Post-Secondary Education Subcommittee

Thursday, February 23, 2017
10:00 AM
306 HOB

Action Packet

Richard Corcoran
Speaker

Elizabeth Porter
Chair

COMMITTEE MEETING REPORT

Post-Secondary Education Subcommittee

2/23/2017 10:00:00AM

Location: Mashburn Hall (306 HOB)

Summary: No Bills Considered

Committee meeting was reported out: Thursday, February 23, 2017 2:03:52PM

COMMITTEE MEETING REPORT

Post-Secondary Education Subcommittee

2/23/2017 10:00:00AM

Location: Mashburn Hall (306 HOB)

Attendance:

	Present	*Absent*	*Excused*
Elizabeth Porter (Chair)	X		
Larry Ahern	X		
Ramon Alexander	X		
Robert Asencio	X		
Bryan Avila	X		
Charles Clemons, Sr.	X		
Robert Cortes	X		
Thomas Leek	X		
MaryLynn Magar	X		
Amber Mariano	X		
Mel Ponder	X		
David Silvers	X		
Carlos Smith	X		
Richard Stark	X		
Jay Trumbull	X		
Totals:	**15**	**0**	**0**

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COMMITTEE MEETING REPORT

Post-Secondary Education Subcommittee

2/23/2017 10:00:00AM

Location: Mashburn Hall (306 HOB)

Presentation/Workshop/Other Business Appearances:

El-Sheikh, Eman (State Employee) - Information Only
University of West Florida
Director
11000 University Parkway
Pensacola FL 32514

Dyga, Peter (General Public) - Information Only
Associated Builders and Contractors Florida East Coast Chapter
President & CEO
3730 Coconut Creek Parkway Suite 200
Coconut Creek FL 33066
Phone: 954-984-0075

Sullivan, Dr. James (General Public) - Information Only
University of Florida
309 Rinker Hall PO Box 115703
Gainesville FL 32611
Phone: 352-273-1154

Wilkerson, Jennifer (General Public) - Information Only
NCCER
Director of MArketing
13614 Progress Boulevard
Alachua FL 32615
Phone: 888-622-3720 ext 6908

Kurtz, Stanley (General Public) - Information Only
Ethics & Public Policy Center, Wash, DC
Senior Fellow
1730 M. Street, NW Suite #910
Washington DC
Phone: 202-969-2467

Painter, Jim (General Public) - Information Only
Florida Concrete Masonry Education Council
Executive Director
PO Box 12018
Gainesville FL 32604
Phone: 407-988-4614

Buck, Douglas (Lobbyist) - Information Only
Florida Home Builders Association
Director of Government Affairs
2600 Centerville Place
Tallahassee FL 32308
Phone: (850) 402-1852

Committee meeting was reported out: Thursday, February 23, 2017 2:03:52PM

Location: Mashburn Hall (306 HOB)

Presentation/Workshop/Other Business Appearances: **(continued)**

Florida Construction Workforce Task Force
Duckworth, Rod (State Employee) - Information Only
Florida Department of Education
325 W. Gaines Street
Tallahassee Florida 32399
Phone: 8502450446

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UWF Multidisciplinary Cybersecurity Education Options

UWF is an NSA-DHS National Center of Academic Excellence in Cyber Defense Education

For more information:

