WHAT'S IT ALL ABOUT?

The EDUCAUSE and Internet2 Higher Education Information Security Council, with sponsorship by the National Cyber Security Alliance (NCSA) and CyberWatch, is seeking creative and educational videos and posters on information security to be part of a national campaign to increase information security awareness at colleges and universities.

WHAT'S IT ALL ABOUT?

If your video or poster is selected you'll get exposure for your work on the EDUCAUSE security web site (educause.edu/security), from media announcements, and as part of campus security awareness campaigns across the country. And that's not all — winners receive cash prizes:

Gold:	Silver	Bronze:
\$1,500	\$1,000	\$500

WAYS YOU CAN PARTICIPATE:

- Training or instructional video (2 minutes or less)
- Public service announcement (PSA) (30 seconds or less)
- Poster

Submissions should address information security problems and/or suggest effective ways of handling them.

Deadline to enter: March 31, 2011

WANT MORE INFORMATION?

For topic suggestions or help, contact us.

Email: security-video@educause.edu

Web: educause.edu/securityvideocontest2011

Presented by:



Sponsored by:



CyberWatch K-12 Division



Davina Pruitt-Mentle, PhD



Sponsored by the National
Science Foundation



K-12 Programs

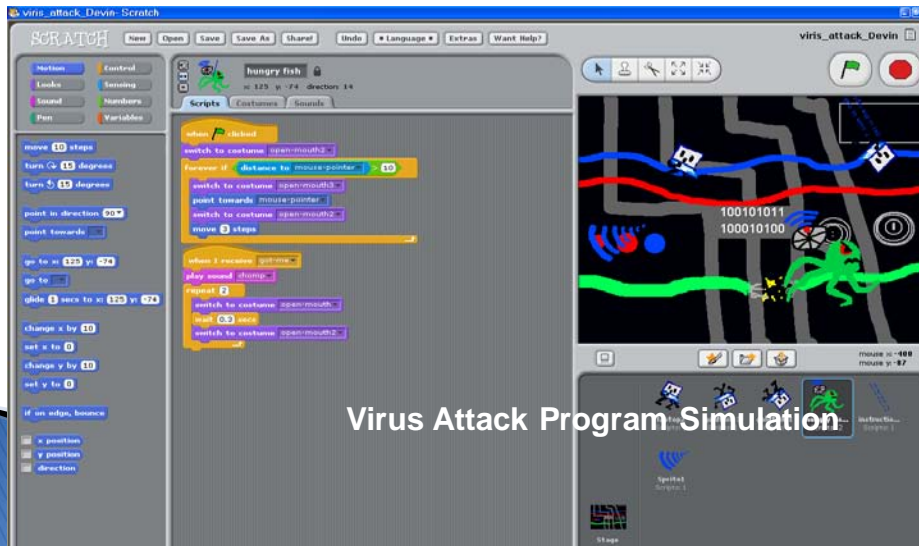


- ▶ **K-12 Division Goals include increasing:**
 - The IA workforce pipeline
 - Community awareness of IA workforce
 - Community awareness of C3-Cyberethics, Safety and Security, and
 - Security of K-12 IT systems



K-12 Program

- Informal after school programs
 - Mindtools (4-5)
 - JR. Cyberwarrior Program (6-8)
- Summer Cyberwarrior high school programs



High School Clubs
4H
Girl Scouts
Formal Lesson Plans

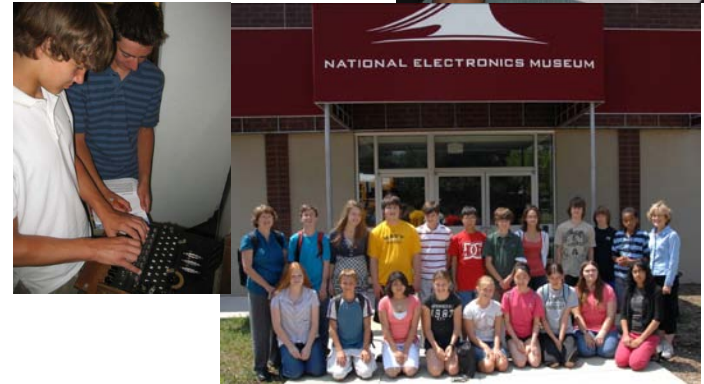
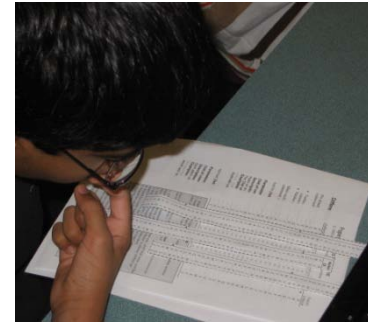


CW K12 Modules

5 Content Modules

- *Computational Logic/Programming—Scripting/Gaming/Simulations*
- *Cryptography*
- *Digital Ethics, Safety and Security*
- *System Vulnerabilities*
- *Digital Forensics*

- Grade bands 4–5, 6–8 and 9–12
- Tied to partnering school system math and science curriculum, students engage in hands-on STEM activities and improve digital literacy skills while learning and applying concepts through gaming, modeling and simulation development.
- Speakers and field trips
- The central focus is the field of IA, but it is supported by the too often neglected topics of citizen awareness of ethics, safety and security.



