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National Centers of Academic Excellence in Information Assurance Education

Michigan Universities at the Forefront of Cybersecurity Education

By Katherine Johnson, June 2012

As we conduct more and more of our lives online, the security of our digital information has become critical. Web-based applications, mobile devices, social networks and cloud computing are becoming everyday tools. Cyberspace touches nearly every part of our daily lives. It's the broadband networks beneath us, the wireless signals around us, and the networks in our schools and hospitals and businesses. Creating safeguards to protect the digital information of individuals, businesses, and governments is becoming more important each day.

One downside to the virtual world is the new avenues it provides for cyber criminals. Developing tools to prevent and defend against cyber threats is a growing industry. The importance of education and training of a cyber-workforce has moved front and center, and there is a growing demand for professionals who can protect the safety and security of our key infrastructure.

In October 2011, Gov. Rick Snyder announced an action plan to defend Michigan against cyber threats and position the state to take advantage of opportunities in the growing cyber security industry. One focus of the plan was to create and use talent within the state, utilizing strong partnerships with Michigan universities.

In the past decade, Michigan has become a leader in the field of cyber security and information assurance education. Michigan currently hosts five universities that have been designated as National Centers of Academic Excellence (NCAE) in Information Assurance (IA) Education by the National Security Administration (NSA). Universities that meet the rigorous criteria established by federal agencies are granted designations as Centers of Excellence in IA education. This is a highly competitive annual process involving rigorous review of the target curriculum by national experts. Eastern Michigan University, Ferris State University, Davenport University, University of Detroit-Mercy, and Walsh College all currently hold the NCAE honor.

Eastern Michigan University

Eastern Michigan University (EMU), located in Ypsilanti, partners with the National Initiative for Cybersecurity Education (NICE) to bring students course work in Information Assurance at the undergraduate, graduate, and the doctorate level. The NICE Framework organizes cybersecurity education into seven high-level categories, each comprising several specialty areas. Operating safely within the new digital frontier is key in all of the categories.

"Never before in the history of our country has so much of our personal information been available on the Internet, in data bases, banking, or our medical records," said Gerald Lawver, the Program Coordinator for School of Technology Studies and the Director of the Center of Academic Excellence in Information Assurance at EMU. "The Information Assurance program at EMU focuses on a common body of knowledge that highlights the concepts of Confidentiality, Integrity, and Availability of information."



Lawver emphasizes the importance of mapping IA coursework to the requirements of the Committee on National Security Standards.

"These standards ensure our students are getting curriculum that is held to the highest standards available mandated by the Federal Government for workers who handle sensitive information. We prepare students for positions of trust at the federal, state and local branches of government and the private sector, including management, investigations, computer forensics, encryption, and network security."

Lawver emphasizes the quality of the IA program at EMU, "The coursework here is demanding and we have a high reputation for delivering a finished product to those agencies who are looking for a few good people."

Ferris State University

Information Security and Intelligence are the key components of the undergraduate and graduate degree programs at Ferris State University (FSU), located in Big Rapids. The program focuses on digital forensics, risk analysis, data mining, and national infrastructure security. FSU created the program with information directly from the U.S. Department of Homeland Security and the Pentagon. Information Security and Intelligence Professor Greg Gogolin, is proud of the program offered at FSU.



"Ferris State University is one of only eight universities in the nation, and the only university in Michigan, that has been certified in all six National Security Agency Centers of Excellence criteria. Additionally, we have ongoing research in the Information Assurance area funded by the National Science Foundation and other sources. Ferris is taking a global approach with international partner institutions and organizations."

Ferris State University is keeping pace with the ever-changing environment of digital world. The Master of Science in Information Systems Management degree has been offered at Ferris State University since 1987. In the fall of 2012, the degree will be replaced by the Master of Science in Information Security and Intelligence degree. The new program will prepare students for careers in Business Intelligence, Incident Response, and Project Management.

"Information Assurance is critical for a number of reasons including the extreme growth rate of digital crime and the potential unauthorized exposure or misuse of information," says Gogolin.

Ferris State University students develop skills in a variety of leading-edge technologies such as link/visual analysis, geographic information systems, and digital forensics, as well as a broad cultural background to provide a basis for interpreting the information and its ethical use.

Davenport University

Security of the technological environment is the focus of the Security and Information Assurance program at Davenport University (DU). While initially offering Bachelor degrees in Network Security and Information Security, Davenport has continued to diversify to include Biometric Security and a Master of Science in Information Assurance. Beginning Fall 2012, DU will offer a Digital Forensics Bachelor of Science, Security and Information Assurance degree. This degree program will address the highest in-demand needs of digital crime investigation. The program covers digital forensics on Unix, Linux, Windows and Mac platforms. It will also incorporate concepts of E-Discovery and mobile device forensics.