UWF Center for Cybersecurity

http://uwf.edu/centers/center-for-cybersecurity/education/

cybersecurity@uwf.edu

Rev. 8-24-2016

Programs			
Name	**Department**	**Point of Contact**	**Delivery Mode**
BS in Computing and Information Sciences: Cybersecurity specialization ***NSA/DHS CAE-CDE approved program	Computer Science	**Dr. Sikha Bagui** bagui@uwf.edu	Blended
BS in Information Technology: Network Systems Operations specialization	Instructional Workforce and Applied Technology	**Dr. Nancy Hastings** nhastings@uwf.edu	Online
BA in International Studies: Security and Diplomacy concentration	Government	**Dr. Michelle Williams** mwilliams@uwf.edu	Face-to-Face
MS in Information Technology: Cybersecurity specialization	Computer Science	**Dr. Sikha Bagui** bagui@uwf.edu	Online
MS in Computer Science: Cybersecurity focus	Computer Science	**Dr. Sikha Bagui** bagui@uwf.edu	Blended
MA in Political Science: Security and Diplomacy concentration	Government	**Dr. Michelle Williams** mwilliams@uwf.edu	Blended
MBA: Information Security Management specialization	MBA Program	**Melissa Brode** mbrode@uwf.edu **Dr. Esmail Mohebbi** emohebbi@uwf.edu	Online

Certificates and Minors			
Name	**Department**	**Point of Contact**	**Delivery Mode**
Undergraduate Certificate in Cybersecurity	Computer Science	**Dr. Sikha Bagui** bagui@uwf.edu	Blended
Undergraduate Certificate in Geospatial Cybersecurity	Computer Science and Earth and Environmental Sciences	**Dr. Sikha Bagui** bagui@uwf.edu **Dr. Matt Schwartz** mschwartz@uwf.edu	Online
Undergraduate Certificate in Intelligence Analysis	Instructional, Workforce and Applied Technology	**Dr. Nancy Hastings** nhastings@uwf.edu	Online
Undergraduate Certificate in Information Security Management	Management and MIS	**Dr. Esmail Mohebbi** emohebbi@uwf.edu	Online
Minor in Information Security Management	Management and MIS	**Dr. Esmail Mohebbi** emohebbi@uwf.edu	Online
Graduate Certificate in Geospatial Cybersecurity	Computer Science and Earth and Environmental Sciences	**Dr. Sikha Bagui** bagui@uwf.edu **Dr. Matt Schwartz** mschwartz@uwf.edu	Online
Graduate Certificate in Information Security Management	MBA Program	**Melissa Brode** mbrode@uwf.edu **Dr. Esmail Mohebbi** emohebbi@uwf.edu	Online