Programming	Cryptography	Digital Ethics, Safety and Security	System Vulnerabilities	Digital Forensics
Elementary School				
Intro to LOGO - MicroWorlds Interactive PPT Scratch Robotics I - RoboLab	Intro to cryptology & cryptanalysis Transposition cipher Invisible ink Substitution cipher (cipher wheels) NSA Codemakers Codebreakers	Password/passphrases Cyberbullying Who's Who Online Digital Footprints	Free iPod-Opening Attachments Pop Ups Password Guessing	Decoding/Debugging I/II MW programming Learning Binary Name in Computer "Talk"-Binary Numbers Bar coding Real or Unreal (Detecting scams)
Middle School				
Computational Logic MicroWorlds/Scratch Robotics II - Mindstorms Google SketchUp NetLogo Alice	Intro to cryptology & cryptanalysis Coding/decoding -out of the box Substitution cipher and letter/number frequency Cryptography Scavenger Hunt Geometric cipher	Passwords/Passphrases /cyberbullying Online Reputation Management Dangerous Uploads Security Clearances Copyright/Plagiarism Social Networks	System Upkeeps/Patching Phishing/ Pharming / Hijacking Password Cracking SNS Malware	Recognition of similar patterns Needle in a Hay Stack (where's the bad code)
High School				
Computational Logic II Rapture MicroWorlds/Scratch Python Programming in Excel StarLogo/NetLogo Alice Robotics III Mindstorms	Intro to cryptology & cryptanalysis Substation ciphers Paper Enigma Algebraic ciphers Intro Computer cryptography 2 key cryptography	Passphrases/patterns-encryption Cyberbullying Sexting Online Reputation Management Webcams/GoogleHacking Copyright/Plagiarism Security Clearances File Sharing/LimeWire Social Networks	Security Layering Firewalls Password Cracking II Ping/Trace Route Reconnaissance Wireshark Pasco Patterns SamSpade exercise	Deleted/Hidden Files SIM reader exercise Roadrunner SamSpade exercise FTK Imager Lite Encase (CWVDFL) Reverse Engineering Steganography /Digital Watermarking

Careers in IT/Field Trips/Speakers/Parents Materials/Labor stats-Projections/Pathways

CW K12 Content

Content Examples

Write your name in Computer Talk

The Alphabet in Binary Code

Letter	Binary Code	Letter	Binary Code
A	01000001	a	01100001
B	01000010	b	01100010
C	01000011	c	01100011
D	01000100	d	01100100
E	01000101	e	01100101
F	01000110	f	01100110
G	01000111	g	01100111
H	01001000	h	01101000
I	01001001	i	01101001
J	01001010	j	01101010
K	01001011	k	01101011
L	01001100	l	01101100
M	01001101	m	01101101
N	01001110	n	01101110
O	01001111	o	01101111
P	01010000	p	01110000
Q	01010001	q	01110001
R	01010010	r	01110010
S	01010011	s	01110011
T	01010100	t	01110100
U	01010101	u	01110101
V	01010110	v	01110110
W	01010111	w	01110111
X	01011000	x	01111000
Y	01011001	y	01111001
Z	01011010	z	01111010

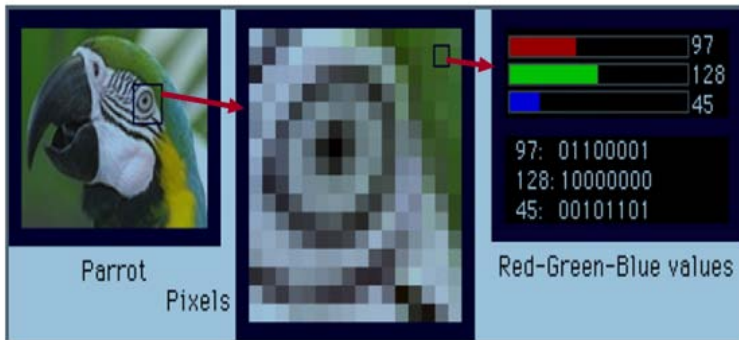
Decoding Bar Codes

63938200039 3



- Add together the value of all of the digits in odd positions (digits 1, 3, 5, 7, 9 and 11).
 $6 + 9 + 8 + 0 + 0 + 9 = 32$
- Multiply that number by 3.
 $32 * 3 = 96$
- Add together the value of all of the digits in even positions (digits 2, 4, 6, 8 and 10).
 $3 + 3 + 2 + 0 + 3 = 11$
- Add this sum to the value in step 2.
 $96 + 11 = 107$
- Take the number in Step 4. To create the check digit, determine the number that, when added to the number in step 4, is a multiple of 10.
 $107 + 3 = 110$
- The check digit is therefore 3.

Embedding Text in Pictures



http://www.roubaixinteractive.com/PlayGround/Binary_Conversion/Binary_to_Text.asp



- Send me a polite or write me a polite coded binary message
- dpruitt@umd.edu
- http://www.roubaixinteractive.com/PlayGround/Binary_Conversion/Binary_to_Text.asp

Content Examples

Can you tell the difference?



