

MEMORANDUM

TO: 2023-2024 Senate Executive Committee
 FROM: Teri Hogg
 Chair, Undergraduate Curriculum Subcommittee
 DATE: April 16, 2024
 SUBJECT: Concentration in Cyber Security

The Undergraduate Curriculum Subcommittee reviewed and supported the proposal from the College of Engineering, Technology and Computer Science (ETCS) for a new concentration in Cyber Security. We find that the proposal requires no Senate review.

Thank you for the opportunity to review this new concentration.

Approved	Opposed	Absent	Non-Voting
Laurel Campbell Claudio Freitas, Teri Hogg Lee Roberts Xiaoguang Tian		Emily Tock Jordan Marshall Terri Swim (non-voting)	

Degree/Certificate/Major/Minor/Concentration Cover Sheet

Date:

Institution: Purdue

Campus: Fort Wayne

School or College:

Department:

Location: 80% or more online: Yes No

County:

Type:

Program name:

Graduate/Undergraduate:

Degree Code:

Brief Description:

Rationale for new or terminated program:

CIP Code:

Name of Person who Submitted Proposal:

Contact Information (phone or email):

Request for a New Concentration

Campus: Ft. Wayne

School or College: ETCS

Department: School of Polytechnic

Degree and Major: Information Technology

Title of Concentration: Cyber Security

CIP Code: 43.0404

Effective Date (Session and Academic Year): Spring 2025

Mode of Delivery: Campus/Online/Distance/Hybrid

80% or more online:

Yes

No

If Hybrid, explain: some courses will be offered in both an online and live modalities

Who will administer the online aspect of this program (vendor, program)?

Program

Brief Description of Concentration: *This may be published in the Catalog. A brief explanation of what the student will experience and/or learn; no more than 2-3 sentences.*

The concentration in cyber security within the B.S. Information Technology (IT) degree provides students with knowledge and specific skill sets in cyber security such as intrusion detection, incident response management, IT auditing, cryptography and digital forensics.

Justification

This section provides statements regarding the mission of the proposed concentration.

Need for the concentration:

- Target audience would be students who are looking to gain deeper knowledge into all aspects of computer cyber security and policy. This program will serve IT students who want to provide cyber security in a variety of industries. Protecting data/digital assets in hospitals, schools, and businesses is all the more important given our current cyber environment.
- The demand for cyber security professionals has been increasing steadily over the past few years. If we don't have people protecting our digital assets, we are at risk of our personal information being compromised. Currently there are not enough knowledgeable people to meet the demand. This is evidenced by a 32% projected growth in cyber security jobs in the US

and 33% projected growth in Indiana (onetonline.org) for Information Security Analysts. This represents over 16,500 job openings between 2022-2032 in the US.

- The knowledge and skills acquired in this certificate open professionals to higher salaries. The average salary for this occupation is \$77,470 in Fort Wayne, IN.
- While no formal study has been conducted, students inquire about additional course options in cyber security on a weekly basis. We believe this concentration will attract more students into the program. Until now, we are unable to expand our course offerings due to a lack of faculty. With support from Dean Elfayoumy, we have hired a faculty member with deep knowledge in this area to begin addressing this need.
- This new concentration will allow us to set up a TSAP agreement in cybersecurity. The Commission for Higher Education created a new TSAP in Cyber Security in 2023 to be implemented by ITCC and VU beginning Fall 2024. Initially, we weren't able to create a pathway for students. However, the new faculty hire allows us to do so moving forward. Additionally, we created an agreement with Northwest State Community College (OH) for student to earn an IT major with cyber security courses. Once the concentration is approved, it will show as an official concentration on their transcript.

Target audience, including the expected number of students and benefits to them:

The target audience would be IT majors who want to focus their specialization into cybersecurity. Courses in the concentration could also be used individually as advanced technical electives for students not choosing to complete the concentration.

Focus of Research or career relevance:

All IT major take 2 cyber security courses, but with the projected job growth in the cyber security sector, we need to be graduating students with deeper skill sets.

Description of how the concentration fits into and supports the existing degree program(s) and major(s).

The B.S. in IT has 15 credits designated as Approved Technical Electives. Creation of this 15-credit concentration in cyber security allows interested IT students to use those 15 credits and acquire deeper knowledge, beyond the two courses they already required to take, and skill sets in cyber security.

Description of the relationship to other concentrations in the degree program:

This is the first concentration within the program. Courses used in the concentration can be used by those not in the concentration to fulfill approved technical electives.

Participating faculty, including name, academic rank, and departmental affiliation:

Michelle Parker, Associate Professor of Practice in Information Technology, School of Polytechnic

Dr. Hongli Luo, Associate Professor in Computer Engineering Technology, School of Polytechnic

William Russell, Assistant Professor of Practice in Information Technology, School of Polytechnic

Prospective Curriculum – *Please create a plan of study for the degree. If new courses are being created, all course proposals must be completed in order to add to this block. (note any that are variable title; **min of 9 hours of unique courses for a GRAD concentration**):*

This 15-credit concentration can begin after completing the prerequisites of ITC 11000 IT Fundamentals and ITC 33100 – Networks 1 which are taken by the 3rd semester of the program. It is anticipated that students would take 1 course per semester starting with their 3rd or 4th semester in the program, though multiple courses could be taken at one time if needed.