University of West Florida Cybersecurity Course List

Rev. 2-17-17

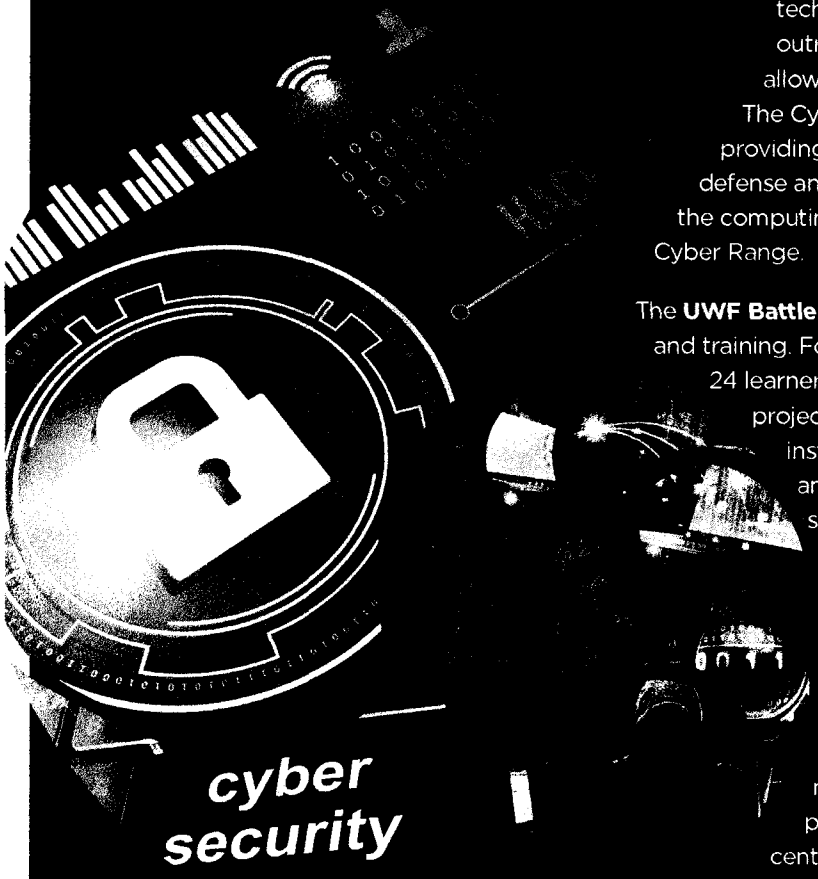
Course Number	Course Title	Credits Hours	Delivery Format	Semester(s) Typically Offered	Department
CEN4078	Secure Software Development	3	Face-to-face	Spring	Computer Science
CIS2530	Intro to Cybersecurity	3	Face-to-face	Fall, Spring	Computer Science
CIS4368	Intro to Database Security	3	Fully Online	Fall	Computer Science
CIS4385	Ethical Hacking and Penetration Testing	3	Face-to-face	Fall	Computer Science
CNT4007C	Theory and Fundamentals of Networks	3	Face-to-face	Fall, Spring	Computer Science
CNT4403	Computer and Network Security	3	Face-to-face	Spring	Computer Science
COP4610	Theory and Fundamentals of Operating Systems	3	Face-to-face	Fall, Spring	Computer Science
CNT4416	Cyber War Gaming	3	Face-to-face	Spring	Computer Science
CTS4348	Linux System Administration	3	Face-to-face	Spring	Computer Science
CEN 6074	Software Assurance and Security	3	Fully Online	Varies	Computer Science
CIS 6376	Database Security	3	Fully Online	Varies	Computer Science
CIS6379	Applied Info Security	3	Fully Online	Varies	Computer Science
CEN 5079	Secure Software Development	3	Fully Online	Varies	Computer Science
CIS 6394	Digital Forensics	3	Face-to-face	Varies	Computer Science
CNT 6519	Wireless Network Security	3	Face-to-face	Varies	Computer Science
CJE3694	Cybercrime	3	Face-to-face, Fully Online	Varies	Criminology and Criminal Justice
DSC3012	Terrorism	3	Face-to-face, Fully Online	Varies	Criminology and Criminal Justice
DSC4013	Homeland Security	3	Face-to-face, Fully Online	Varies	Criminology and Criminal Justice
DSC5020	Terrorism	3	Face-to-face, Fully Online	Varies	Criminology and Criminal Justice
DSC6026	Issues in Homeland Security	3	Face-to-face, Fully Online	Varies	Criminology and Criminal Justice
DSC6045	Homeland Security	3	Face-to-face, Fully Online	Varies	Criminology and Criminal Justice
GIS4043/L	Geographic Information Systems and Lab	4	Face-to-face, Fully Online	Fall, Spring	Earth and Environmental Sciences
GIS4048	Applications in GIS	3	Face-to-face, Fully Online	Fall, Summer	Earth and Environmental Sciences
GIS4930	Special Topics in GIS	3	Face-to-face, Fully Online	Fall, Spring	Earth and Environmental Sciences
GIS6005	Communicating GIS	3	Fully Online	Spring	Earth and Environmental Sciences
GIS6555	GIS Management	3	Fully Online	Spring	Earth and Environmental Sciences
EEL4276/EEL5277	Cyber Security of Industrial Control System	3	Fully Online	Spring	Electrical and Computer Engineering
CPO 4774	Radicalism and Extremism	3	Face-to-face	Fall every other year	Government
INR 3073	Analyzing Issues in International Politics	3	Face-to-face	Spring	Government
INR 4102	American Foreign Policy	3	Face-to-face	varies	Government
INR 4334	National Security Policy	3	Face-to-face	varies	Government
INR 4364	Intelligence	3	Face-to-face	varies	Government
INR 4403	International Law	3	Face-to-face	Spring every other year	Government
INR 4990/5990	Cyber, Drones and Security Policy	3	Face-to-face	Fall 2016 trial	Government
EME3002	Introduction to Intelligence	3	Fully Online	Fall, Spring, Summer	Instructional, Workforce and Applied Technology
EME3003	Introduction to Intelligence Analysis	3	Fully Online	Fall, Spring, Summer	Instructional, Workforce and Applied Technology
EME4001	Geospatial Analysis	3	Fully Online	Fall, Spring, Summer	Instructional, Workforce and Applied Technology
EME4474	Social Network Analysis	3	Fully Online	Fall, Spring, Summer	Instructional, Workforce and Applied Technology
PLA 3583	Cyber Law	3	Fully Online	Fall	Legal Studies, Public Administration and Sport Management
ISM3323	Information Security Management	3	Fully Online	Summer	Management and MIS
ISM4483/5222	Business Data Communication	3	Fully Online	Fall/ISM5222 Spring 2018 OL	Management and MIS
ISM4321/5327	Legal, Ethical, and Human Aspects of Cybersecurity	3	Fully Online	ISM5327 Summer 2017 OL	Management and MIS
ISM4321/5328	Cybersecurity Risk Management	3	Fully Online	ISM5328 Fall 2017 OL	Management and MIS
ISM6326	Information Systems Auditing and Control	3	Fully Online	Pending	Management and MIS
MAD4301	Graphs and Their Application (Number Theory)	3	Face-to-face	Spring	Mathematics and Statistics

