Ohio | Department of Higher Education

Mike DeWine, Governor
Randy Gardner, Chancellor

INITIAL INQUIRY
REQUEST TO OFFER A NEW PROGRAM

Date of submission: October 28, 2019

Name of institution: Kent State University

Primary institutional contact for this request:
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Name of program: Cybersecurity Engineering major, Bachelor of Science degree

Classification of Instructional Program (CIP): **14.4701 Electrical and Computer Engineering:** A program that prepares individuals to apply mathematical and scientific principles to the design and development of computer systems. Includes instruction in computer architecture, cybersecurity, electronic circuits, electromagnetism, electronic materials and design, micro-fabrication methods and techniques, signal and image processing, and wireless communication networks.

Proposed start date: Fall 2020
Start date is contingent upon final approval from the Ohio Department of Higher Education and the Higher Learning Commission.

Type of request:
☐ New degree designation at Kent State
☒ New major within an existing degree at Kent State

Delivery options:
☒ Campus-based
☒ Online/hybrid delivery
☐ Flexible or accelerated delivery
☐ Offering the program at a new offsite location
☐ Offering the program at an existing offsite location
☐ Program contains off-campus experiences (e.g., internship, clinical, student teaching)

The institution will be seeking specialized accreditation for the program:
☐ No ☒ Yes

Kent State will seek accreditation from the ABET Engineering Accreditation Commission.

Provide a brief description of the request.

The College of Aeronautics and Engineering is proposing a Bachelor of Science degree in Cybersecurity Engineering to prepare individuals who want to become professional engineers in the broad field of cybersecurity. One objective of the program will be to provide students with a working knowledge of "analysis and evaluation of components and systems with respect to security and to maintaining operations in the presence of risks and threats"[1] with an emphasis on engineered systems. Students will gain the knowledge and skills necessary to address security issues pertaining to stakeholder needs and requirements (from a system engineering perspective) considering the lifecycle of the system from the outset. Design and development of systems, their components and associated networks to increase trustworthiness is a driving concern.

ABET offers accreditation for cybersecurity programs under two separate and distinct commissions: Computer Accreditation Commission (CAC) and Engineering Accreditation Commission (EAC). Both have the Computing Sciences Accreditation Board (CSAB) as a lead ABET society, which guides curricular requirements specific to the accreditation process; EAC also receives direction from the Institute of Electrical and Electronics Engineers and the International Council of Systems Engineering. Of the six specialized curriculum requirements set forth by ABET EAC, the requirement to offer curriculum that includes "engineering topics necessary to determine cybersecurity requirements and to analyze, design, test and protect complex devices and systems that incorporate hardware, software, and human components"[1] makes a cybersecurity engineering degree program uniquely poised to exist within the College of Aeronautics and Engineering.

The College of Aeronautics and Engineering offers a B.S. degree in Computer Engineering Technology, with a large number of courses that are directly relevant to this proposed degree (more than 20 existing courses). Students in the computer engineering technology program have completed capstone projects focused on cybersecurity engineering. In addition, the college offers a minor in electronic technology and is partnering with Kent State's College of Applied and Technical Studies to create pathway programs for that college's A.A.S. degree in Electrical/Electronic Engineering Technology and B.S. degree in Engineering Technology, both offered on the Tuscarawas Campus. Both colleges currently have programs accredited by ABET.

Recognizing that the College of Aeronautics and Engineering has focus and experience with hardware and human factors, but not software, the college will work with other academic departments within Kent State to fill the gap in curriculum and best leverage existing expertise and offerings. As one example, the Department of Computer Science offers a comprehensive set of courses that address the software and information security implications for the design of an engineered system.

[1] ABET Accreditation Criteria 2019-2020. Retrieved from www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2019-2020/#3

Explain the academic unit's rationale for making the request.

The Bureau of Labor Statistics projects that the job outlook for information security analysts (those who plan and carry out security measures to protect an organization's networks and systems) will grow by an astounding 32 percent in the next 10 years.[2]

The College of Aeronautics and Engineering is currently working with the National Security Administration to have its B.S. degree in Computer Engineering Technology designated as a Center of Academic Excellence in Cyber Defense.[3] This distinction will transition to the proposed cybersecurity engineering degree program once it is in place. Additionally, the college is working to establish partnerships with the State of Ohio, University of Cincinnati and University of Akron in the Ohio Cyber Collaboration Committee.[4]

Indicate whether additional resources (e.g., faculty, staff, facilities, technology) will be needed to support the proposed request.

While an increase in the number of faculty may be required as projected enrollment in the cybersecurity engineering degree program grows, at this time there is no immediate need for faculty. Additionally, there is no anticipated need for additional staff or technologies. The College of Aeronautics and Engineering is in discussions with university architects for an expansion to its building on the Kent Campus. Any growth associated with this or other proposed academic programs is being incorporated into that discussion.

[2] Bureau of Labor Statistics: U.S. Department of Labor (2018). Retrieved from https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm.

[3] National Security Agency, Central Security Service (n.d.). National Centers of Academic Excellence. Retrieved from www.nsa.gov/resources/students-educators/centers-academic-excellence.

[4] Ohio Cyber Collaboration Committee (n.d.). Retrieved from www.ohioc3.org.