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TO: Linda C. Martin, Vice President for Academic Affairs and Student Success
The University of Tennessee System

FROM: Betty Dandridge Johnson, Chief Academic Officer
Tennessee Higher Education Commission

A handwritten signature in blue ink, appearing to read 'BDJ', is positioned to the right of the 'FROM:' line.

SUBJECT: University of Tennessee, Chattanooga
Letter of Notification: Information Technology in Cybersecurity,
Bachelor of Applied Science (BAS)

DATE: December 17, 2021

Thank you for the submission of the Letter of Notification (LON) for the Information Technology in Cybersecurity, Bachelor of Applied Science (BAS) program. Per THEC Policy A1.0 – *New Academic Programs: Approval Process*, the LON is evaluated on the following criteria: alignment with state master plan and institutional mission, need, sustainable demand, program costs and revenues; institutional capacity to deliver the proposed academic program; and avoidance of duplication.

After reviewing the revised LON, I approve the University of Tennessee, Chattanooga's (UTC) plan to develop the New Academic Program Proposal (NAPP) for the Information Technology in Cybersecurity, BAS program. As UTC continues to develop the proposed program, all concerns italicized on the attached LON evaluation must be reflected in the NAPP. It is understood the proposed program will be developed in accordance with the mission of UTC and will meet the Master Plan for Tennessee Postsecondary Education 2015-2025 degree completion and workforce development objectives.

The LON projects implementation of an approved Information Technology in Cybersecurity, BAS program in August 2022. Please be advised that the approval and the attached LON evaluation will be posted on the THEC website for public disclosure.

Attachment

cc: Emily House, THEC Executive Director
Randy Boyd, UT President
Karen Etzkorn, UT Director of Academic Affairs
Steve Angle, UTC Chancellor
Jerold Hale, UTC Provost
Corey Gheesling, THEC Director of Academic Affairs

Tennessee Higher Education Commission
Letter of Notification Evaluation
December 17, 2021



The evaluation of the Letter of Notification (LON) is in accordance with the *THEC Policy A1.0 New Academic Programs: Approval Process*. The evaluation is conducted by interested parties and THEC staff. The LON is posted on the THEC website for a 15-day period of comment by interested parties. Based on the internal and external evaluation, THEC will make a determination to support, not to support, or defer a decision based on a revised LON.

Institution: University of Tennessee, Chattanooga	LON Submission Date: June 24, 2021 LON Resubmission: August 30, 2021 LON Resubmission: December 3, 2021
Academic Program, Degree Designation Information Technology in Cybersecurity Bachelor of Applied Science (BAS-ITCyS)	
Proposed CIP Code: 11.1003 (Computer and Information Systems Security)	
Proposed Implementation Date: Fall 2022	
Time Period Posted on Website for Public Comment: June 28, 2021-July 12, 2021	
Academic Program Liaisons: Karen Etzkorn (etzkorn@tennessee.edu) Luay Wahsheh (luay-a-wahsheh@utc.edu)	

Note: Comments in italics within this document should be addressed in the New Academic Program Proposal (NAPP).

Criteria	Comments
Letter of support from President/Chancellor	<ul style="list-style-type: none"> A signed letter of support from Chancellor Angle was submitted along with the letter of notification (LON) that was dated on June 21, 2021.
Background on academic program development	<ul style="list-style-type: none"> The proposed Information Technology in Cybersecurity (ITCyS) program emerged from identified labor market gaps for individuals trained in cyber security and requests from the Greater Chattanooga Chamber of Commerce, industry partners, and the University of Tennessee, Chattanooga (UTC) advisory board to address the critical need for trained IT professionals in the greater Chattanooga region. ITCyS is intended for adult learners and transfer students who have already completed their Associate of Science (AS) or Associate of Applied Science (AAS) and will require students to enroll full-time and consist of coursework in the morning and an internship in the afternoon. ITCyS will differ from the current UTC Computer Science, BS with a concentration in Cybersecurity by offering an accelerated time to degree, targeting a different student population (e.g., adult learners)