With your parents help

SOURCE: <http://mozaik.org/encrypt/> AND <http://mozaik.org/decrypt/>

wizardofoz1.jpg - JPEGsnoop

File Edit View Tools Options Help

```

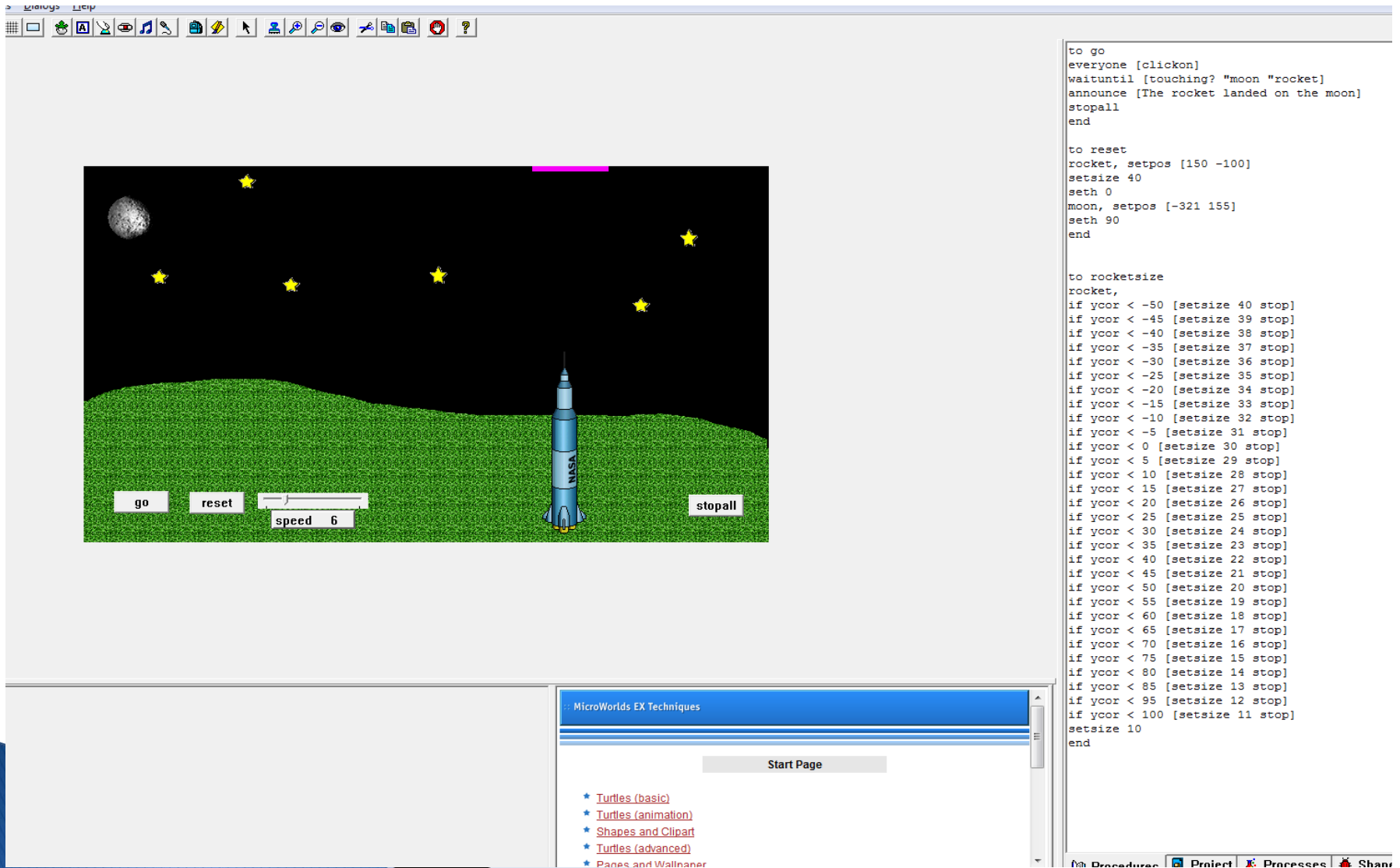
SW :[IJG Library      ]
The following IJG-based editors also match this signature:
SW :[GIMP            ]
SW :[IrfanView       ]
SW :[idImager        ]
SW :[FastStone Image Viewer ]
SW :[NeatImage       ]
SW :[Paint.NET       ]
SW :[Photomatix      ]
SW :[XnView          ]
Based on the analysis of compression characteristics and EXIF metadata:
ASSESSMENT: Class 1 - Image is processed/edited
This may be a new software editor for the database.
If this file is processed, and editor doesn't appear in list above,
PLEASE ADD TO DATABASE with [Tools->Add Camera to DB]
    
```

Done

File Manager

File Name	Size	Date Modified	File Type	Category	Subcat	C-Date	ModDate	Alt Date	I-Size	P-Size	Children	Devis
Camera-Jungle-01	4,192	2009-04-04	Image (JPEG)	Image					1,120	26,400	0	
Camera-Jungle-02	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-03	4,200	2009-04-04	Image (JPEG)	Image					4,200	26,400	0	
Camera-Jungle-04	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-05	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-06	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-07	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-08	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-09	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-10	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-11	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-12	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-13	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-14	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-15	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-16	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-17	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-18	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-19	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	
Camera-Jungle-20	4,196	2009-04-04	Image (JPEG)	Image					4,196	26,400	0	

Content Examples



The screenshot displays the MicroWorlds EX interface. The main workspace shows a rocket on a green field under a starry night sky. A control panel at the bottom left includes 'go', 'reset', a speed slider set to 6, and 'stopall' buttons. On the right, a code editor contains the following NetLogo code:

```

to go
  everyone [clickon]
  waituntil [touching? "moon "rocket]
  announce [The rocket landed on the moon]
  stopall
end

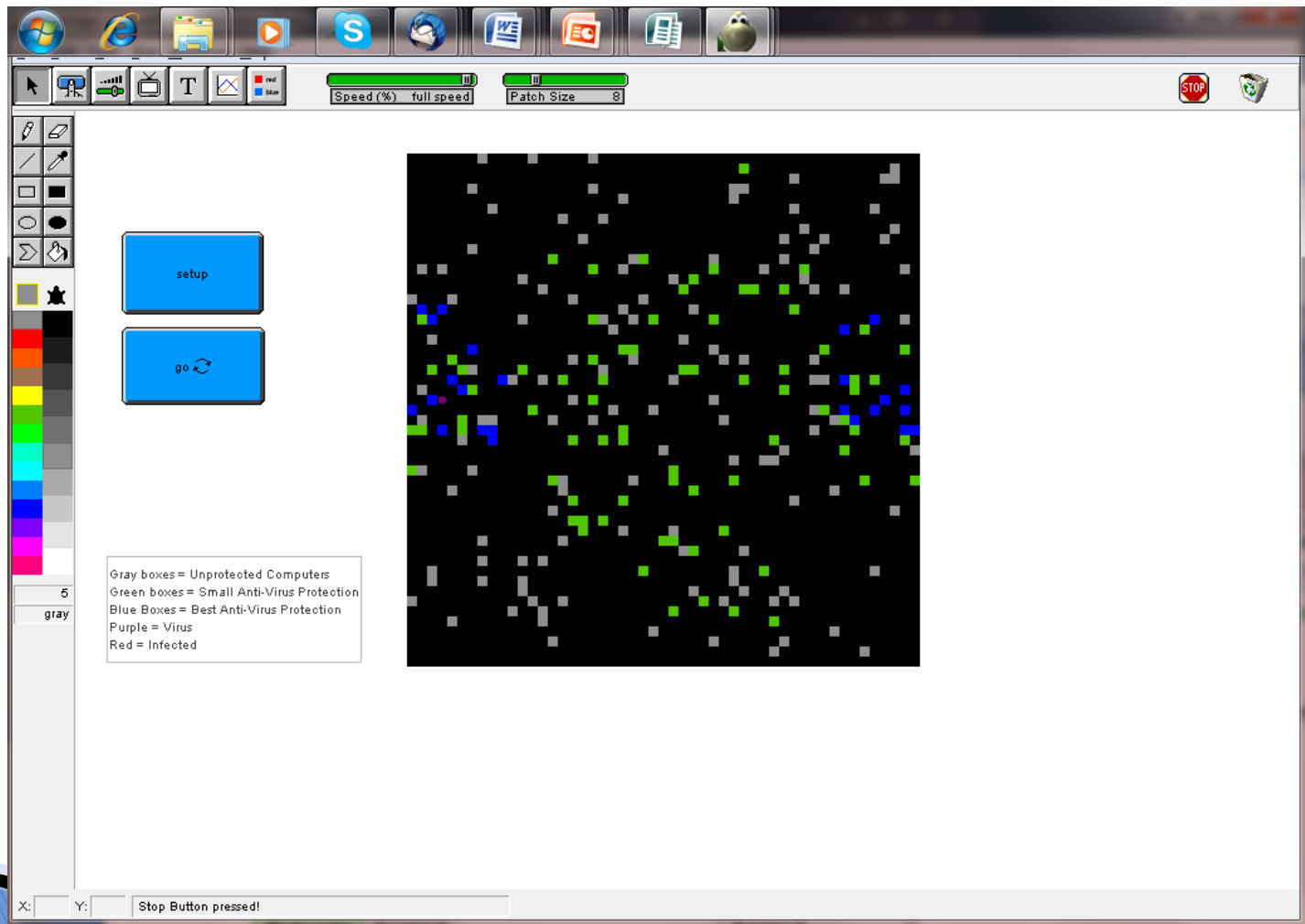
to reset
  rocket, setpos [150 -100]
  setsize 40
  seth 0
  moon, setpos [-321 155]
  seth 90
end

to rocketsize
  rocket,
  if ycor < -50 [setsize 40 stop]
  if ycor < -45 [setsize 39 stop]
  if ycor < -40 [setsize 38 stop]
  if ycor < -35 [setsize 37 stop]
  if ycor < -30 [setsize 36 stop]
  if ycor < -25 [setsize 35 stop]
  if ycor < -20 [setsize 34 stop]
  if ycor < -15 [setsize 33 stop]
  if ycor < -10 [setsize 32 stop]
  if ycor < -5 [setsize 31 stop]
  if ycor < 0 [setsize 30 stop]
  if ycor < 5 [setsize 29 stop]
  if ycor < 10 [setsize 28 stop]
  if ycor < 15 [setsize 27 stop]
  if ycor < 20 [setsize 26 stop]
  if ycor < 25 [setsize 25 stop]
  if ycor < 30 [setsize 24 stop]
  if ycor < 35 [setsize 23 stop]
  if ycor < 40 [setsize 22 stop]
  if ycor < 45 [setsize 21 stop]
  if ycor < 50 [setsize 20 stop]
  if ycor < 55 [setsize 19 stop]
  if ycor < 60 [setsize 18 stop]
  if ycor < 65 [setsize 17 stop]
  if ycor < 70 [setsize 16 stop]
  if ycor < 75 [setsize 15 stop]
  if ycor < 80 [setsize 14 stop]
  if ycor < 85 [setsize 13 stop]
  if ycor < 95 [setsize 12 stop]
  if ycor < 100 [setsize 11 stop]
  setsize 10
end
  
