BOARD OF REGENTS

EASTERN MICHIGAN UNIVERSITY

RECOMMENDATION

NEW ACADEMIC PROGRAM

ACTION REQUESTED

It is recommended that the Board of Regents approve a New Academic Program: **Information Technology Major (Bachelor of Science)**

SUMMARY

The Bac*helor of Science* in *Information Technology* will focus on IT infrastructure, project management and integration, systems and network administration, security, and IT architecture.

PROPOSAL ELEMENTS

Rationale	The last decade has witnessed a surge in the already fast-paced technology changes. New platforms were introduced while others became obsolete. New areas of study have emerged, which were not previously conceivable, but now due to great advancements and lower prices of various types of resources, such as storage, memory and processors have made them more viable. From Big Data, Data Science and Engineering, Mobile Development & Computing, Internet of Things, Maker movements, Raspberry Pi, and many others that have revolutionized technology as a field of study and made a very attractive field for students to pursue. This proposed program would prepare them for the large number of jobs that have been increasingly posted in various job search engines, which require such technical skills, such as "Systems Admin", "Network Admin", "IT Engineer", "IT Specialist", "IT Manager" and others.
Program Distinction	Currently, no public university in Southeast Michigan offers a bachelor's degree in Information Technology. A major in information technology would be a point of distinction and competitive advantage for Eastern in our region and should help to attract students to Eastern.
Curriculum Design	The proposed Major requires students to complete 78 credit hours (24 required courses, 2 restricted electives). Graduates of this proposed IT program will have excellent opportunities in various areas that revolve around systems, networks, database management, ERP, Web application development and administration, and security (A mix of Computer Information Systems, Computer Science, Information Assurance, and Information Technology course work).
Projected Enrollment	In Thibodeau (2012), it is stated that "By 2020, employment in all computer occupations is expected to increase by 22%, but some IT fields will fare better than others," according to BLS. This includes "Faster than average" (28%) growth in network & computer administration and other similar positions that are IT related, ergo the title of this article. In addition, White (2009) addressed the slight downturn in enrollments at four-year and two-year colleges in IT programs, and explained the reasons and proposed remedies to address this issue. Furthermore, Adeptia (2015) outlines Detroit-Warren-Dearborn, MI as one of the top 5 cities with the most technical jobs. In this same summary article, they indicate how healthcare is expected to see a 20% increase in its need for IT professionals,

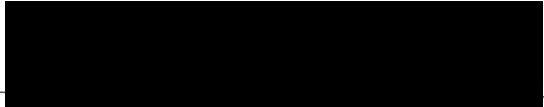|	which may contribute to an overall 22% anticipated growth in IT jobs by 2020, despite off-shoring of programming.
	Additionally, the proposed IT program will also contain courses in security making it a unique and sought degree. It is noticeable that our proposed IT program will be a good tool to prepare students for these jobs. Therefore, we expect a lot of interest in this program as it presents an opportunity for students to take advantage of that changing trend toward insourcing and to be educated in a such a diversified program, which will help make our students ready for future IT jobs. Finally, according to U.S. News (2016-2017), employment in related jobs is not expected to slow down anytime soon, but rather will grow annually until at least 2022.

FISCAL IMPLICATIONS

Program costs will be absorbed by the current Academic Affairs budget.

ADMINISTRATIVE RECOMMENDATION

The proposed Board action has been reviewed and is recommended for Board approval.

████████████████████████████

University Executive Officer

11/27/17

Date

TO: Chris Shell, Registrar
Suleiman Ashur, Director (I), School of Information Security & Applied Computing

FROM: Michael Tew, Associate Provost & Associate Vice ███████████ gramming and Services

SUBJECT: **Information Technology, BS (New Program)** ███████

DATE: November 3, 2017

The attached proposal from the School of Information Security & Applied Computing and the College of Technology for a new undergraduate program **Bachelor of Science** in **Information Technology**, is approved.

> The effective date will be determined following consideration by the Academic Officers Committee, Michigan Association of State Universities and the Eastern Michigan University Board of Regents.

If you have any questions, please contact Evan Finley, Academic Catalogs & Curriculum Development (487-8954, efinley2@emich.edu).

cc: Rhonda Longworth, Provost & Executive Vice President of Academic and Student Affairs
Mohamad Qatu, Dean, College of Technology
Mary Brake, Associate Dean, College of Technology
Faculty Senate
Calvin McFarland, Director, University Advising and Career Development
Doris Fields, Director, Undergraduate Studies
Sarah Otto, Director, Career Development & Outreach
Colleen Kibin, Assistant Director, Community College Relations
Extended Programs
John Feldkamp, Assistant Director, Honors College
Ramona Milligan, Coordinator, Registration
Carol Evans, Transfer Equivalency Coordinator, Records & Registration
Erin Burdis, Assistant Registrar
Karen Schiferl, Director, Student-Athlete Support Services
Mary Butkovich, Halle Library
Samir Tout, School of Information Security and Applied Computing
James Banfield, School of Information Security and Applied Computing
Original, Course and Program Development

Information Technology | BS

New Program | Effective Date TBD

The effective date will be determined following consideration by the Academic Officers Committee, Michigan Association of State Universities and the Eastern Michigan University Board of Regents.