UNIVERSITY of WEST FLORIDA

CYBERSECURITY SOLUTIONS

Center for Cybersecurity

The **University of West Florida (UWF) Center for Cybersecurity Solutions** integrates a Battle Lab, Cyber Range and Data Center. Our Cybersecurity solutions provide innovative state-of-the-art facilities for experimentation and evaluation of advanced technologies and supports research, instruction, training and outreach. The Battle Lab is a stand-alone virtualized environment, allowing for a safe and secure environment for computer simulations. The Cyber Range is an extension to the already capable Battle Lab, providing a networked virtualized environment that supports cyber defense and offense exercises and competitions. The Data Center provides the computing infrastructure to support the Cybersecurity Battle Lab and Cyber Range.



The **UWF Battle Lab** supports face-to-face, online and remote instruction and training. For face-to-face needs, the Battle Lab accommodates up to 24 learners with up to three different workstations simultaneously projecting to different displays. The instructor has full control over the instructional technologies: Smart Board, video and sound systems, and multiple displays. The robust and dynamic infrastructure supports a range of activities including cyber defense and offense exercises, malware analysis and secure software development. Learners and researchers conduct host-based static and dynamic malware analysis. The Battle Lab provides unimpeded direct access to the Cyber Range.

The **UWF Cyber Range** supports face-to-face, online and remote instruction and training for three simultaneous networks. The realization of various types of networks is possible: public utilities, financial systems, air traffic control centers, chemical plants, and cyber operations centers. Learners and researchers conduct defensive and offensive cyber operations with the abilities to reset to a prior state after disaster strikes. Automated network traffic is generated to simulate an active network for network security and furthermore packet analysis.

The **UWF Data Center** provides state-of- the art facilities including high-performance servers, switches, and storage area networks and supports on-demand virtualization to meet a wide range of computing needs for instructional and research purposes.

Partner with the UWF Center for Cybersecurity!
Explore how UWF Cybersecurity Solutions can enhance cybersecurity research, instruction, training and outreach.