```

At the bottom, a navigation pane titled 'MicroWorlds EX Techniques' lists the following items:

- * [Turtles \(basic\)](#)
- * [Turtles \(animation\)](#)
- * [Shapes and Clipart](#)
- * [Turtles \(advanced\)](#)
- * [Pages and Wallpaper](#)

Content Examples



How to Tell if an E-mail is Real



Bank of United States

Dear Customer,

Unfortunately, your Online Access is locked Out.

To ensure your protection, we've now lock access to your accounts due to a miss-match of access code between your security details. You now need to verify your Identity. You won't be able to gain access to your accounts until you've done this.

To verify your identity, kindly follow the reference below and go to the directions to instant activation. This should take about five minutes.

<https://sitekey.blankoftheUSA.com/sas/@signonSetup.do>

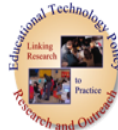
For more information on the Account Access Lock Out procedures please open the attached document.

Important Notice: You are strictly advised to match your Site-key Question and Answers correctly to avoid service denial.

As a token of our appreciation for promptly responding, we will send you an Apple iPod nano. You must respond within 1 hour of receiving this message to receive your Apple iPod nano.

Yours Sincerely,
Bank Of America
Online Banking Customer Service

Don't be Lazy About Encryption



- Process may vary depending on the version of Windows on any given machine
- EX: Windows XP
 - Open Windows Explorer
 - Right-click the file or folder that you want to encrypt, and then click **Properties**
 - On the General tab, click **Advanced**
 - Check the box that says, "**Encrypt contents to secure data check**"

How long to crack



- Assume 1 million attempts a second

Digits	Lower case (26)	Lower case + number (36)	Upper – Lower Numbers (62)
4	0.46 seconds	1.68 seconds	14.78 seconds
6	5.15 minutes	36.28 minutes	15.78 hours
8	58 hours	32.65 days	6.92 years



Simple Password Sniffing with Wireshark

What in the world is she saying???



Laure Casson, the narrator in the video, is talking about Transmission Control Protocol (TCP). This is one way computers talk to one another. The first thing that happens when computers want to talk to each other is called the handshake.

Establishing a connection (called the handshake): First the sender (the client) sends a SYN to the destination computer (the server) to see if it is listening. The server responds to the sender with a SYN+ACK which confirms that the destination computer is on and is listening. Then, the client sends an ACK back to the server to confirm it got the SYN+ACK.

What a human says:	Hello!	Hello! How U doing?	How U doing?
A Successful Connection			
What that sounds like in TCP talk	SYN	SYN+ACK	ACK

What a human says:	So?!?!? Are you listening to me!!!!	Did you even hear a word I said! <small>(repeats until she gets a response or just gives up because he just keeps talking to himself)</small>
An Unsuccessful Connection		
What that sounds like in TCP talk	SYN	[Wait 4 minutes for a SYN+ACK then give up]

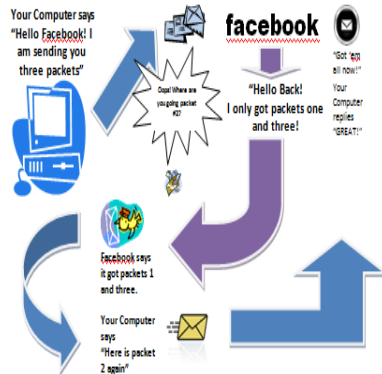
SYN (synchronization sequence numbers) → a notification from the sender to the receiver that this is the first packet of information

ACK (acknowledgement) → a message used in the Transmission Control Protocol (TCP) to acknowledge receipt of a packet.