School Information

Information Security and Applied Computing, *College of Technology*

Suleiman Ashur, Ph.D. | *Interim Director* | 109 Sill Hall | 734.487.0354 | sashur@emich.edu

Advisor Information

Contact department for advisor information

Program Admission

Requirements

Students must meet the following criteria to be admitted to the SISAC programs: completion or transfer credit of IS 215 and IA 110 with a grade of B- or above

Limitations

1. Students can NOT apply courses at the 300-level or above to this program, if not taken at EMU
2. ALL students MUST take at least 45 credits at the 300-level or above in the IT program

Process

Students who wish to be admitted to the IT program must do the following

1. Complete all requirements listed above. *Students may be enrolled in one or two of the required courses listed above during the semester they apply.*
2. Submit a transcript to the attention of the school director by **October 1, February 1,** or **July 1**
3. Attend a mandatory meeting with a SISAC faculty member or a designated COT staff advisor. *The student will be contacted to schedule an appointment after the receipt of their application.*

Decision Notification Process - Students will be notified by letter and/or through email after a decision is made. This notification will be made no later than the start of the semester following the application.

General Education Requirements:

For specific General Education requirements, click here or print a General Education Worksheet

Major Requirements: 78 hours

Students must maintain a minimum cumulative EMU or transfer GPA of 2.5.

Core Courses: 72 hours

Foundational Courses: 6 hours
- CET 215 - Computer Hardware and Software 3 hrs
- COSC 105 - Everyday Computing and Social Responsibility | GEGA 3 hrs

Information Assurance Courses: 30 hours
- IA 110 - Concepts of Network and Business Technology 3 hrs
- IA 150 - Networking I 3 hrs
- IA 212 - Open Systems Platform and Network Administration 3 hrs
- IA 244 - Administration of Computer Systems 3 hrs
- IA 329W - Policy Development in Information Assurance | GEWI 3 hrs
- IA 354 - Networking II 3 hrs
- IA 385 - Database Management & Security 3 hrs
- IA 387L4 - Cooperative Education | GELB 3 hrs
- IA 445 - Ethical Hacking and Offensive Security 3 hrs
- IA 462 - Advanced Operating Systems Security and Administration 3 hrs

Information Systems Courses: 15 hours
- IS 215 - Information Systems for Business 3 hrs
- IS 350 - Enterprise Resource Planning and Architecture 3 hrs
- IS 425 - IS Project and Risk Management 3 hrs
- IS 427 - Business Process and Identity Management 3 hrs
- IS 437 - Introduction to Business Information Technology Audit 3 hrs

Information Technology Courses: 21 hours
- IT 145 - Task Automation for IT Admins 3 hrs
- IT 219 - Introduction to Human-Computer Interaction 3 hrs
- IT 221 - Web Server Administration and Development 3 hrs
- IT 256 - Managing Virtualization and Cloud Computing 3 hrs
- IT 367 - Application Server Administration 3 hrs
- IT 375 - Wireless Networks Administration 3 hrs
- IT 495 - Capstone 3 hrs

Restricted Electives: 6 hours

Choose two IA, IT, COSC, or CIS courses, not already taken. *Each course must be at the 300-level or above.*

Minor Requirement:

This major does not require a minor.

Program Total:

Critical Graduation Information

The following are minimum requirements for all bachelor's degrees awarded by Eastern Michigan University. Some majors and minors require more than the minimum in one or more of the areas below; students are urged to consult the on-line catalog for the requirements of their particular programs.

- Earn a minimum total of 124 credits at the *100-level and above*. Courses with numbers below 100 will not be counted toward this degree requirement. At most 8 credit hours of physical education (PEGN) activity courses will be counted toward this requirement.
- Meet the requirements of the General Education program (see *information below*).
- Complete a Writing Intensive (GEWI) Course in your major.
- Earn a minimum of 60 credits from a four-year college or university; **courses taken at community colleges cannot be used to meet this requirement.** (Some formal program-to-program articulation agreements modify this requirement. See specific agreements for details.)
- Earn a minimum of 30 credits from courses taken at EMU.
- Complete 10 of the last 30 hours for the degree from courses taken at EMU.
- Have a minimum of 30 *unique* credit hours in their major and 20 *unique* credit hours in their minor for a total of at least 50 unique credit hours between them. Some majors that require 50 or more hours themselves do not require a minor; students should check requirements of the selected major in the undergraduate catalog to see if a minor is required.
- Earn no more than 60 credit hours in one subject area (prefix). Credits in excess of the 60 maximum will not be counted toward the minimum of 124 credits required for a bachelor's degree.
- Earn the minimum number of credits in 300-level and above courses in each major and minor as specified below - these credits must be earned in distinct courses; that is, no course can be used to fulfill this requirement in more than one major or minor.
  - Earn a minimum of 6 credits in 300-level or higher courses at EMU in each minor
  - Earn a minimum of 9 credits in 300-level or higher courses at EMU in each major that requires a minor.
  - Earn a minimum of 15 credits in 300-level or higher courses at EMU in each major that does not require a minor
- Transfer credit will be awarded for courses taken at colleges and universities that are accredited by one of the recognized regional accrediting bodies only if the courses are college-level (equated to 100-level or above at EMU) and the student earned a "C" (or 2.0 on a 4 point scale) or better. Transfer credit may be awarded on a case-by-case basis for college-level courses in which a "C" (2.0) or better was earned at institutions outside the U.S. or at non-accredited U.S. institutions; the internal review of such courses is conducted by individual departments/schools within EMU, and additional documentation may be required. *Please note:* EMU awards only credits for transferred courses; grades are not used in the calculation of an EMU GPA.
- Earn a minimum cumulative GPA of 2.0 in courses taken at EMU in order to graduate. In addition, a minimum cumulative GPA of 2.0 must be reached in each major and minor. Only courses taken at EMU and those applied to a student's major or minor will be used in the calculation of their major and minor cumulative GPAs. (Note: some programs may require a higher GPA - check with your program advisor.)