	<p>and by differing in curricular scope with less emphasis on the mathematical underpinnings of the academic discipline.</p> <ul style="list-style-type: none"> ▪ The proposed program is designed to be substantially different from existing programs in Tennessee by requiring an internship component tied to the curricular objectives of the program to maximize student learning opportunities in workplace settings and quickly moving students from the program to the workforce. ▪ ITCyS will align with the Information Technology Tennessee Career and Technical Education (CTE) cluster to provide students with a program that is aligned with each of the sub-pathways of this cluster including Cybersecurity, Networking Systems, Coding, and Web Design. Two local K-12 districts near UTC (Hamilton and Bradley County Schools) offer this CTE cluster. ▪ The proposed program will work with the Department of Computer Science and Engineering’s Institutional Advisory Board at UTC that included representatives from leading corporations and employers in the region including Tennessee Valley Authority, Oak Ridge, BlueCross BlueShield, etc., to ensure the program is aligned with current and emerging industry needs.
<p>Purpose and nature of program</p>	<ul style="list-style-type: none"> ▪ ITCyS will require 120 credit hours and will include 60 credit hours of General Education and required science and mathematics courses, 42 credit hours of Information Technology courses, and 18 credit hours of Cyber Security courses. <i>Sixty credits of general education are higher than other programs including community college general education requirements. Please provide some additional information concerning the departure from UTC’s typical general education requirements and if there will be any potential impact on transfer students from community colleges.</i> ▪ The proposed program is designed so that graduates will demonstrate mastery to program, operate, test, maintain, and analyze complex computer systems along with associated equipment following appropriate safety, health, and environmental considerations and regulations. ▪ ITCyS is designed to incorporate intensive experiential learning for students to practice knowledge gained in the curriculum in their internship settings. ▪ The proposed program will prepare students to obtain advanced industry-recognized certifications (e.g., Certified Information System Security Professional (CISSP), Certified Information Security Manager (CISM), Certified Information Systems Auditor (CISA) and NIST Cybersecurity Framework (NCSF)) through the inclusion of the content of these certifications into the program’s curriculum. Completing the requisite exams for each of these certifications will be optional. ▪ ITCyS will seek accreditation via the Computing Services Accreditation Board of ABET for Engineering and Technology (CSAB-

	<p>ABET) in 2023, once the program produces graduates. The program intends to pursue accreditation under the Cybersecurity and Similarly Named Computing category of standards.</p> <ul style="list-style-type: none"> ▪ UTC notes that the proposed program is difficult to situate in a specific CIP code, but that CIP 11.1003- Computer and Information Systems Security fits most closely with the intended scope of the program. ▪ The program of study is designed to ensure graduates achieve the following educational objectives. Students will: <ul style="list-style-type: none"> ○ Act as responsible and ethical professionals and leaders in Information Technology and Cybersecurity or closely related disciplines; ○ Function effectively in inclusive, multidisciplinary environments and adapt to various environments; and ○ Participate in further knowledge-building opportunities. ▪ Graduates of the degree will meet the following six ABET - CAC student learning outcomes. Specifically, students will: <ul style="list-style-type: none"> ○ Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions; ○ Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline; ○ Communicate effectively in a variety of professional contexts; ○ Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles; ○ Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline; and ○ Apply security principles and practices to maintain operations in the presence of risks and threats.
<p>Alignment with State Master Plan and Institutional Mission</p>	<ul style="list-style-type: none"> ▪ The THEC Master Plan supports “tactical strategies to support Tennessee’s students and institutions for greater success and improved workforce alignment, while continuing to focus on increasing the state’s educational attainment”. The proposed program is designed to prepare non-traditional learners to meet demonstrated labor market needs and future growth opportunities in Cybersecurity in both Tennessee and in Chattanooga. ▪ Faculty and students will collaborate with local industry partners by creating new educational pathways for non-traditional learners and for developing knowledge and research through a collaborative intensive internship program to impact the community directly. ▪ UTC also follows the institutional pledge, “We shall achieve”. The proposed program aligns with the UTC mission through its

	<p>community partnerships and a focus on technical revitalization to better tie together the university and the economic partners around UTC to better provide educational opportunities to the area's citizens.</p> <ul style="list-style-type: none"> ▪ The proposed program aligns closely with UTC's strategic goals by developing cutting-edge academic offerings, build and participate in strategic partnerships, and become deeply involved in the community as well as offering another program focused on non-traditional learners. ▪ The Department of Computer Science and Engineering is committed—through the proposed degree—to developing ethically and socially responsible leaders within the regional industry; creating a supportive, collegial learning environment for those who seek knowledge; building effective community partnerships; and achieving national recognition through research, scholarship, and creative endeavors. ▪ The main strategic goals of UTC are to: <ul style="list-style-type: none"> ○ Transform lives through meaningful learning experiences for students ○ Inspire, nurture, and empower scholarship, creativity, discovery, innovation, and entrepreneurial initiatives for students ○ Ensure stewardship of resources through strategic alignment and investments ○ Embrace diversity and inclusion as a path to excellence and societal change within the university's surrounding community ▪ The ITCyS program will align with the UTC Strategic Goals by offering an academic program rooted in meaningful learning experiences that blend academic course work with internships, developing closer academic and industry working partnerships in a dynamic and growing industry, securing private funding sources to augment student success in the program, and through providing an alternative pathway to adult learners and transfer students to earn an expedited degree while gaining critical learning experiences.
<p>Institutional capacity to deliver the proposed program</p>	<ul style="list-style-type: none"> ▪ The proposed program will be in the Department of Computer Science and Engineering (CSE) within the College of Engineering and Computer Science at UTC and will leverage existing facilities and capacities. ▪ The department currently has a major in Computer Science with a concentration in Cybersecurity that was previously named the Information Security and Assurance concentration. ▪ The Cybersecurity Concentration has increased enrollment from 61 students in 2017 to 117 in 2020 and has graduated 11 students the last two academic years.