For more information on the UWF Cybersecurity Solutions, contact:
Eman El-Sheikh, PhD, *Director, Center for Cybersecurity*
850.474.2999 • eelsheikh@uwf.edu

UWF Cybersecurity Faculty Research Interests
January 19, 2017

Computer Science

Dr. Sikha Bagui, Professor and Chair, Computer Science
Analyzing or mining Cybersecurity data, Malware data analysis

Dr. John Coffey, Professor, Computer Science
Knowledge representation and management, expert systems, semantic web

Dr. Brian Eddy, Assistant Professor, Computer Science
My interests are focused towards building and maintaining secure software systems and in the training and education of cybersecurity professionals and students. Topics of interest include:

- Visualization of security vulnerabilities in software systems
- Security and concept location
- Security and Privacy in the Cloud
- Security and DevOps
- Automated testing techniques for security in software systems
- Security and Requirements Traceability
- Secure Software Development
- Training cybersecurity professionals through gaming and simulation
- Approaches to introducing cybersecurity in K-12

Dr. Eman El-Sheikh, Director, Center for Cybersecurity, and Professor, Computer Science
AI and machine learning for cybersecurity, intelligent intrusion detection, malware analysis, intelligent cyber range environments, intelligent cybersecurity education and training tools

Dr. Ezhil Kalaimannan, Assistant Professor, Computer Science
Digital forensics, malware analysis
Ezhil's current research involves the study of the effects of Cache memory capable injection attacks in tactical hybrid networks, automated approaches for malware analysis using data mining techniques and digital forensic investigation/analysis methods for smart devices such as mobile phones and tablets. His previous research interests included the study of developing efficient computational models and heuristic algorithms, which can improve the overall effectiveness of a digital crime scene investigation procedure and minimize the total expected costs of an organization, through the selection of optimal IDS alarms.

Mr. Dustin Mink, Assistant Director, Center for Cybersecurity, and Instructor, Computer Science

Critical Infrastructure Security, Defensive Cyberspace Operations, Secure Software Engineering, Reserve Software Engineering

The goal is to create a secure cyber-physical system for the national airspace systems. The focus is on Supervisory Control and Data Acquisition (SCADA) systems that enable air travel. This includes the digital forensics needed to identify vulnerabilities, mitigate those vulnerabilities, and develop processes to mitigate the introduction of vulnerabilities into those systems. The pre-Next Generation Air Transportation System (NextGen) notional aircraft architecture uses air gap interconnection, non-IP-based communications, and non-integrated modular avionics.

Dr. Amitabh Mishra, Assistant Professor, Computer Science

Security for smart sensor networks

The Internet of Things (IoT) is a revolutionary model that conceptualizes a pervasive existence of a variety of objects with distinctive identification and communications ability such as cell phones, Radio-Frequency IDentification (RFID) tags, sensors, and actuators around us at home, in workplace, or wherever we are. Using unique addressing arrangements for identification and their in-built communications competency, such Internet nodes would interact with their neighbors to achieve common objectives. It is projected that by the year 2025, Internet nodes may reside in everyday objects like furniture, paper documents, supermarket articles, food packages, and others used in our daily lives. For the business users, the most obvious outcomes will be visible in fields such as automation, intelligent transportation of people and goods logistics, industrial manufacturing, and healthcare. In this context, domestics, e-health, assisted living, enhanced learning are only a few examples of possible application set-ups in which the IoT paradigm will play an important role in the near future.

Wireless Body Area Networks (WBANs) form an important prong of this technology. They involve the use of low power, low radio range sensor nodes for sensing of physiological and bio-kinetic parameters and transmission of sensed data using wireless link hops over a network. WBANs envisage a human-centric use of wireless technology for personalized telehealth and telemedicine, and remove the compulsion to stay confined to the bed or under the care of medical attendants or doctors in a hospital.

Security is a major concern for WSN and WBAN applications. Attacks vary from eavesdropping on transmissions including traffic analysis or disclosure of message contents, to modification, fabrication, and interruption of transmissions through node capturing, routing attacks, or flooding. The aspect of security is well addressed with existing standards-based technologies.

AES-128 (Advanced Encryption Standard, with 128-bit keys and 128-bit block size) symmetric-key cryptography algorithm is used in the IEEE 802.11 and IEEE 802.15.4 standards. The IEEE 802.15.6 standards being newer have more constraints. As they have to be small enough to be wearable, the manufacturers cannot pack a lot of processing power in them. Computationally intensive authentication and encryption mechanisms cannot be implemented in WBANs.