General Education Requirements EMU's General Education Program requires students to choose from a menu of approved courses in several different areas; do not assume that other courses in the same department or with similar names will fulfill these requirements. A detailed description of General Education requirements is available in the General Education section of the catalog.

Students who transferred to EMU may have modified general education requirements based on Michigan Transfer Agreement (MTA) or articulation agreements; consult your academic advisor for additional information.

EASTERN MICHIGAN UNIVERSITY
DIVISION OF ACADEMIC AND STUDENT AFFAIRS

OUTLINE FOR SUBMITTING PROPOSALS FOR NEW DEGREE PROGRAMS

Use this outline to prepare proposals for new programs, including undergraduate majors and minors and graduate majors. Proposals should be submitted in narrative form, organized according to the following outline. Guidelines for submitting such proposals are on the following pages.

PROPOSED PROGRAM NAME:_____**INFORMATION TECHNOLOGY**_____

DEGREE:_____**BACHELOR OF SCIENCE**____**REQUESTED START DATE**_____**FALL 2017**_____

DEPARTMENT(S)/SCHOOL(S): **INFORMATION SECURITY AND APPLIED COMPUTING** **COLLEGE(S):** **COLLEGE OF TECHNOLOGY**

CONTACT PERSON:_____**JAMES BANFIELD**_____**CONTACT PHONE:**_____**487-0652**_____

CONTACT EMAIL:_____JBanfield@emich.edu____

I. Description:

A. Goals, Objectives, Student Learning Outcomes

Goals

We propose a Bachelor of Science with a major in Information Technology (IT) program, which will be offered by the School of Information Security & Applied Computing (SISAC) and housed in the College of Technology (CoT) at EMU. The program will consist of multiple CIS, IA courses, and several new IT courses. This program will focus on IT infrastructure, project management and integration, systems and network administration, security, and IT architecture. This program will be consistent with the mission of CoT, which is to be a leader college in educating students about emerging technologies and preparing them to fill key technical jobs that are needed in various sectors of our economy. There are two associated goals of this program are:
1. Produce students that are ready for today's fast-paced technology market
2. Achieving and retaining ABET accreditation

Program Educational Objectives

The objectives of the B.S. program in Information Technology at School of Information Security and Applied Computing as defined by ABET is the abilities of the alumni three to five years after graduation will be:

- Function successfully in field of Information technology and communicate effectively to design, implement, and evaluate solutions to IT and security technical problems.

- Advance professionally through increasing level of responsibility of information technology, and/or by transitioning into leadership position in industry, government, and/or education.

- Actively seeking life-long learning through self-study, completion of advanced degree(s), continuing education, and IT related certification(s)/licensure or other professional development related to their career.

- Demonstrate ethical, social, and professional commitment to community by applying technical skills and knowledge to support various service activities.

Student Learning Outcomes (SLOs).

The IT program SLOs are adapted from ABET General Criteria 3 for Accrediting Computing Programs, General Criteria 3. The following outcomes must be attained by students upon graduation.

(a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(d) An ability to function effectively on teams to accomplish a common goal

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems

(l) An ability to effectively integrate IT-based solutions in the user environment.

(m) An understanding of best practices and standards and their application

(n) An ability to assist in the creation of an effective project plan

Please note that outcomes **(a)** thorough **(i)** are general outcomes required by all programs accredit by the ABET's Computing Accreditation Commission (CAC): Computer Science and Similarly Named Computing Programs, Information Systems and Similarly Named Computing Programs, and Information Technology and Similarly Named Computing Programs. In addition, outcomes **(j)** thorough **(n)** are specific IT program outcomes required by CAC.

B. Program

The proposed program is composed of 124 credits. The IT major accounts for 72 credits while electives are 6 credits.