	<ul style="list-style-type: none"> ▪ UTC does not anticipate the proposed program having a negative impact on the current concentration because the intended students for the proposed program and the internship component of the program differs from current offerings. ▪ The CSE Department Head will serve as the Program Coordinator for the first two years and have immediate responsibility for administering the program. A program director will be hired in year three. ▪ UTC currently has articulation agreements for students with an Associate of Science or Associate of Applied Sciences to transfer to the UTC Bachelor of Science and Bachelor of Applied Science Engineering and Computer Sciences programs with Chattanooga State Community College, Cleveland State Community College, Dalton State Community College (GA), Motlow State Community College, Enterprise State Community College (AL), Covenant College, and Lee University. Further agreements are being developed with Pellissippi State Community College, Nashville State Community College, Volunteer State Community College, Roane State Community College, and Columbia State Community College. ▪ Faculty advisors as well as CECS Professional Advisors will be assigned to students based on common specialties and interests.
<p>Existing programs offered at public and private Tennessee institutions</p>	<ul style="list-style-type: none"> ▪ There are currently five other standalone major programs in the proposed CIP code in Tennessee: Freed Hardeman University; Lipscomb University; University of Tennessee, Martin; University of Tennessee, Southern; and Union University. ▪ The proposed program differs from the existing program at UT Martin through a focus on information technology with an emphasis on Cybersecurity rather than the entire program oriented around Cybersecurity. ▪ The University of Memphis (UoM) also has an undergraduate major of Computer Science with a concentration in Cybersecurity. ▪ ETSU and BlueCross Blue Shield have launched a similarly designed program in Computing that includes a concentration in Cybersecurity and intends to serve Chattanooga residents particularly in the healthcare industry. ▪ The proposed program differs from the ETSU program through offering a broader curriculum designed to serve a variety of industries and an intended student population that is comprised of adult learners and transfer students.
<p>Feasibility Study</p>	
<p>Student interest</p>	<ul style="list-style-type: none"> ▪ <i>Please provide additional data which supports interest from adult learners for the proposed program, especially considering the need for these students to be dedicated to the program in a full-time capacity,</i> ▪ UTC anticipates the majority of students to come from Tennessee Board of Regents (TBR) community colleges – particularly

	<p>Chattanooga State Community College (ChSCC) and Cleveland State Community College (CISCC).</p> <ul style="list-style-type: none"> ▪ Annually, ChSCC averages over 250 students enrolled in their Engineering and information Technologies division and has doubled graduation since between 2016-2019 (31 in 2016 to 63 in 2019, respectively). CISCC has nearly doubled their enrollment in related disciplines between 2016-2019 and has graduated approximately 10 students per year. ▪ UT Chattanooga surveyed students at ChSCC (N=99) and CISCC (N=77) and found 74 percent of ChSCC students and 80 percent of CISCC were interested in pursuing a transfer program designed like the proposed program.
Local and regional need	<ul style="list-style-type: none"> ▪ UT Chattanooga cited inquiries from regional employers about establishing the proposed program to help their current and potential employees be equipped with the skills and experience to meet the current workplace demands. ▪ EMSI Data showed there were 233 jobs closely related to the proposed program in Tennessee that were posted between March 2019-March 2021 in the Chattanooga region. ▪ UT Chattanooga found that only 21 percent of the current population in the Chattanooga region possess the talent to fill current IT related openings. ▪ BLS data for the associated occupations in the Chattanooga region shows a shortage of available workers to fill available jobs in the region.
Employer need/demand	<ul style="list-style-type: none"> ▪ Tennessee Department of Labor and Workforce Development data from July 2019 showed over 2000 openings for IT related jobs in Tennessee. ▪ IPEDS data has six direct occupational matches for the proposed CIP code. ▪ EMSI data shows that Tennessee institutions are only producing 54 percent of the number of graduates needed for associated occupations to the proposed program. In Chattanooga, 74 percent of available jobs have a degree produced in that CIP. ▪ EMSI data shows the cybersecurity shows up at a desired skill in 56 percent of job postings.
Future sustainable need/demand	<ul style="list-style-type: none"> ▪ EMSI data shows the projected growth rates for the six occupational matches with information security analysts growing by 40 percent in Chattanooga and 33 percent in Tennessee through 2030. ▪ EMSI data shows the median salary for the six identified occupations in the region is approximately \$47.34 per hour. ▪ Citing the 2021 THEC Academic Supply and Demand report, UTC showed that Information Security Analysts – identified as the closest occupational match to the proposed program – is classified as a high-demand occupation and is projected to have the highest growth rate in Tennessee.