Dr. Thomas Reichherzer, Associate Professor, Computer Science
Network security, virtualization, wearable device security

Dr. Dallas Snider, Assistant Professor, Computer Science
Big data, data mining and analytics, machine learning, information assurance

Dr. Norman Wilde, Nystul Chair and Professor, Computer Science
Cybersecurity and cloud computing, cybersecurity and DevOps, cybersecurity and concept location
Research Topics / Questions:

- Cybersecurity and Infrastructure Cloud Computing: What are best practices for securing large applications in a infrastructure cloud such as Amazon Web Services?
- Cybersecurity and DevOps: What can be done to automate cybersecurity practices in the context of the shortened deployment cycles used in DevOps?
- Low-Budget Cyber Defense for Valuable, Low-Volatility Web Sites: How can we reduce the costs of defending web sites that offer old research results, technical manuals, and so on that change infrequently?
- Concept Location for Securing Software Systems: How can the concept location techniques developed for software maintenance be applied to reduce the costs of validating that software meets security requirements?

Earth and Environmental Sciences

Dr. Zhiyong Hu, Associate Professor, Earth and Environmental Sciences
Cyber-attack spatio-temporal pattern mapping and analysis using GIS and spatial statistics

Dr. Derek Morgan, Assistant Professor, Earth and Environmental Sciences
GIS Web Development, Geographic Visualization, Human-Environment Interaction, Legal Geography & Crime Mapping

Electrical and Computer Engineering

Dr. Bhuvana Ramachandran, Assistant Professor, Electrical and Computer Engineering
Power grid security

Mathematics and Statistics

Dr. Avinash Dalal, Assistant Professor, Mathematics and Statistics
My interests are in discrete and combinatorial mathematics. I also have done research in data security/cryptography.

Management Information Systems

Dr. Randy Reid, Assistant Professor, MIS
Disaster planning and recovery, governance and compliance issues