Course	Course Name	New/Existing	Comments
IS 215	Information Systems for Business	Existing (CIS)	3
CET 215	Computer Hardware and Software	Existing (CET)	3
COSC 105	Everyday Computing and Social Responsibility	Existing (COSC)	3
IA 110	Concepts of Network and Business Technology	Existing (IA/CD)	3
IT 145	Task Automation for IT Admins	New	3
IA 150	Networking I	Existing (IA/CD)	3
IA 212	Open Systems Platform and Network Administration	Existing (IA/CD)	3
IT 219	Introduction Human-Computer Interaction	New	3
IT 221	Web Server Admin and Dev.	New	3
IA 244	Systems Administration	Existing (IA/CD)	3
IT 256	Managing Virtualization and Cloud Computing	New	3
IS 425	IS Project and Risk Management	Existing (CIS)	3
IA 329W	Policy Development	Existing (IA/CD)	3
IA 354	Networking II	Existing (IA/CD)	3
IS 427	Business Process and Identity Management	Existing (CIS)	3
IS 350	Enterprise Resource Planning and Architecture	Existing (CIS)	3
IT 367	Application Server Administration	New	3
IT 375	Wireless Networks Admin	New	3
IA 385	Database Management and Security	Existing (IA/CD)	3
IA 387	Cooperative education (GELB)	Existing (IA/CD)	3
IA 445	Offensive Security	Existing (IA/CD)	3
IS 437	Introduction to Business Information Technology Audit	Existing (CIS)	3
IA 462	Systems Administration and Security	Existing (IA/CD)	3
IT 495	Capstone	New	3

Total Core — **72**

Restricted Electives: 6 hours

Choose two courses from any IA, IT, COSC, or CIS course not already taken. Each course must be at 300-level or above.

Total Electives	6
Total	**78 hrs.**

C. Admission

1. Requirements for Admission

   Students must meet the following requirement to be admitted to the SISAC programs: completion or transfer credit of IS 215 and IA 110 with a grade of B- or above

2. Application Process

   Students who wish to be admitted to the IT program must do the following:

   a. Complete all requirements listed above. Students may be enrolled in one or two of the required courses listed above during the semester they apply.

   b. Submit a transcript to the attention of the school director by October 1, February 1, or July 1

   c. Attend a mandatory meeting with an SISAC faculty member or a designated COT staff advisor. The student will be contacted to schedule an appointment after the receipt of their application.

   Decision Notification Process

   d. Students will be notified by letter and/or through e-mail after a decision is made. This notification will be made no later than the start of the semester following the application.

3. Limitations

   a. Students can NOT apply courses at the 300-level or above to this program, if not taken at EMU

   b. ALL students MUST take at least 45 credits at the 300-level or above in the IT program

4. Requirements for Graduation

   a. Students must maintain a minimum cumulative EMU or transfer GPA of 2.5.

D. Projections

General Enrollment:

The National Center for Education Statistics (NCES) released a report titled "Projections of Education Statistics to 2022" in which they point out that, although college enrollment growth is projected at 16%, which although slower, relative to the past decade, it is still considered to be fairly aggressive, especially given that the "traditional college-age population is expected to decline over the same period" [1]. Considering NCES's good track record over the past couple of decades, whereby its projections are said to be within 13% of the actual totals, this is a good indicator that college enrollment in general is on a rising trend.

IT Enrollment:

In [2], it is stated that "By 2020, employment in all computer occupations is expected to increase by 22%, but some IT fields will fare better than others," according to BLS. This includes "Faster than average" (28%) growth in Network & computer administration and other similar positions that are IT related, ergo the title of this article. In addition, White [3] addressed the slight downturn in enrollments at four-year and two-year colleges in IT programs, and explained the reasons and proposed remedies to address this issue. Furthermore, Adeptia [4] outlines Detroit-Warren-Dearborn, MI as one of the top 5 cities with the most technical jobs. In this same summary article, they indicate how healthcare is

expected to see a 20% increase in its need for IT professionals, which may contribute to an overall 22% anticipated growth in IT jobs by 2020, despite off-shoring of programming. Additionally, the proposed IT program will also contain courses in security making it a unique and sought degree. It is noticeable that our proposed IT program will be a good tool to prepare students for these jobs. Therefore, we expect a lot of interest in this program as it presents an opportunity for students to take advantage of that changing trend toward insourcing and to be educated in a such a diversified program, which will help make our students ready for future IT jobs. Finally, according to U.S. News [5], employment in related jobs is not expected to slow down anytime soon, but rather will grow annually until at least 2022.

II. Justification/Rationale

The last decade has witnessed a surge in the already fast-paced technology changes. New platforms were introduced while others became obsolete. New areas of study have emerged, which were not previously conceivable, but now due to great advancements and lower prices of various types of resources, such as storage, memory and processors have it them more viable. From Big Data, Data Science and Engineering, Mobile Development & Computing, Internet of Things, Maker movements, Raspberry Pi, and many others that have revolutionized technology as a field of study and made a very attractive field for students to pursue. This proposed program would prepare them for the large number of jobs that have been increasingly posted in various job search engines, which require such technical skills, such as "Systems Admin", "Network Admin", "IT Engineer", "IT Specialist", "IT Manager" and others. As detailed in the list of courses and their associated descriptions, we provide adequate coverage of key areas, especially those emphasized in the Student Learning Objectives (SLOs) above.