ITC 32200 – Incident Response Management	3 credits
ITC 32800 – Intrusion Detection	3 credits
ITC 41200 – IT Auditing	3 credits
ITC 41500 – Cryptography	3 credits
ITC 41700 – Digital Forensics	3 credits

Learning outcomes (e.g., unique knowledge or abilities, capacity to identify and conduct original research, ability to communicate to peer audiences, critical thinking and problem-solving skills, etc.):

1. Understand the terminology of threats, vulnerabilities, and controls
2. Construct proper security plans and the creation of security policies
3. Apply access controls
4. Understand and apply cryptography principles
5. Implement security policies in the protection of General-Purpose Operating Systems
6. Apply authentication techniques to provide secure communication
7. Use software to identify vulnerabilities in computer systems and network devices.
8. Understand network security threats and countermeasures such as IPSec, SSL/TLS
9. Apply knowledge of intrusion detection to protect assets
10. Use digital forensic principles to identify and analyze electronic data
11. Evaluate infrastructure to determine proper controls and procedures
12. Knowledge with Email security and Web security
13. Familiarization with legal, privacy and ethical issues in computer security

Will new courses be created for this concentration?

Yes
 No

If yes, list new courses and if proposals have been submitted:

All 5 of these courses will be new and proposals have already been submitted in Curriculog.

ITC 32200 – Incident Response Management	3 credits
ITC 32800 – Intrusion Detection	3 credits
ITC 41200 – IT Auditing	3 credits
ITC 41500 – Cryptography	3 credits
ITC 41700 – Digital Forensics	3 credits

Name of Person who Submitted Proposal: Michelle Parker

Contact Information (phone and email): 260-481-5716 parkerm@pfw.edu

Liaison Librarian Memo

Date:

From:

To:

Re:

Describe availability of library resources to support proposed new program:

Comments:

Sarah Wagner *3-4-2024*
Liaison Librarian Signature *Date*

Library Resources

Address the following issues regarding the impact of the new program on the library's budget and personnel. Please respond to each item below indicating the library sources and services required to support the proposed program.

- Which databases/indexing sources will be used by the courses in this program?
 - None
- What are the journals that will be used by students completing library research in this program? Please list three to five titles.
 - None will be needed
- Is there an expectation that access to new journals will need to be purchased for students in this program?
 - No
- Are there any specific reference sources (e.g. encyclopedias, handbooks, standards, etc.) required to support the new program?
 - No
- Is there an expectation for additional books to be purchased? What about DVD or audio/visual materials? What is the estimated dollar amount needed yearly to support this program with new books and media materials?
 - No
- Will the new program use the Library's Document Delivery Services? Costs for this service come out of the Library's budget. What types of materials would the program be requesting through DDS?
 - No
- Who is the liaison librarian for this program? The liaison librarian provides support through involvement in Blackboard-supported classes, one-on-one research consultations, in-class instructional sessions, and tailored course guides for research assignments. Which of these librarian services do you anticipate will be utilized in the new program?
 - Sarah Wagner
 - None
- Memo from Liaison Librarian regarding resources.
- Is there an accrediting body that will be overseeing this program? What are the statements of the accrediting body related to the library, e.g. holdings, personnel, services?
 - ABET/CAC

“The library services and the computing and information infrastructure must be adequate to support the scholarly and professional activities of the students and faculty”



Undergraduate Academic Program Memo

Date: 2/28/24

From: Michelle Parker

To: Dr. Sherif Elfayoumy, Dr. Carl Drummond

Re: Cyber Security Concentration in B.S. Information Technology

Brief description of the program:


The concentration in cyber security within the B.S. Information Technology degree covers more specific skill sets in cyber security such as intrusion detection, incident response management, IT auditing, cryptography and digital forensics.

Brief rationale for program request:

The demand for cyber security professionals has been increasing steadily over the past few years. This certificate will enable students from all disciplines to obtain the necessary background in cyber security. Jobs in the cyber security area are projected to grow by 32% in the State of Indiana. This will also allow us to establish a TSAP agreement in cyber security.

CIP Code: 11.1099

For completion by Office of Academic Affairs

<small>DocuSigned by:</small>  <small>4E345542E1EA497...</small>	4/12/2024
<i>Department Chair Signature</i>	<i>Date</i>
<small>DocuSigned by:</small>  <small>5CC32880FFC14FA...</small>	4/15/2024
<i>School Dean Signature</i>	<i>Date</i>
<small>DocuSigned by:</small>  <small>27109142004745C...</small>	4/11/2024
<i>Vice Chancellor for Academic Affairs Signature</i>	<i>Date</i>

PLEASE NOTE: The Office of Academic Affairs will collect electronic signatures from the Chair, Dean, and Vice Chancellor for Academic Affairs after the form has been filled out and submitted to the Associate Vice Chancellor for Academic Programs with the rest of the program proposal.