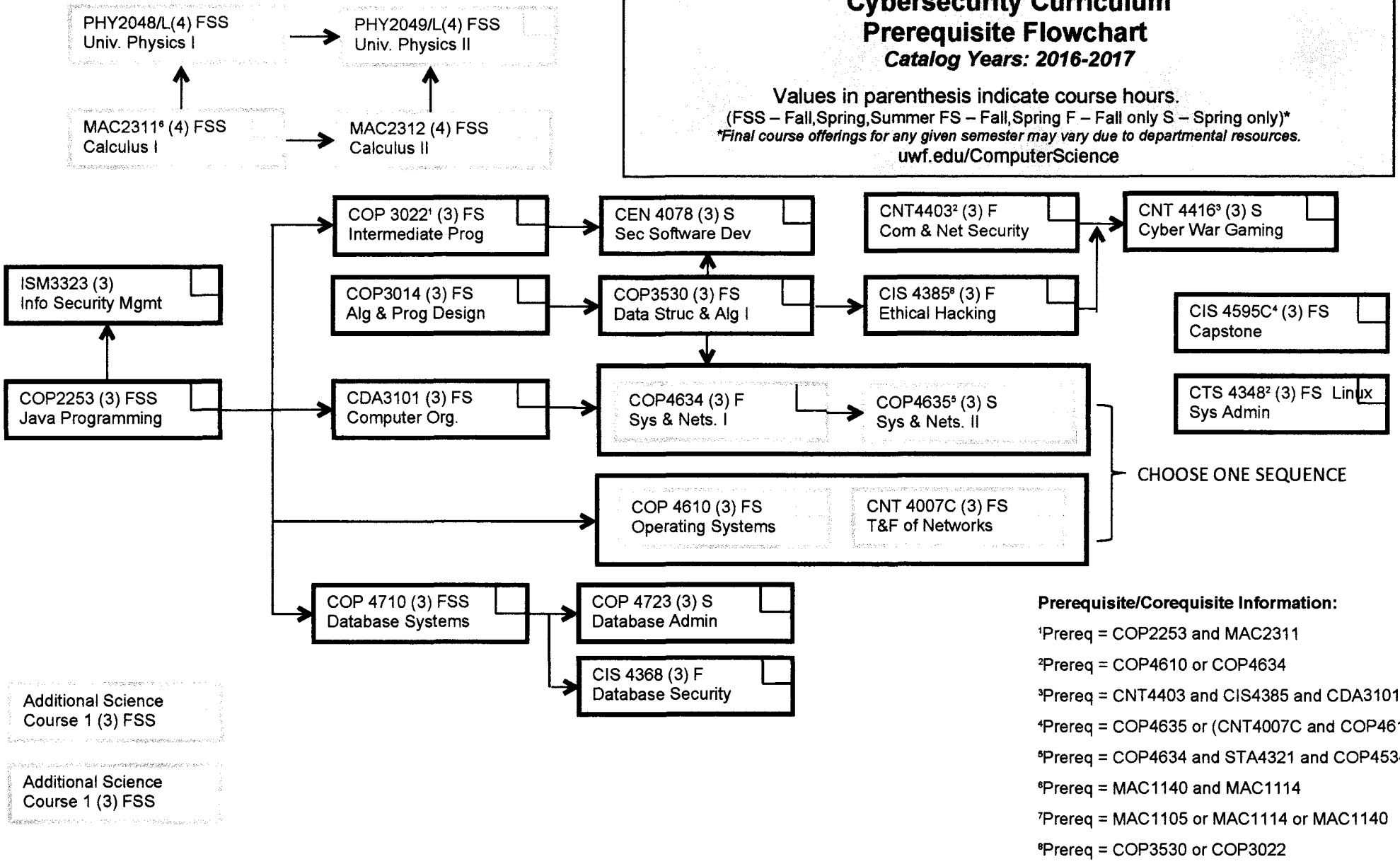
Dr. June Wei, Professor, MIS
Enhancing Cyber Information and Network Security through Behavior Analysis, Threat Analysis in Cyber Domains, and Espoused Cultural Values Impacting Cyber Security

Psychology

Dr. Steven Kass, Professor, Psychology
Human Factors, Training and Attention

Cybersecurity Curriculum
Prerequisite Flowchart
Catalog Years: 2016-2017

Values in parenthesis indicate course hours.
(FSS – Fall,Spring,Summer FS – Fall,Spring F – Fall only S – Spring only)*
**Final course offerings for any given semester may vary due to departmental resources.*
uwf.edu/ComputerScience



Prerequisite/Corequisite Information:

[1]Prereq = COP2253 and MAC2311

[2]Prereq = COP4610 or COP4634

[3]Prereq = CNT4403 and CIS4385 and CDA3101

[4]Prereq = COP4635 or (CNT4007C and COP4610)

[5]Prereq = COP4634 and STA4321 and COP4534

[6]Prereq = MAC1140 and MAC1114

[7]Prereq = MAC1105 or MAC1114 or MAC1140

[8]Prereq = COP3530 or COP3022

In addition to the degree requirements outlined above, students seeking the BS Computer Science/Cybersecurity degree must also take 12 semester hours of 3000/4000 level advisor approved electives. Contact your academic advisor for more information.

*For students completing the Systems and Networks track, Discrete Structures (COT 3100), Data Structures and Algorithms 2 (COP 4534), and Intro to Math Stats (STA 4321) must be completed as electives prior to taking Systems and Networks 2 (COP4635). COT 3100 is a prerequisite for COP 4534.

Students are recommended to take Intro to Cybersecurity (CIS 2530) as one of their Additional Science courses or it can be taken in place of ISM 3323.