Transmission Control Protocol (TCP) works on a sending computer and a receiving computer to make sure that everything that was sent was received. The sender is an application program (the client) – like Internet Explorer, Safari, Firefox, or the program you use for email – like Outlook or Thunderbird. So lets use your computer as the sender and the Facebook servers as the receiving server.



Your computer sends packets of information to the Facebook server. Then, as the Facebook server gets each packet, it sends a message back to your computer to say it got the packet (called an acknowledgement). It is possible for packets to get lost or come out of order. If your computer does not receive a confirmation that a packet was received, the TCP on your computer resends the lost packets. The TCP on Facebook's server deletes any duplicate packets it received and reorders all the packets when they all have arrived safely. All of this packet sending and receiving is called the TCP stream.

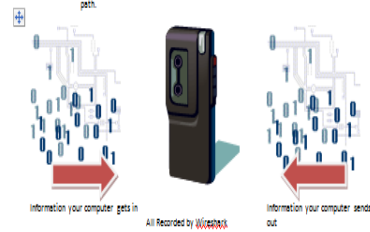


In the tutorial the instructor opens up a window to use File Transfer Protocol (FTP). FTP is a way for one computer to send a file to another computer. This system of sending files is an old one and has lots of security flaws. One of these flaws is that it sends passwords in clear text. However, more secure programs encrypt (converts your passwords to an unreadable form), however FTP sends the passwords just as you typed them – For anyone to read! However it is a great choice for this example because you will be able to see what the data from a Wireshark capture would look like if any of the programs (applications) you use were to send your passwords in clear text.



I send my passwords over clear text. If everyone knows my passwords, I have people to ask when I forget them!

There are several methods the instructor mentions if you want to look at network traffic other than on your own computer. This should only be done if you are a true forensic investigator, law enforcement, or a network administrator. This is because the Wireshark program has to be running on the computer where you are trying to capture the data. The program records all communications from your computer and all the communications into your computer so it has to be in the data path. Imagine Wireshark as the answering machine that records all calls in and out of your house or office building – the phone line is like a physical data path. The terms she used – network tap, hub out, span switch ports, or setting the wireless adapter to promiscuous mode (in addition to the Airport adapter which you have to pay for) – are only mentioned here so that it clarifies the jargon she uses to describe ways of putting the Wireshark program in the data path.



Now it is Your turn!

Watch the tutorial. Then...

Can you find the clear text passwords in the sample file?



Try it out!

- Open Wireshark from your thumb drive
 - Double click on the Wireshark Folder
 - Double click on the Wireshark Portable icon.
- Once the Wireshark program has launched
 - Click on File and select Open
 - Choose the SAMPLEDATA.ws file
- Review the file to find all the clear text passwords. If you need to watch the tutorial again, a copy is on your thumb drive.

List all the clear text passwords you find here:



If you have time, review the file to investigate which clients (applications or programs) are sending clear text passwords. Write the names of the programs next to the passwords

If this was your computer, what would you do?



K-12 Program



Annual Careers in IA/IS Guidance Counselors Workshop

Cool Careers in Cybersecurity for Girls

Educational Technology Policy, Research, and Outreach
8th Annual Cyberethics, Cybersecurity, and Cybersecurity Conference

October 1-2, 2009
 UMD Campus
 Directions and Parking

Home | Agendas | Workshop | Sponsors | Hotel & Travel FAQ's | Press | Awardees | Register

Sponsorship and Exhibitor Opportunities

- Connect with state and local school system decision makers
- Be recognized in the online and print conference program
- Share your organization's unique C3[®] initiatives

2009 C3[®] Conference a Success. Thanks for Attending.

Certificate of Participation
 Online Conference Evaluation
 Due Dec 7, 2009
 Content Evaluation
 Due Dec 7, 2009

2010 C3[®] Conference Information

Call for 2010 Presenters - Due May 10, 2010
 Call for Nominations: C3 Award of Excellence (Practitioner) - Due June 4, 2010
 2010 Grant Applications [RFPs] - Due December 7, 2009

- C3[®] Framework
- C3[®] Matrix

2009 Speakers

- Lyn Allen**
Web Wise Kids
- Joy Barsbach**
Maryland State Department of Education
- Mala Bauer**
Cyber Smart! Education
- Frank Gallagher**
Cable in the Classroom
- Bonnie S. Greenberg**
Project Safe Childhood Coordinator
- Todd Hulteen**
Common Sense Media

October 1-2, 2009 • University of Maryland Campus

The core mission of the C3[®] Conference is to inform the educational community about the ethical, legal, safety, and security implications of technology use and illustrate how educators and parents can apply these concepts to their own settings. Tutorial sessions include practical applications that can be immediately applied to your home or classroom setting.

Participants will hear from state and local educators, law enforcement, internet safety/security curriculum providers and researchers, and policy makers on a broad range of topics to include: current and pending legislation, educational initiatives available, the latest "hot topics" to include cyberbullying, identity theft and spoofing, internet safety provider updates, online reputation management, newly released online interactive simulations and games that promote responsible online behavior.

Cybersecurity
The Forgotten Element

Cybersecurity Word Cloud: GetNetWise, CyberSafety, InternetSafety, Malware, DigitalLiteracy, Sexting, WebWiseKids, CyberWatch, Cyberawareness, DigitalCopyright, IdentityTheft, WoogiWorld, Cyberethics, Curriki.org, FileSharing, S.H.A.K.T.I. Warrior, CyberSmart, Netmartz, ISAFE, CyberSecurity, Cyberbully.

