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, cyberspace situational awareness, network visualization, software and technology advancements include efforts in network intrusion detection and avoidance, insider threat mitigation, cyberspace situational awareness, network visualization, software and technology advancements include efforts in network intrusion detection and avoidance, insider threat mitigation, cyberspace situational awareness, network visualization, software and technology advancements include efforts in network intrusion detection and avoidance, insider threat mitigation, cyberspace situational awareness, network visualization, software and technology advancements include efforts in network intrusion detection and avoidance, insider threat mitigation, cyberspace situational awareness, network visualization, software and technology advancements include efforts in network intrusion 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intrusion detection and avoidance, insider threat mitigation, cyberspace situational awareness, network visualization, software and technology advancements include efforts in network intrusion detection and avoidance, insider threat mitigation, cyber In This Issue: AFIT CCR Graduates First Class of Cyber Warriors

The CCR mission, Developing the Cyber Warrior through Education and Research, has never been more evident as it was on October 28, 2010 during the Cyber 200 and 300 Course Graduation Banquet. Over 100 students graduated from the Air Force Institute of Technology’s newest Professional Continuing Education (PCE) courses designed to develop and train a dedicated cadre of cyberspace warriors as they transition to intermediate and higher level responsibilities in their careers. General Kehler commented on the rapid growth on the Air Force’s cyber capabilities and challenges faced in this operational domain. “It is tremendously important that we, as a service, have decided to embrace cyberspace as an operational domain,” said General Kehler. “Fly, fight and win in air, space, and now cyberspace is enormously important to our future.”

Graduates enrolled in the first ever program were provided a broad background in cyber concepts, including capabilities, limitations and vulnerabilities and their associated application and employment in joint military operations. They represent a wide spectrum of the Air Force and DoD cyber community to include the 7th Intelligence Squadron, 315th Network Warfare Squadron, 690th Network Support Squadron, 24th Air Force, Air Force Special Operations Command, National Guard Bureau, and U.S. Strategic Command.

The Cyber 200/300 courses were designed for all cyberspace professionals including the entire “17D” or Cyberspace Operator career field. The courses provide an understanding of the design, development, and acquisition of cyberspace systems. They are continually re-tooled to keep cyberspace professionals current and at the cutting-edge, keeping pace with the quickly changing technologies of the cyber domain.

Among the distinguished attendees at the banquet was, U.S. Representative Mike Turner, Maj. Gen. Edward Bolton, the Air Staff’s director of Cyber and Space Operations, and Maj. Gen. David Fadok, Air University Vice Commander.

Addressing the graduates and all attendees, Gen Kehler noted this event as a milestone in Air Force history, “This is a remarkable time in our Air Force. One day you will look back and say, ‘I was there.’”

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The Air Force Institute of Technology (AFIT) and The Center for Cyberspace Research (CCR) were honored to host the 6th Bomb Group members for an exclusive AFIT visit on September 10, 2010. Guests arrived to a warm AFIT welcome by Commandant, Brig. Gen. Walter D. Givhan and CCR Director, Dr. Richard Raines.

The 6th Bomb Group was based on the island of Tinian during WWII and played a significant role in winning the war against Japan during 1944-45. The Group was part of the 313th Bomb Wing, 20th Air Force based on Tinian, Saipan and Guam and led the Wing in hours flown and tonnage dropped. The mission of the 20th was to engage in the strategic destruction of Japan by air. The 6th Bomb Group participated in 75 missions plus 7 non-post war missions flying B-29 bombers.

By connecting the past to the present, vintage video footage of the group’s bombing missions were shown along with an agenda that included an overview of AFIT by Gen Givhan and technology demonstrations by the Center for Cyberspace Research (CCR), Advanced Navigation Technology Center (ANT), Combustion Optimization and Analysis Laser Laboratory (COAL), and AFIT CubeSat (miniaturized satellite) for space research.

Every year the 6th Bomb Group veterans, spouses, and family members gather for a reunion banquet to stay connected and remember their fallen comrades. Dr. Raines was the keynote speaker at this year banquet and spoke of the rapid advancements of technologies and the challenges the nation faces in cyberspace security.

“It was a great honor to be able to speak and interact with these heroes. These veterans stepped up when America needed them most. The liberties we enjoy today are a result of their sacrifices and efforts. These folks truly exemplify ‘America’s Greatest Generation’,” Raines said.