	<ul style="list-style-type: none"> ▪ MOUs are currently in development with the TVA regarding supporting the proposed program. ▪ Letters of Support were received by: <ul style="list-style-type: none"> ○ Joseph Brown – VP of Engineering and Quality Assurance at Miller Industries ○ Steven Douglas – VP of Nuclear Operations Support at TVA ○ Amanda Thompson – Chief People Officer at US Xpress Inc. ○ Julian Bell – Executive Vice President at Signal Energy ○ Scott Swiney – Corporate Director of Information Technology at Playcore Inc. ○ Karen Walker – Senior Director of IT at CBL Properties. ○ Greg Sutherland – VP of IT at McKee Foods ○ Marie Webb – VP and Chief Talent and Inclusion Officer at EPB ○ Joe Ferguson – Advisory Board Chairman College of Engineering and Computer Science at UTC ○ Debra Socia – President and CEO at the Enterprise Center ○ Dr. Joshua Guerin – Associate Professor and Chair at UTM ▪ Letters committing to financially support internships were received from <ul style="list-style-type: none"> ○ Sias Reyneke – CIO Miller Industries Towing Equipment, Inc ○ Amanda Thompson – Chief People Officer at US Xpress Inc. ○ Scott Swiney – Corporate Director of Information Technology at Playcore Inc.
<p>Program costs/revenues and THEC Financial Projection Form</p>	<ul style="list-style-type: none"> ▪ UTC anticipates 30 students in year one increasing to a total enrollment of 60 students beginning in year four (see LON Table 1). ▪ No new office, classroom, or laboratory space needs are anticipated to start the program. ▪ The program will require \$100,000 for computing and networking equipment to establish a dedicated teaching laboratory and a separate computer network to teach protection tools from hackers for the proposed program. \$10,000 for library costs in year one will be used to purchase reference material. ▪ Faculty costs represent the bulk of programmatic costs for the program increasing from \$338,400 in year one to \$727,802 in year five. Six faculty lines total will be hired to support the program. Four faculty lines will be hired in year one and two additional faculty will be hired in year two of the proposed program. ▪ A program director will be hired in year three of the proposed program. ▪ Support staff costs increase from \$141,000 in year one to \$218,610 in year five. An administrative member will be hired in year one of the proposed program to help with student support, clerical and

	<p>technical work, and the recruitment of staff. <i>Please align the notes regarding specific support staff jobs associated with the program from the financial projections regarding support staff with the LON narrative under the personnel section.</i></p> <ul style="list-style-type: none"> ▪ The proposed program plans a \$45,000 operating budget for the first two years and \$76,000 operating budget beginning in year three. These funds will be used for faculty professional development, lab materials and activities, and various administrative costs. ▪ The proposed program anticipates generating revenue beginning in year four. ▪ The Financial Projection Form notes (see Note 5) that the proposed program anticipates partner companies who participate in the internship program will contribute \$5,000 per student with totals increasing from \$150,000 in year one to \$300,000 beginning in year three.
Public comments	<ul style="list-style-type: none"> ▪ The University of Memphis provided a public comment (Appendix A) to notify that they offer an undergraduate program in Computer Science with a concentration in Cybersecurity. UoM is not opposed to the proposed program.

Appendix A: University of Memphis Public Comment

From: Lan Wang (lanwang) <lanwang@memphis.edu>
Sent: Monday, July 5, 2021 10:23 AM
To: Betty.Dandridge Johnson <Betty.Dandridge.Johnson@tn.gov>
Cc: Abby L Parrill-Baker (aparrill) <aparrill@memphis.edu>; Thomas J Nennon (tnennon) <tnennon@memphis.edu>
Subject: [EXTERNAL] Re: UTC Cybersecurity BAS (Public Comment Period June 18-July 12)

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Hi Ms. Johnson,

Thank you for sharing the LON. We do not object to the proposed program, but we would like to mention that the University of Memphis offers a Bachelor of Science in Computer Science with a concentration in Cybersecurity. This information is missing from the proposal. More details about the program can be found at https://www.memphis.edu/cs/programs/bs_conc_cyber_security.php.

Lan

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