Labor Force Statistics, The Special Interest Group for Information Technology Education, and Employment Possibilities:

Although our school does not yet have solid figures for SISAC alumni who have been employed after graduating from our programs, there is an evident growth in the number of students who have reported that they found jobs at renowned companies around the nation, such as HP, Amazon, Google, CISCO, Plante Moran, Government Agencies, etc. We have also received multiple leads form past alumni to share with our students about job openings [6]. We anticipate the same trend to continue growing for our IT program as it shares quite a few of our existing IA courses and especially that most of our students found jobs related more to IT, such as Systems Administration, Network Administration, Network Security, etc.

Graduates of this proposed IT program will have excellent opportunities in various areas that revolve around systems, networks, database management, ERP, Web application development and administration, and security (A mix of CIS, COSC, IA, and IT course work). The U.S. Bureau of Labor Statistics (BLS) has a table containing the fastest employment growth areas for 2012 – 2022 [7], which includes Information Security Analysts as an occupation in which our IT graduates will be able to compete while [8] projects an 18% growth for Computer and mathematical occupations. More importantly, in [9], the BLS projects an improvement of the growth for 2012-2022 above that of

2002-2012 for the Information service-providing occupations. Furthermore, the wage data for IT related occupations in [10] also holds promise for our graduates as it sheds light on relatively high paying IT jobs, such as Database Admins (82K/year), Network and Computer Systems Admins (80K/year), and Computer Network Architects (101K/year), and others.

The Special Interest Group for Information Technology Education (SIGITE), which is part of ACM (www.sigite.org) is an authoritative entity that is composed of "IT faculty (teachers and researchers), students, and industry professionals, with over 400 members worldwide, SIGITE drives the creation and dissemination of the computing discipline of information technology." SIGITE established IT as an "Academic Discipline" that is separate from CS and IS, despite natural overlaps with them. They indicate in [11] that "Information Systems focuses on the information aspects of information technology. Information Technology is the complement of that perspective: its emphasis is on the technology itself more than the information it conveys. **It is a new and rapidly growing field** that started as a grassroots response to the practical, everyday needs of business and other organizations." And "the IT discipline has a key role to play." Furthermore, in another table by BLS, the expectation of growth in 2014-2024 is evident for multiple IT areas, including administrators of various types and support specialists, which are at the core of IT [12].

Appendix A includes a list of existing IT programs around the nation, some of which are well established. We conducted an analysis of their curriculum and compared them to ours. The rest of the worksheets delve into that comparison and concludes with a gap analysis that helped guide the selection of the courses for our IT curriculum. SISAC has also received several letters of support for the new IT program. We are including two of these letters in Appendix B.

III. Preparedness

In Fall 2015, the School of Information Security & Applied Computing (SISAC) hired a new faculty, Dr. Bilquis Ferdousi, with a solid Systems Administration and IT background.   In the Fall of 2016 the SISAC and as part of their position requirements, we have included the following areas, which are at the core of the IT program:

      i.   Systems/Network Security and Administration
      ii.   Software Development (Web, Mobile, Cloud, Secure Dev, Architecture, etc.)
      iii.   Data Administration, Analytics, Mining, and/or Management
      iv.   Systems Integration, Capacity Planning, Enterprise Computing

A. The Faculty Qualifications

Our current faculty and newly hired faculty have significant experience in multiple IT and security areas and can teach, evaluate student learning, and monitor student progression, as well as direct courses and their online course shells. We have attached the CVs of our entire SISAC faculty in Appendix C.

B. Current Library Resources

The library is well positioned to support the IT program. The associated bibliographies included in the new course proposals list a total of over 100 print and electronic titles in support of the courses. The current library prints holdings

and electronic access, the overwhelming majority from the Books24x7 package, provide ~85% of the monograph titles listed. In all courses, we have access to the majority of the titles in the bibliography, with most courses lacking EMU content/access to only a few titles.

The library prints and electronic holdings do provide access to materials similar (and in many cases more current) to those in the bibliographies. The existing collection should provide ample support for this new major and this range of new courses shown in Appendix D, with one caveat. A very large proportion of access to the titles above are all provided from a single electronic book package – Books24x7. The subscription to this package is covered by campus IT and Human Resources (with a much smaller contribution from the library to provide links to the materials through the library catalog.) Books24x7 is part of the license for the Skillport Online Skill Training package.

C. Adequacy of Existing Facilities and Laboratories

SISAC has multiple rooms that are equipped with modern machines and advanced networking configurations, which currently support the IA classes and are expected to easily support the addition of the new IT courses. Roosevelt Hall rooms 2, 6, 16, and 13 as well as Room 8's data center contain sufficient horsepower to adequate fulfill the computing needs of these courses with 16 machines in Room 2, 24 newly updated machines in Room 6, 21 machines in Room 16, and 28 machines in Room 13.

D. Supportive Courses, Faculty, and Equipment Outside SISAC

The IA program has historically worked closely with faculty and administration from departments that are outside of SISAC. Faculty from the Computer Science department have taught IA courses and provide at least one service course for us. The CIS department in the College of Business also has been cooperative and will provide a service course for the IT program.

