The Center for Cyberspace Research (CCR), established in March 2002, conducts defense-focused research at the Master’s and PhD levels. The CCR is forward-looking and responsive to the changing educational and research needs of the Air Force, the Department of Defense, and the federal government. The CCR faculty teaches and performs research to understand and develop advanced cyber-related theories and technologies. These theory and technology advancements include efforts in network intrusion detection and avoidance, insider threat mitigation and technology advancements such as efforts in network intrusion detection and avoidance. These theory and technology advancements include efforts in network intrusion detection and avoidance, insider threat mitigation, and anti-tamper technologies development. On June 19, 2008 AFIT was designated by the SECAF and CSAF as the Air Force Cyberspace Technical Center of Excellence.

Lt. Gen. Hyten is Vice Commander, Air Force Space Command, Peterson Air Force Base, Colorado. He assists the commander in organizing, equipping, training, and maintaining mission-ready space and cyberspace forces and capabilities for North American Aerospace Defense Command, U.S. Strategic Command and the other functional and geographic combatant commands with missile warning, positioning, navigation and timing, communications and cyber capabilities. Prior to assuming his current position, he served as Director, Space Programs, Office of the Assistant Secretary of the Air Force for Acquisition, Washington, D.C.

As Lt. Gen. Balsal says farewell to Lt. Gen. Michael J. Basla, the DRB and BOA Chairperson since August 2009, Lt. Gen. Basla is the Chief, Information Dominance and Chief Information Officer, Office of the Secretary of the Air Force, the Pentagon, Washington, D.C. Prior to his current assignment, he was Vice Commander, Air Force Space Command, Peterson Air Force Base, Colorado. Over the past three years, Lt Gen Basla’s unique qualifications have provided vital counsel and guidance to the DRB/BOA. His extensive Air Force cyber operations and capabilities experience has provided the CCR, and its DRB/BOA, with distinct and visionary perspectives for the development of Air Force cyberspace capabilities. In addition, his leadership has ensured the needed resources for the Center to effectively and efficiently conduct the mission set forth by the Secretary and Chief of Staff of the Air Force.

Under Lt. Gen Basla’s leadership, several major initiatives have been developed, implemented, and matured. These accomplishments include the development and delivery of Cyber 200 and Cyber 300 professional continuing education courses which annually educate over 650 officers, enlisted, and civilian personnel; the Advanced Cyber Education (ACE) ROTC program which introduces our future leaders to cyber operations; cyberspace education modules in Air Force Basic Military Training (BMT); and cyber education support to joint and allied personnel. “Lt Gen Basla has been a catalyst and motivator for many of our mission successes. There is no way that we can thank him enough for his leadership and contributions,” said Dr. Raines.

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CCR provides impressive Center updates to DRB members despite Super Storm

In lieu of the meetings, CCR program and research updates were mailed to all of the DRB and BoA members accompanied with a CD containing electronic copies of meeting slides and featured videos.

A warm welcome to new DRB Members

The new DRB members are Mr. Stephen M. Bailey, Chief of Analysis and Data Fusion, Information Assurance Directorate, National Security Agency; Dr. Jon A. Kimminau, Analysis Mission Technical Advisor for the Deputy Chief of Operations, Intelligence, and Reconnaissance, Headquarters of U.S. Air Force; Mr. Larry K. Zelin, Director of the National Cyber and Communications and Integration Center, U.S. Department of Homeland Security.

ACE advances:
The Advanced Cyber Education (ACE) 8-week summer program was hosted for the second year at AFIT’s CCR June 18-Aug 10, 2012. ACE is the only ROTC cyber education and professional development course at a U.S. military institution this year, it include 35 cadets and midshipmen from Air Force, Army and Navy ROTC detachments from 30 different schools and 21 states. The program has deep technical foundations and is organized around five components of graduate level lectures, guest speakers, internships at AFIT, AFRL, SAIC, 711th Human Performance Wing and 88th Communications Group, staff rides, and a HackFest event that culminates all of the lectures and internships into a final project. The 2013 ACE program is scheduled for June 17 – August 9 with West Point and Air Force Academy participation.