Digital Footprints: Online Identity Management 2009 Fall STEM Coordinators Meeting

Davina Pruitt-Mentle, Ph.D.
 Director
 Ed Tech Policy, Research and Outreach

NSF

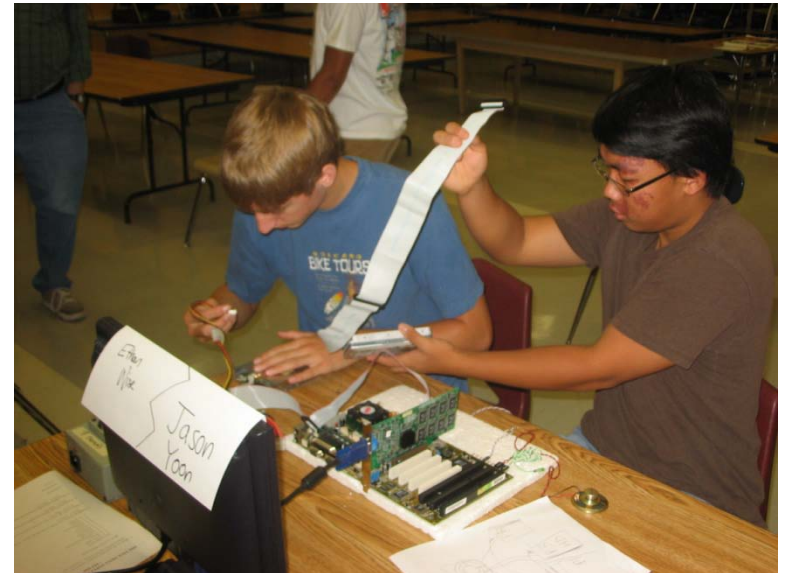
Annual C3 Conference

PD Opportunities and Speaking Topics



K-12 Pipeline: Saturation Model

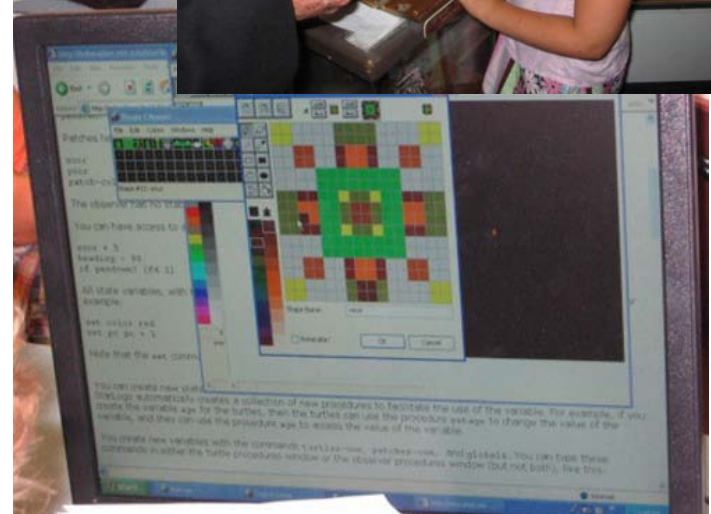
- ▶ [Cyberethics, Cybersafety and Cybersecurity \(C3\) Conference](#)
- ▶ Cool Careers in Cybersecurity for Girls Conference
- ▶ [Careers in IS/IA and Digital Forensics for Guidance Counselors Workshop](#)
- ▶ After School Elementary and Middle School (+parents)
- ▶ High School Summer Programs (+ parents)
- ▶ CW K12 Content
- ▶ Clubs





K12 Pipeline

- ▶ Teacher Cisco Academy Training Program
- ▶ Educator Training
- ▶ C3 Conference–C3 Awards and Grants
- ▶ Security Awareness Events





Research

- ▶ Social Learning Theory
- ▶ Engaging, interactive—hands-on or project based
- ▶ Sequential
- ▶ On-going or at minimum “booster” sessions
- ▶ Integrated
- ▶ Trained Educators
- ▶ “Community Development Model” buy in/ownership from stakeholders
- ▶ Multi-layers



What's Missing

2 Year → 4 Year



What's Missing

High School → 2 Year → 4 Year



High School Cybersecurity Track

- ▶ CW 130 Understanding Operating Systems
 - ▶ CW 160 Computer Security, Security+
 - ▶ CW 150/151 Networking—w/ some existing track course (Cisco 1 & 2)
 - ▶ CW 235 Network Defense and Countermeasures
-
- ▶ Some CW 110 Computer Ethics content and case studies will be included in Cybersecurity CTE IA track (can also make use of Simulation Case studies via NSF grant)

Foundation needed for:

CompTIA's Security certification

Apply credits IA A.A.S. degree

CCENT Cert

Cisco CCNA Preparation certificate

CISSP Prep Exam



Training



Sponsored by the National
Science Foundation



Dissemination and Outreach

- ▶ Presentations to academic conferences, government agencies, and industry associations
- ▶ Newsletters, news articles, and reports
- ▶ Speakers Bureau

All Designed To:

- ▶ Promote information assurance education at all levels
- ▶ Promote CyberWatch memberships and partnerships



GOOD TECH HABITS

Manage personal safety

Protect the privacy of others

Manage a positive personal reputation

Value relationships with others

Respect the ownership of intellectual property

Protect the technology used at school

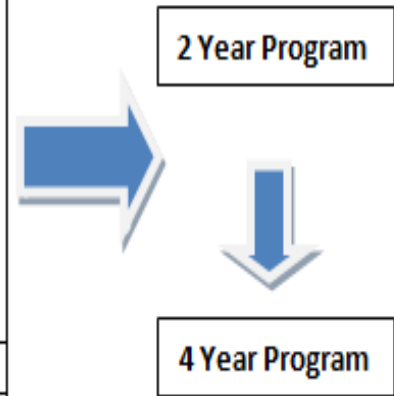




SECURE IT:

Strategies to Encourage Careers in Cybersecurity and IT

Elementary MINDTOOLS	Formal: Individual Classroom Activities	<i>JR. FIRST Lego League</i> <i>FIRST Lego League (FLL)</i> <u><i>eCYBERMISSION</i></u>
	Formal: Extension Units	
	Informal: After School Program	
Middle JR CYBERWARRIORS	Formal: Individual Classroom Activities	<i>FIRST Lego League (FLL)</i> <u><i>eCYBERMISSION</i></u> <i>Am Comp Sc League</i>
	Formal: Extension Units	
	Informal: After School Program	
High CYBERWARRIOR	Informal: Summer Program	<i>FIRST Tech Challenge</i> <i>FIRST Robotics</i> <i>Am Comp Sc League</i> <i>Image Cup</i> <i>High School CCDC</i> <i>Patriots</i> <i>Forensics Cup</i>
	CTE : IA Track	
Other Activities		<i>Parent Awareness</i> <i>Community Awareness</i> <i>Teacher Training</i> <i>K12 C3 Awareness Contest</i> <i>Cybersecurity Olympiad</i> <i>C3 Awareness grants</i>
Cool Careers in <u>CyberSecurity</u> for Girls Event		
C3: <u>CyberEthics</u> , Safety & Security Conference		
Careers in IS/IA and Digital Forensics for Guidance Counselors Workshop		





Thank You!