E. Plan for Marketing Proposed Program and Recruiting Students

To recruit students for the proposed IT program, SISAC will focus on three different target populations: 1) High school seniors, 2) Transfer students from community colleges, 3) current IT professionals who want to finish their degree. Faculty will visit local high schools, be present in the open houses that take place yearly on the EMU campus. We will also institute visits for students/parents to our classrooms, data center, and labs. Furthermore, we will be working on refining our existing articulation agreements with local and regional community colleges, in order to recruit high school seniors and transfer students from these colleges. To recruit current IT professionals, we will contact local IT industry, and are meanwhile working on forming an advisory committee to help in this regard. In addition, the EMU marketing department has always been and will continue to extend a helping hand to spread the word to prospective students and parents about our programs.

IV. Assessment/Evaluation

The plan is to have the new IT program become ABET accredited. The program will develop an assessment plan to evaluated the student learning outcomes and program objectives in order to have an assessment based continuous improvement of the program. The assessment plan will have the process, tools, timelines, and success criteria to assess outcomes and objectives. The tools will use direct (e.g., exams, homework, presentations, portfolio, etc.) and indirect (e.g., surveys and interviews) assessment tools. The plan will include details on the data collection and analysis and how it will be collected and evaluated. The assessment committee develop a summary report of the findings and provide recommendations for continuous improvement of the program.

The following table shows a sample of the assessment or course learning outcomes that is planned for the IT program.

Course Learning Outcomes	Where Assessed	Who Assessed	How Assessed	Results/Benchmark
Students will learn the concepts, tools, and problem-solving techniques in business information systems. The main topics of this course are: IT infrastructure, data communications and network, data management, electronic business, strategic information systems such as ERP, CRM, and SCM, the role of information systems in business processes, security, impact of IS on society, and business applications using Microsoft Office.	IS 215 Information Systems for Business	Course Instructor	Students' basic knowledge will be assessed on essential Information Technology topics such as basic Computer Concepts, Applications, Programming, Networking, Database, and Web Fundamentals. Besides Hands-on Tests and Lab assignments, students will be given Web-based research projects on each topic. The research projects will evaluate students' ability and skills to apply their theoretical knowledge of Information Technology to problem solving and decision making in real world situations.	70% of the students should be able to demonstrate competency with 80% accuracy in basic computer technology.
Students will demonstrate their understanding of the usability evaluation in the design of interactive software systems, ability to select appropriate usability evaluation methods applying quantitative and qualitative approaches in usability assessment based on factors including the task domain, usability objectives, and end-user culture.	IT 219- Introduction to Human Computer Interaction	Course Instructor	Students will be given project to design, develop and successfully perform usability tests of interactive system. On completing the usability model test students will prepare, analyze and present (verbally and written) the results of usability tests to explain the purpose of usability evaluation in the design of interactive systems.	70% of the students should be able to demonstrate competency with 80% accuracy in designing, developing and performing usability tests of interactive system.

				70% of the students should be able to demonstrate competency with 80% accuracy in understanding and explaining the advantages and disadvantages of a diverse range of usability evaluation methods.
Students will demonstrate their understanding of main concepts and application of Web Server; secure coding, ability to evaluate Web Server technologies through acquired foundational skills and knowledge and employ them in real world environments.	IT 221-Web Server Admin and Dev	Course Instructor	Different real world projects will be assigned to assess students learning of the set-up, configure, and administer of Web Server architecture that include create dynamic web applications using Server controls, validate form data using server-side validation controls, create dynamic Web applications that interacts with a database using server-side programming, debug and troubleshoot Web server.	70% of the students should be able to demonstrate competency with 80% accuracy in development of advanced websites and web-based applications including database back-end, web services. .

Assessment Infrastructure/Use of Findings:

The IT faculty will meet at the end of the academic year and review the assessment results for the year. The overall achievement rates will be measured against the assessment benchmark to determine if the goals are met across all courses assessed. Then, individual course assessment results will be reviewed and compared to the ABET students learning outcomes. If the assessment results fall short of the goals, faculty will discuss reasons, possible modification of instructional strategies and map out a plan for the following year in terms of assignments to use, teachings strategies and support services such as tutoring that would help increase student success. Faculty teaching different sections of the assessed course work collaboratively on teaching and assessment strategies. In addition, due to the constantly changing nature of technology, IT faculty will reexamine the adopted assessment tools to ensure that the tools are the most appropriate for use in assessing the stated learning outcomes.

V. Program Costs

   This proposal and associated costs has the full support of the Dean of the COT. Current IA facilities and faculty are in place to offset that portion of the costs. The School of Information Security and Applied computing is well funded by the COT and can support this new program much is did the former IA-NSA program. The new program will share resources with the existing program.

VI. Action of the Department/College

1. Department/School (Include the faculty votes signatures from all submitting departments/schools.)

Vote of faculty: For____5_____   Against_____0_____   Abstentions____0_____
                                              (Enter the number of votes cast in each category.)

I support this proposal. The proposed program can_____X_____cannot_____ be implemented without additional College or University resources.