Cyber 200/300 course update, CCAD

Accreditation and Allied partners:
The AF Cyber 1,135 cyber workforce professionals have graduated from Cyber 200 and 300...thank you senior leaders for your support! The courses continue to reach national attention and recently, a Presidential proclamation declaring December 2012 as “Cyber Awareness Month.” The courses have also been an active participant of AETC/IAD and SAF/IA to garner approval for the courses continuing through 2013.

This program takes place at AFIT’s CCR from June 17 - August 9, 2013. During the program the cadets and midshipmen receive formal education lessons taught by AFIT Faculty. The formal educational components include Information warfare, Supervisory Control and Data Acquisition (SCADA) systems, cryptography, computer network defense, computer network offense, digital forensics, wireless security and software reverse engineering lessons.

Research: continued

An anonymous feedback response system was implemented and metrics were developed. Over 90% of the students believe the Cyber 200/300 course content is on-target with 95% of students recommending the courses to their peers. In Cyber 200, 40% of the course content is based on new and emerging capabilities. In Cyber 300, 21% is spent on labs and this is an increase of 50% based on Fall 2011 DRB guidance.

In addition to Cyber 200/300 being Joint program, the cadets who graduate from AFIT’s CCR at West Point and Air Force Academy will receive a Cyber 200/300 certificate of completion. Cadets and midshipmen fulfill internships in a variety of disciplines and research areas. Interdisciplinary partners include AFIT faculty, the Air Force Research Laboratory, the National Air and Space Intelligence Center, the 711th Human Performance Wing, and the 88th Communications Group. Finally, the program finishes with a 2.5 day cyber war gaming exercise “HackFest” where the cadets and midshipmen test their newly acquired cyber skills.

CCR develops future officers into the next-generation of cyberpace leaders through the ACE program’s formal education lectures, local military internships and weekly physical training. Faculty Highlight: Major Jonathan Butts, PhD.

Major Jonathan Butts, AFIT Assistant Professor and Chief of the computer science and engineering division, has been leading a field manual effort to develop the Cyber 200/300 course content on-target with the International Federation for Information Processing (IFIP) working group on critical infrastructure protection, a United Nations recognized body for advancements in global cyber security policy. Considered one of the foremost experts in the area, Maj Butts has also been on the DHS/Evalee system joint working group steering committee and has presented at prestigious conferences around the world. In 2012 he was named a Fellow of the National Board of Information Security Examiners.

Over the past two years, Maj Butts has helped develop the Air Force’s leading research and development capability for industrial control system security. Through DoD grants and partnerships he has established a state-of-the-art lab facility. Equipment consisting of a SCADA malware test bed, solar/wind power station as part of a course on “Managing the Security of Control Systems.”

CCR is protecting America’s critical infrastructure with cyber security research

How viable is the cyber threat to our nation’s electric power grid? Can a rogue attacker remotely disable an oil pipeline’s safety system or cause a transit system to malfunction? Such a scenario is plausible. Cyber attacks to the U.S. critical infrastructure have drawn national attention and recently, a Presidential proclamation declaring December 2012 as “Cyber Awareness Month.” How viable is the cyber threat to our nation’s critical infrastructure?

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CCR has also provided briefings and development of a series in cyber security and educational capabilities to legislators, the White House Cybersecurity Coordinator, military general officers, and various industry leaders. In San Diego, Maj Butts and Lopez, a CCR cyber security research engineer, is a focal point in SCADA research. He has been featured on local television and has done several briefings about Supervisory Control and Data Acquisition (SCADA) systems security to show just how vulnerable these systems are to cyber hacking events.

CCR has also developed programs that focus on educating the next generation work force in a critical way. In addition to the International Federation for Information Processing Working Group (IFIP WG) 11-10 for Critical Infrastructure Protection. CCR affiliated faculty members include Maj Butts, PhD, and current Chair of IFIP WG 11-10, states that “The principal aim of IFIP WG 11.10 is to weave scientific, technology and policy in developing and implementing sophisticated, yet practical, solutions that will help secure information, computer and networks from the various cyber critical infrastructure sectors.”

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