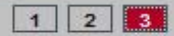
Expanding Knowledge in Cyber awareness and Careers in Cybersecurity

OUR PROGRAMS →

Summer High School CyberWarrior Courses in Full Swing

WHAT'S NEW

- **9th Annual C3 : Cyberethics, Cybersafety and Cybersecurity Conference.** October 7-8th , 2010
- **CW launches Phase II of SECURE IT Program**
- **Cybersecurity workshop for Girls Summit - National Electronics Museum**
- **Careers in IA/IS Digital Investigation for Guidance Counselors - September 30th**



PROGRAMS

We have a wide range of programs, content and activities for formal and informal settings. The central focus is IA content, but it is supported by the too often neglected topics of citizen awareness of ethics, safety and



WORKFORCE AWARENESS

C3 conference Annual GC Workshop Professional Development Speaker Sessions/Topics [More →](#)



C3 AWARENESS

C3 conference Professional Development Speaker Sessions/Topics [More →](#)



K12 IT SYSTEMS

Workshops are conducted at partner institutions on a variety of topics determined by our annual needs assessment survey. [More →](#)



CW Model IA Programs

- :: A.A.S. in Information Assurance
- :: A.S. in Information Assurance
- :: Certificate in Information Assurance
- :: Certificate in Information Assurance Management

Curriculum development emphasizes:

- ▶ building core technical skills
- ▶ meeting 4011 and/or 4013 standards
- ▶ help prepare for several industry certifications including:

- :: CompTIA's Network+ and Security+
- :: Cisco Certified Network Associate (CCNA)
- :: Microsoft Certified Professional (MCP)
- :: Security Certified Network Professional (SCNP)



Model A.A.S. Degree

	FIRST YEAR		SECOND YEAR	
Credit Hours	Semester 1	Semester 2	Semester 3	Semester 4
:: Technical Courses :: 43 credits	:: CW 110 - Ethics and the Information Age :: 3 credits	:: CW 150 - Networking 1 :: 4 credits	:: CW 250 - Networking 3 :: 4 credits	:: CW 235 - Network Defense and Countermeasures :: 3 credits
:: English :: 6 credits	:: CW 120 - Introduction to Computers :: 3 credits	:: CW 151 - Networking 2 :: 4 credits	:: CW 251 - Networking 4 :: 4 credits	:: Biological/Physical Sciences :: 3-4 credits
:: Mathematics :: 3-4 credits	:: CW 130 - Microcomputer Operating Systems :: 3 credits	:: CW 160 - Security+ :: 3 credits	:: CW 225 - Hardening the Infrastructure :: 3 credits	:: Social/Behavioral Sciences :: 3 credits
:: Arts and Humanities :: 3 credits	:: English: Composition 1 :: 3 credits	:: English: Composition 2 :: 3 credits	:: Technical Elective #1 :: 3 credits	:: Technical Elective #2 :: 3 credits
:: Health/Fitness/Wellness :: 3 credits	:: Mathematics :: 3-4 credits	:: CW 230 - Microsoft Windows Server 2003 :: 3 credits	:: Health/Fitness/Wellness :: 3 credits	:: CW 270 - Capstone :: 3 credits
:: Social/Behavioral Sciences :: 3 credits				
:: Biological/Physical Sciences :: 3-4 credits				
64-66 credits	15-16 credits	17 credits	17 credits	15-16 credits

A.A.S.

<i>First Year</i>		<i>Second Year</i>	
Semester 1	Semester 2	Semester 3	Semester 4
CW 110 Ethics and the Information Age	CW 150 Networking 1	CW 250 Networking 3	CW 235 Network Defense & Counter- measures
CW 120 Intro to Computers	CW 151 Networking 2	CW 251 Networking 4	Bio or Physical Science
CW 130 Operating Systems	CW 160 Security +	CW 225 Hardening the Infrastr'r	Social & Behavioral Science
Comp'n & Intro to Literature 1	Comp'n & Literature 2	CW Technical Elective 1	CW Technical Elective 2
College Algebra or Calculus	CW 230 Windows 2003 Server	PHE/HEA Health/ Fitness/ Wellness	CW 270 Capstone



Model A.S. IA Degree

	FIRST YEAR		SECOND YEAR	
Credit Hours	Semester 1	Semester 2	Semester 3	Semester 4
:: Technical Courses :: 40 credits	:: CW 110 - Ethics and the Information Age :: 3 credits	:: CW 150 - Networking 1 :: 4 credits	:: CW 250 - Networking 3 :: 4 credits	:: CW 235 - Network Defense and Countermeasures :: 3 credits
:: English :: 6 credits	:: CW 120 - Introduction to Computers :: 3 credits	:: CW 151 - Networking 2 :: 4 credits	:: CW 251 - Networking 4 :: 4 credits	:: Biological/Physical Sciences :: 3-4 credits
:: Mathematics :: 3-4 credits	:: CW 130 - Microcomputer Operating Systems :: 3 credits	:: CW 160 - Security+ :: 3 credits	:: CW 225 - Hardening the Infrastructure :: 3 credits	:: Social/Behavioral Sciences :: 3 credits
:: Gen Ed :: 6 credits	:: Composition and Introduction to Literature 1 :: 3 credits	:: Composition and Introduction to Literature 2 :: 3 credits	:: Gen Ed :: 3 credits	:: Gen Ed :: 3 credits
:: Health/Fitness/Wellness :: 3 credits	:: College Algebra or Calculus :: 3-4 credits	:: CW 230 - Microsoft Windows Server 2003 :: 3 credits	:: Health/Fitness/Wellness :: 3 credits	:: CW 270 - Capstone :: 3 credits
:: Social/Behavioral Sciences :: 3 credits				
:: Biological/Physical Sciences :: 3-4 credits				
64-66 credits	15-16 credits	17 credits	17 credits	15-16 credits

A.S.