_____Suleiman Ashur_____   4/11/2017
          Department Head/School Director Signature   Date

2. College/Graduate School (Include signatures from the deans of all submitting colleges.)

A. College.

I support this proposal. The proposed program can_____ cannot_____ be implemented within the affected College without additional University resources.

   Mohamad Qatu
   _____   _____
   College Dean Signature   Date

B. Graduate School (new graduate programs ONLY)

   _____   _____
   Graduate Dean Signature   Date

VII. Approval

   _____   _____
   Associate Vice-President for Academic Programming Signature   Date

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VIII. Appendices

Appendix A
Existing IT Programs in the U.S.

This table can be found in the second worksheet within the above workbook. We highlighted some of the existing national programs that we found to be commensurate with the goals and objectives of our newly introduced program. These schools offer both IT and CIS programs.

School Name	Location	Website
Brigham Young University	Provo, UT, US	www.byu.edu
Capella University	Minneapolis, MN, US	www.capella.edu
Drexel University	Philadelphia, PA, US	www.drexel.edu
East Tennessee State University	Johnson City, TN, US	www.etsu.edu
George Mason University	Fairfax, VA, US	www.gmu.edu
George Mason University	Fairfax, VA, US	www.gmu.edu
Georgia Southern University	Statesboro, GA, US	www.georgiasouthern.edu
Indiana -Purdue University Indianapolis	Indianapolis, IN, US	www.iupui.edu
Kennesaw State University	Kennesaw, GA, US	www.kennesaw.edu
Massachusetts Institute of Technology	Cambridge, MA, US	www.mit.edu
Middle Georgia State University	Macon, GA, US	www.mga.edu
New Jersey Institute of Technology	Newark, NJ, US	www.njit.edu
New Mexico State University	Las Cruces, NM, US	www.nmsu.edu
Northern New Mexico College	Espanola, NM, US	http://www.nnmc.edu/
Purdue University at West Lafayette	West Lafayette, IN, US	www.purdue.edu
Purdue University Calumet	Hammond, IN, US	www.purduecal.edu
Rochester Institute of Technology	Rochester, NY, US	www.rit.edu
Slippery Rock University	Slippery Rock, PA, US	www.sru.edu
Southeastern Louisiana University	Hammond, LA, US	www.selu.edu
The University of Toledo	Toledo, OH, US	www.utoledo.edu
United States Military Academy	West Point, NY, US	www.usma.edu
United States Naval Academy	Annapolis, MD, US	www.usna.edu
University of Cincinnati	Cincinnati, OH, US	www.uc.edu
University of Missouri – Kansas City	Kansas City, MO, US	www.umkc.edu
University of New Hampshire	Durham, NH, US	www.unh.edu
University of North Florida	Jacksonville, FL, US	www.unf.edu
University of North Texas	Denton, TX, US	www.unt.edu
University of South Alabama	Mobile, AL, US	www.southalabama.edu
University of South Carolina	Columbia, SC, US	www.sc.edu
Walden University	Minneapolis, MN, US	www.waldenu.edu
Winston-Salem State University	Winston-Salem, NC, US	www.wssu.edu

Appendix B
Letters of Support for New IT Program

The following are letters of support are from Altarum and Dominos

ALTARUM INSTITUTE

SYSTEMS RESEARCH FOR BETTER HEALTH

MEMORANDUM

April 6, 2016

To: Whom It May Concern

From: Steven J. Towell

**Subject:** College of Technology – Potential for New Program

To Whom It May Concern:

It has come to my attention that the Eastern Michigan University College of Technology is considering a program within the Information Assurance program that will mirror the former Network and Information Technology Administration (NITA) program.

As a 20+ year professional in the Information Technology industry, I can say I find the skills such a program can present to an employer to be quite valuable. I myself went through the NITA program and have an Enterprise Network Manager that graduated from the same program. I also had two former staff members that graduated from the EMU College of Technology through courses of study similar to the NITA program.

Some may say the demand for administrators is on the decline. Information Technology work is done as a team; we've long seen one individual cannot fulfill every aspect of the team efficiently or effectively. Security is part of the team, but so is Information Technology administration. It is my opinion (and the opinions expressed here are my own and not necessarily those of Altarum Institute) that Eastern Michigan University should continue to teach to the entire team, not just select positions.

Thank you,
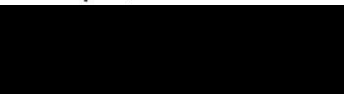
Steven J. Towell
Vice President
Corporate Information Security and Technology
Altarum Institute
3520 Green Court, Suite 300
Ann Arbor, MI 48105
734-302-4600
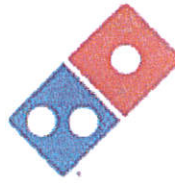
Ron Ulko
Domino's Pizza LLC
30 Frank Lloyd Wright Dr
Ann Arbor, MI 48105

April 6, 2016

James Banfield
Eastern Michigan University
900 Oakwood St.
Ypsilanti, MI 48197

James Banfield

With over 20 years of experience in my field of Information Security, having an extensive knowledge of technology is crucial to being successful. I spend my day protecting my employer from security vulnerabilities. It would not be possible to do my job without knowing how computers work on an internal level and how various forms of technology integrate with each other.