Demand is strong for qualified IA employees and is continuing to grow. According to Aphrodite Jones, associate dean at the Davenport College of Technology, "Davenport University has had increasing growth within its undergraduate and graduate IA programs, including 100 percent growth over the last three years. DU has had graduates employed by many government agencies such as the State of Michigan, the Federal Bureau of Investigation and the National Security Agency."



Graduates of the IA programs at Davenport University will create the architectural components of emergency response plans and build the framework for disaster recovery plans.



"As we become ever more reliant on computers and networks to store our information, keep us on task, and perform our work, the ability to protect that information has continued to become increasingly important. Information is one of the most important assets for companies these days," says Jones. "Employers, both public and private sector, are increasingly looking for motivated students and graduates with the knowledge and skills to succeed."

Davenport University is at the forefront of providing innovative and practical curriculum. Students have access to much of the same computers and networking hardware that they will be using after they graduate from the program.

University of Detroit-Mercy

In addition to being the second Michigan university to receive the Center of Academic Excellence designation, University of Detroit-Mercy (UDM) partners with universities and colleges in the International Cyber Security Education Coalition (ICSEC), formerly known as the Midwest Coalition for Information Assurance. Memberships in the coalition include universities, colleges, business, and industry partners across North America and abroad. Local partners of the ICSEC coalition include Eastern Michigan University, Delta College, Henry Ford Community College, Lansing Community College, Oakland Community College, and Washtenaw Community College.



UDM is recognized as one of the top institutions in the country for secure software assurance education. In support of its Information Assurance research, UDM has been the recipient of close to \$4 million dollars in federal funding in the past six years. UDM runs a cyber-range laboratory for advanced forensics research.

Dan Shoemaker, the Program Director of the Information Assurance at University of Detroit-Mercy has authored textbooks on Information Assurance and Cybersecurity. Shoemaker is passionate about the topic.

"Since the digital age is built around secure information, a term like 'critically important' might be an understatement. All of America's commerce and national defense is digitally enabled and so the study that focuses specifically on ensuring the confidentiality, integrity, and availability of that information ought to be considered central to our national well-being," says Shoemaker.

UDM faculty is active with the federal government in the area of Information Assurance standardization. Faculty members have been on the authoring team for the DHS-NCSD Common Body of Knowledge (CBK) and the Essential Body of Knowledge (EBK).

University of Detroit-Mercy continues to play a critical role in Information Assurance education, providing the needed professionals for this ever-expanding field.

Walsh College

Walsh College offers a Master of Science in Information Assurance degree. The program is designed to meet the demand for information security professionals in government, corporations and private industry, with an emphasis on applied learning. The program's curriculum is taught online. Students have access to virtual labs and coursework from anywhere, through a web browser. Students can choose to specialize in Digital Forensics, IT Audit, or Security Management.

Walsh College has created an Information Assurance Education Center to provide public organizations with education, information and training in responding to cyber threats, protection, compliance, and privacy issues. Nanette Poullos is the Director of the Information Assurance Center at Walsh College.



"The Information Assurance education program at Walsh College has been recognized for its depth of instructional content and for its rigor in preparing students for the workforce," says Poullos. "Walsh College is unique in its 'all business' focus. Our courses are taught by business professionals that bring real work experiences to the classroom."

Poullos has found "there is a strong demand for security professionals that understand business issues along with technical issues." The program at Walsh College combines theory with applied learning, so students can start using their newly acquired skills even before they graduate.

Information Assurance in Demand

Information Assurance is one of the fastest growing careers in technology today. Graduates from the types of IA programs offered here in Michigan will find career opportunities in government, business, health care, and private industry.

"Demand for graduates is high, both within Michigan and nationally. We've seen strong demand for graduates in insurance and finance, as well as Federal positions," says Greg Gogolin of Ferris State University.

Gerald Lawver has seen a similar situation at Eastern Michigan University. "Just this year GE, AT&T, DTE, Barracuda Networks, GM, FORD, Chrysler, and Blue Cross, plus many more, are in need of our students in the IA field for compliance, incident response, investigation, and network security."

The main goal of each of the National Centers of Education programs here in Michigan is to promote higher education and research in Information Assurance and produce a growing number of professionals with expertise to reduce vulnerability in our information infrastructure. The threats to our digital information change in number and sophistication daily. Universities in Michigan will continue working to produce the cutting edge professionals needed to protect our cyberspace.



Davenport University, Eastern Michigan University, Ferris State University, University of Detroit-Mercy, and Walsh College are all Members of the Merit Network.

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