<i>First Year</i>		<i>Second Year</i>	
Semester 1	Semester 2	Semester 3	Semester 4
CW 110 Ethics and the Information Age	CW 150 Networking 1	CW 250 Networking 3	CW 235 Network Defense & Counter- measures
CW 120 Intro to Computers	CW 151 Networking 2	CW 251 Networking 4	Bio or Physical Science
CW 130 Operating Systems	CW 160 Security +	CW 225 Hardening the Infrastr'r	Social & Behavioral Science
Comp'n & Intro to Literature 1	Comp'n & Literature 2	GenEd	GenEd
College Algebra or Calculus	CW 230 Windows 2003 Server	PHE/HEA Health/ Fitness/ Wellness	CW 270 Capstone



IA Certificate

	FIRST YEAR		SECOND YEAR	
Credit Hours	Semester 1	Semester 2	Semester 3	Semester 4
	:: CW 110 - Ethics and the Information Age :: 3 credits	:: CW 150 - Networking 1 :: 4 credits	:: CW 250 - Networking 3 :: 4 credits	:: CW 235 - Network Defense and Countermeasures :: 3 credits
	:: CW 120 - Introduction to Computers :: 3 credits	:: CW 151 - Networking 2 :: 4 credits	:: CW 251 - Networking 4 :: 4 credits	:: Technical Elective #2 :: 3 credits
	:: CW 130 - Microcomputer Operating Systems :: 3 credits	:: CW 160 - Security+ :: 3 credits	:: CW 225 - Hardening the Infrastructure :: 3 credits	:: CW 270 - Capstone :: 3 credits
		:: CW 230 - Microsoft Windows Server 2003 :: 3 credits	:: Technical Elective #1 :: 3 credits	
46 credits	9 credits	14 credits	14 credits	9 credits



IA/IS Management Certificate

Information Security Management Certificate

This certificate will help meet the needs of technical and security staff for both managing and implementing information security projects. Coursework may include basic computer operations, operating systems, security, cyber law, disaster recovery, project management and systems analysis. Students wishing to continue may apply these credits to the Information Security A.A.S. degree. Students are also encouraged to complete the Information Security Certificate and the Cisco CCNA Preparation Certificate offered by the Engineering Technology department.

All three certificates may be applied to the Information Security A.A.S. degree program. Support for this certificate program was obtained via the Maryland Higher Education Committee BRAC initiative.

CIS 1010 Computer Literacy	3
CIS 1700 Understanding Operating Systems	3
CIS 1620 Computer Security, Security+	3
CIS 2840 Systems Analysis and Project Management	4
Choose one of the following	
MGT 2860 Cyber Law	3
MGT 1900 Introduction to Public Administration	3
MGT 2880 Disaster Recovery and Risk Management	3

Total Required for Certificate

16 credits



SECURITY NEEDS

- ▶ “ Cybersecurity is one of the top priorities of the Department of Homeland Security and the federal government”
- ▶ “... The DHS plans to build the next generation of our cybersecurity workforce by committing resources to educating and training current employees [and] recruiting new talent.”
- ▶ “The unavailability of people with the right skills is a top challenge for security groups.”



President's 60 Day Cyberspace Policy Report

- ▶ “The United States should initiate a K–12 cybersecurity education program for digital safety, ethics, and security; expand university curricula; and set the conditions to create a competent workforce for the digital age.”



Cyberspace Policy Report

- ▶ Report suggests:
 - Initiation of a **national public awareness and education** campaign to promote cybersecurity risk awareness for all citizens;
 - Changes in the **educational system** that will help **enhance the understanding of cybersecurity** and allow the United States to retain and expand upon its scientific, engineering, and market leadership in information technology; and \
 - Development of educational opportunities and strategies that will **expand and train the workforce** to protect the Nation's competitive advantage, including attracting and retaining cybersecurity expertise in the Federal government

4011 Standings

<u>College</u>	<u>Mapped</u>	<u>Note</u>	<u>Curriculum</u>
Anne Arundel	100%	Accepted - 2006	Model
Balto Co	100%	Accepted - 2007	Modified
Chesapeake CC	0%	Pending Curriculum Dev	Model
Erie CC	0%	Curriculum Review – 2008	Undefined
Hagerstown	0%	Summer 08 Completion	Undefined
Harford	0%	Target - Summer 2008	Model
Howard	100%	Accepted – 02/08	Modified
Montgomery	0%	Summer 08 Completion	Modified
NVCC	100%	Accepted - 2007	Modified
Prince George's	100%	Accepted - 2007	Model
Southern MD	100%	Pending course offerings	Model

4013 Standings

<u>College</u>	<u>Mapped</u>	<u>Note</u>	<u>Curriculum</u>
Anne Arundel	100%	Approved	Model
Balto Co	0%	2008 Completion	Modified
Chesapeake CC	0%	Pending Curriculum Dev	Model
Erie CC	0%	Curriculum Review 2008	Undefined
Hagerstown	0%	2009	Undefined
Harford	0%	2009	Model
Howard	0%	2008 Completion	Modified
Montgomery	0%	2009	Modified
NVCC	0%	2008 Completion	Modified
Prince Georges	0%	2008 Completion	Model
Southern MD	0%	2008 Completion	Model

- Former chem/physics teacher
 - Worked at NRL—testing JP5 Jet Fuels--saw conn w/tech
 - MED sec sc and PhD ed tech policy
 - Dissertation: The relative utility of IT workforce and DL skills in transcultural community
-
- Taught at MD college of ed—integration of tech in classrooms—interest in standards—esp digital citizenship
 - created C3 course based on C3 framework
 - loud advocate for security—not on radar until a year ago (2009)
 - C3 framework---NCSA connection and working with NP groups (internet safety)
-
- Director and Sr researcher at ETPRO—one bucket--curr development and program evaluation of internet safety of tier 1 google—ikeepsafe—cybersmart—WWKids—Netsmartz etc.. And work with dept of ed
 - Other bucket is in STEM education
 - Also C3 baseline study and follow up—hope to do in 2010
 - Also CISSE chair K12—position paper
 - NCSA co-chair