Updated: 7/21/16

UWF B.Sc. in Computing and Information Sciences (CIS) - Cybersecurity Program
List of Approved Electives

In addition to the degree requirements outlined in the program flowchart, students seeking the B.Sc. in Computing and Information Sciences – Cybersecurity degree must also complete 12 semester hours of 3000/4000 level advisor-approved electives from courses in computer science, electrical and computer engineering, management information systems, criminal justice or GIS. Contact your academic advisor for more information.

Below is a list of approved electives that students may choose from subject to completion of required prerequisites and course availability.

Courses offered by the Department of Computer Science:

CAP4053 Artificial Intelligence Programming
CAP4601 Artificial Intelligence
CAP4770 Data Mining
CEN3032 Software Engineering II
CIS4990 Cloud Deployment and Security Architecture
COP3665 iPhone/iPad Programming
COP4027 Advanced Computer Programming
COP4534 Data Structures and Algorithms II
COP4990 Advanced Software Reverse Engineering

Courses offered by other UWF departments:

Courses offered by the Department of Criminology and Criminal Justice:
CCJ3014 Criminology
CCJ3024 American Justice System
CCJ4644 White Collar Crime
CJE3694 Cybercrime
CJE4610 Criminal Investigation
DSC4013 Homeland Security

Please check with your academic advisor regarding cybersecurity-related courses offered by other departments that may be appropriate electives. Any course not on this list must be approved by your academic advisor in advance to count toward elective requirements.

Cybersecurity (MSIT)

The Master of Science in Information Technology - Cybersecurity specialization is designed to address the need for Cybersecurity related to software security, database security, information technology management, server administration and numerous other employment fields.

Program Description

With an ever-growing demand for IT professionals, students of the MSIT program with a specialization in Cybersecurity will be able to plan, implement, upgrade, manage and monitor security for information assurance and protection of computer networks. The blending of the *Internet of Things* with network communications has established a terrific need for information systems security. University of West Florida's M.S. in Information Technology-Cybersecurity program is designed for students and individuals to become cybersecurity experts in protecting the nation's most critical information technology systems and infrastructure.

The program focuses on various aspects of cybersecurity as applied to information technology such as Software Assurance and Security, Database Security, Information Security Management, Secure Software development and special topics in cybersecurity research. With 100 percent of the program being offered online, the courses have been carefully blended to meet the real-world requirements and to facilitate hands-on

University of West Florida has been designated by the National Security Agency and Department of Homeland Security as a **Center of Academic Excellence in CyberDefense Education** (CAE-CD) during 2016-2021.

MSIT Core (15 sh)

MAN 6156	Management and Organizational Behavior	3
COP 5007	Software Engineering Foundations: Java Programming	3
COP 5725	Database Systems	3
CIS 6XXX	Information Security Management	3
CEN 6016	Software Engineering Process	3
Total Hours		15

Cybersecurity Specialization (18 sh)

CEN 6074	Software Assurance and Security	3
CIS 6376	Database Security	3

CEN 5079	Secure Software Development	3
Advisor Approved Elective		3
COT 6931	Computer Science Project	6
Total Hours		18

Admissions Requirements

In addition to the University graduate admission requirements, the department bases decisions for regular admission on a holistic review of credentials in which the criteria listed below are used to assess the potential success of each applicant.

University Requirements*

- Submission of Graduate Application and Processing Fee
- Submission of official transcripts

**International students may have additional requirements.*

Departmental Requirements

- Submission of graduate admission tests: GRE, MAT, or TOEFL
- Undergraduate cumulative GPA
- Undergraduate senior year/major GPA
- Submission of letter of intent describing work experience and reasons for pursuing the degree program, including how the degree relates to career goals
- Submission of three recommendation forms (PDF)

Applicants may check the receipt/status of their materials in MyUWF.

Department Contact

Dr. Ezhil Kalaimannan
Assistant Professor
Building 4, Room 241
Phone: (850) 474-7005
Email:ekalaimannan@uwf.edu