Mr. Juan Lopez, CCR Research Engineer, giving the SCADA system.

Mr. Juan Lopez, CCR Research Engineer, giving the SCADA system.

The other major event that our CCR experts participated in was the Cybersecurity Weapons and Tactics (WEPTAC) Conference. The WEPTAC Conference provides an opportunity for Air Force units to discuss current activities in cyber operations, lessons learned, and the unique challenges associated with fighting in the cyber domain. Mr. Lopez and Capt Butts have provided a presentation on emerging threats and technical challenges associated with Supervisory Control and Data Acquisition (SCADA) systems. Both Mr. Lopez and Capt Butts are involved in extensive research relating to SCADA security. According to Capt Butts, “We are in a unique position to leverage our expertise not only to help provide awareness but also to perform in-depth research on critical problems that affect our nation’s capabilities directly to the Air Force warfighter.” This event marks the first time that AFIT has directly contributed as working group members. As a result of the positive feedback, Mr. Lopez and Capt Butts have been asked to present at the Air Force-level WEPTAC conference hosted at Nellis AFB, NV in January 2011.

CyberCorp Student Internships

CyberCorp provides a scholarship opportunity for non-military students seeking a Masters Degree in Cyber Operations made possible from a grant through the National Science Foundation (NSF) Scholarship for Service (SFS) program. As part of their Graduate Cyber Operations programs, students perform research that develops advanced cyber-related theories, techniques, and technologies.

Our SFS students are required to work in a cyber security-related internship position for the US Government or DoD agency during the fall academic quarter. The requesting organization typically provides funding for the students salary during the internship and simply requires transfer of organizational status and funding for the period of the internship.

Currently there are six CCR CyberCorp students working as interns in several locations including, the 67th Network Operations Group at HanscomAFB (Lackland AFB), NASSIC (Wright-Patterson AFB), and MITRE (Bedford, MA). These students bring a wealth of knowledge to these agencies in network management and security and software development.

In addition to the six students working internships, there are also nine new CCR CyberCorp students that began the Graduate Cyber Operations degree program in September, 2010. These students are looking for summer or fall internships within US Government or DoD positions at this time. View our website at www.afit.edu/ccr/

Col Arata receives award

Colonel (Dr.) Harold J. Arata III is currently the CCR Deputy Director and Senior Military Professor at the US Air Force Institute of Technology. As Deputy Director, Col Arata carries out direction from the SECAF/CSAF to serve as the unifying body for training, education and research of cyber capabilities for the Air Force. He is the recent Air University’s Lance P. Sijan Leadership Award Recipient for the Command 2010. This award, named in honor of former Captain Lance P. Sijan, recognizes the accomplishments of officers and enlisted members who have demonstrated the highest qualities of leadership in the performance of their duties and the conduct of their lives. The CCR faculty and staff are fortunate have a very dedicated and accomplished Deputy Director on our team.

Dr. Mullins was presented by Dr. Werner Dahm, Air Force Chief Scientist, and Dr. Steven H. Walker, Deputy Assistant Secretary of the Air Force for Science, Technology and Engineering on August 18, 2010 at the National Museum of the United States Air Force. Dr. Mullins was honored for his work in various capacities including cyber education and research which directly supports the Air Force mission. His teaching philosophy is quite simple, he genuinely cares for his students, he sees his lectures and course material through their eyes, and he loves the subjects he teaches. He is one of the most animated, caring, and enthusiastic professors at AFIT as evidenced by student comments which inevitably contain the same message year after year like — “I learned so much it’s ridiculous!” and “There aren’t many professors I’ve seen that work this hard for their students!”

Beyond his teaching prowess, he integrates students in his award-winning research efforts. During his time at AFIT, all of his 60+ book chapters, journal articles and conference papers have been co-authored with his students. He is adamant about linking research and classroom instruction to ensure his students receive the most up-to-date and operationally relevant education. He continues working with students in the areas of cyber operations, computer/network security, computer communications networks, embedded (sensor) and wireless networking, and reconfigurable computing systems.

When asked what led to his success he responded, “I thank Dr. Nathaniel Davis and Dr. Richard Raines for providing an environment so conducive to excellence. I also thank my supervisors and colleagues at the U.S. Air Force Academy for teaching me quality teaching skills and attributes of a good instructor.”

The Center for Cyberspace Research is fortunate and honored to have Dr. Mullins on our team!