When we look for new team members, we find that having the right kinds of base knowledge about computes and network technologies is key. Often times we will turn away prospective team members who have been siloed in one area or another. When it comes to the information security side of the house and investigations, we look for team members who have well rounded backgrounds in hardware and technology. Simply understand business process or how the business functions can become a deficit rather than a value add without the additional technical understanding.

Sincerely,
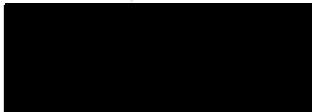
Ron Ulko
Senior Information Security, Intelligence and Forensics

Information Technology New Major Proposal at Eastern

College of Technology (CoT)

- Established in 1980
- 1,900 undergraduate, 400 graduate students
- Four schools and one department within the college
- Programs that emphasize practical applications of scientific knowledge
  - 18 Undergraduate programs (BS)
  - 10 Graduate programs (9 MS and 1 PhD)
  - 9 Graduate Certificates

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Challenges

- **Declining programs**
  - Shelved Distribution Operations and Technical Sales and Applied Technology programs
- **Student and program portfolio**
  - Mostly able to attract 18-24 ACT
- **Employer portfolio**
  - Most jobs offered to recent graduates ($30K-60K)
- **Challenge from community colleges**
  - Some starting to offer BA
  - Enrollment (including transfer students) are declining

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Why Information Technology (IT) at Eastern?

- **Several data sources suggest talent *shortages* in Information Technology at all levels**
  - National (Bureau of Labor Statistics)
  - State (Michigan's Top 50 Job Needs)
  - Regional (industries and businesses)

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IT Needs in Michigan and Nationwide

- **Thousands of jobs in IT related occupations in Southeast MI (Monster.com)**
- **IT specialists are needed in most industries (automotive, banking, academia, etc.)**
- **IA is currently the program with the largest number of students in CoT**
- **Bureau of Labor Statistics is reporting an increase rate of 24% for information security analyst and 15% for computer and information research**

Other sources show nationwide needs : (https://www.bls.gov/oes/current/oes_mi.htm) lists total job numbers, annual average wages and more

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IT Needs (Peer Universities)

Enrollment in IT per year (Profiles.Asee.org)						
Peer universities		2013	2014	2015	2016	% Increase
Oakland University	FT	77	93	120	144	87%
	PT	49	50	61	158	222%
Michigan Dearborn	FT	158	187	200	224	42%
	PT	78	87	71	90	155
Central Michigan University	FT	190	135	213	83	
	PT					
University of Toledo	FT	62	48	52	55	
	PT	15	17	14	13	

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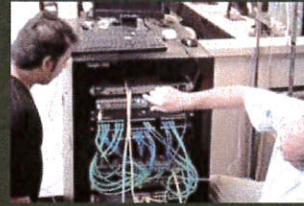COLLEGE of TECHNOLOGY

Why IT at Eastern?

- **CoT Enrollment**
  - Replace declining disciplines with popular programs
  - Ensure controlled and responsible enrollment growth
  - Ensure long term sustainability

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Why IT at Eastern?

- **Student demand**
  - Recruitment: students do not enroll at EMU because we offer limited options
- **Example: Mechanical Engineering**
  - Started Fall 2017. Freshman : 38 students, Sophomore : 20 students, Juniors : 15 students

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Why IT at Eastern?

- **Attract and retain competitive faculty (and research)**
  - Need to advance research portfolio at CoT
  - Need to attract faculty from research intensive universities with experience in grants and scholarship
  - Complement research opportunities in information assurance, computer science and big data

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Why IT at Eastern?
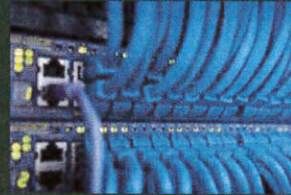
- **Program/Student portfolio**
  - Students who graduate with a BS in IT
    - have a high (almost 100%) employment rate
    - Starting salaries of ($55K-$75K – some reporting $95K)
  - More successful graduates
    - Graduation rate with 6 years > 80%
    - Salaries $100K within 5-10 years (successful alumni)
  - Our students are attracted to regional and major companies like Google and Amazon.

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Why IT at Eastern?

- **We are ready (resources)**
  - More than 15 faculty members with PhD in information technology and/or computer science (5 in SISAC)
  - 2 **open positions** faculty to be hired in Information Assurance in Fall 2018
  - Existing labs (with natural growth and maintenance)
  - EMU has already invested in labs and faculty but has not realized the potential that labs and faculty can bring to the University.

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EMU Engineering

- **Ready for ABET-CAC accreditation**
  - Puts us on par with our peers
- **Small classes**
  - 15-30 students / section
- **Application oriented**
  - Requests by industrial partners
- **Engaged with industry and community**
  - Co-op recommended

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Program Delivery (New Courses)

- **Program builds on existing strengths and programs in the areas of**
  - Information Assurance
  - Information Systems
  - Computer Science
- **Small classes**
  - Only 7 New courses are introduced
- **Existing Faculty are capable of teaching introduced courses**

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