

## IBHE PROGRAM REVIEW SUMMARY REPORT

1. **Reporting Institution:** Eastern Illinois University
2. **Program Reviewed:**
  - Graduate Programs in Technology
  - M.S. in Technology
  - Post-Baccalaureate Certificate in Computer Technology
  - Post-Baccalaureate Certificate in Cybersecurity
  - Post-Baccalaureate Certificate in Quality Systems
  - Post-Baccalaureate Certificate in Work Performance Improvement
3. **Date:** January 15, 2021
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5. **Overview:**

Consistent with the mission of the university, the Graduate Programs in Technology prepare students to become successful leaders in today's technological and global environment. Those programs are designed to provide students with opportunities for developing advanced professional, technical, and personal competencies in the discipline. The programs enable students to identify, develop, and implement quality strategies and practices in contemporary organizations. Additionally, students enhance research and communication skills necessary for technological leadership. They also gain an appreciation of ethical and social implications of technology related to a global and technological society. Presently, the programs include a Master of Science in Technology degree program and four graduate certificate programs including computer technology, quality systems, cybersecurity and work performance improvement, respectively.

The Council on Graduate Studies (CGS) has adopted four learning goals for all graduate programs at the university including: (a) a depth of content knowledge; (b) critical thinking and problem-solving skills; (c) effective oral and written communication skills; and (d) evidence of advanced scholarship through research and/or creative activity. Based upon these four goals, the Graduate Programs in Technology have identified students' learning objectives as follows:

1. Students will develop effective oral and written communication skill;
2. Students will be able to conduct intellectual research in technology;
3. Students will analyze, apply, and evaluate concepts of effective leadership;
4. Students will possess knowledge of strategy, principles and tools of quality systems as applied to business and industry;
5. Students will develop an understanding of the global impact of technology;
6. Students will be able to apply critical thinking and problem-solving skills in the areas of technology management, training and development, career and technical education or computer technology.

The Graduate Programs in Technology serve the largest number of students in the State of Illinois among peer institutions. For instance, the most recent IBHE data indicated the Technology Programs enrolled ~130 students during Fall 2019, while similar programs (2016) by Illinois Institute of Technology enrolled ~60 and Illinois State University ~70 students for the same period. The major strength of our programs is the diverse student body

including gender, nationality and undergraduate disciplines. The programs remain vibrant and attractive to students thanks to the program design that allows students to customize their graduate studies based upon the individual's career goals and interests. The programs are committed to being accessible to a diverse body of students in the state and around the globe.

## **6. Major Findings and Recommendations:**

- a. Description and assessment of any major changes in the program/disciplinary context e.g., (1) in the overall discipline or field; (2) student demand; (3) societal needs; (4) institutional context for offering the degree; (5) other elements appropriate to the discipline in question; and (6) other.

### **(1) Overall discipline change and societal needs:**

The primary change in the field of technology is that computers and applications have prevailed the discipline. The research tools to critique and conduct experimental and non-experimental research in technology are covered in the required TEC 5143 – Research in Technology course, where students complete and submit a research proposal by the end of the semester.

Computers are used not only in manufacturing operations but also in all other sectors including security issues. Due to burgeoning Internet technology and mobile devices, computer technology has emerged, as a major need for the society and for our students. Thanks to its currency in the discipline, faculty in the School of Technology were able to respond to the homeland security initiatives by IBHE during Fall 2005. Consequently, a graduate certificate program on Technology Security was developed to enhance the marketability of our graduates. The name of the certificate was changed to Cybersecurity in 2019.

Another notable change is that society (including citizens and corporate America) embraces green practices and sustainability much more than a decade ago. Students are very forward thinking in terms of renewable energy, climate change, resource conservation and social responsibility as a citizen and as a corporation. In response to this trend, the Graduate Programs in Technology contributed significantly to a new program on Master of Science in Sustainable Energy at EIU. A dual degree plan has been approved at the university level, which allows students to pursue both a Master of Science in Technology and a Master of Science in Sustainability degree.

### **(2) Student demand:**

Student demand for Graduate Programs in Technology has remained strong during the past eight years. This demand is manifested by a robust enrollment trend. Table 1 illustrates the total enrollment and demographic data for students enrolled in the Master of Science in Technology degree program from AY2013 to AY 2020. It is noted that the graduate degree program continues serving on-campus, off-campus, full-time and part-time students. The programs maintain a healthy gender balance, which is a challenge in disciplines related to science, technology, engineering and mathematics (STEM). Moreover, the program also keeps a vibrant enrollment of international students, which enhances the global appreciation and exposure of our domestic students.

<i>Program/AY</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>
<i>Total Students</i>	164	185	151	261	179	100	113	97
<i>Full-Time</i>	140	167	138	250	166	94	105	72
<i>Part-Time</i>	24	18	13	11	13	6	8	25
<i>Male</i>	105	109	97	172	113	60	73	64
<i>Female</i>	59	76	54	89	66	40	40	33
<i>Minority</i>	26	17	17	20	14	5	13	10
<i>International</i>	73	111	98	212	133	74	79	74
<i>NOTE: Enrollment is for the Fall Semesters ONLY for the year shown.</i>								

Table 2 shows enrollment data for the post-baccalaureate certificate programs. As a part of the overall picture for the Graduate Programs in Technology, enrollment for MS in Technology was also included in the table. The number of enrolled students is low in all certificate programs. It should be pointed out that 99% of students enrolled in the certificate programs also pursued the graduate degree of Master of Science in Technology.

<i>Program/AY</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>
<i>Total MS In Technology</i>	164	185	151	261	179	100	113	97
<i>Post-Baccalaureate Certificate in Quality Systems</i>	1	0	1	1	5	2	0	2
<i>Post-Baccalaureate Certificate in Computer Technology</i>	0	0	1	27	55	19	31	25
<i>Post-Baccalaureate Certificate in Work Performance Improvement</i>	0	0	1	3	7	0	0	3
<i>Post-Baccalaureate Certificate in Technology Security/Cybersecurity</i>	1	0	1	2	0	0	1	1
<i>NOTE: Certificates awarded are for the Fall Semesters listed based on the year shown.</i>								

The primary purpose of developing graduate certificate programs is to enhance the students' marketability and value to employers for students in the Graduate Programs in Technology. The course work of a certificate program overlaps with the Master of Science in Technology degree program. In other words, there are no extra resources needed to deliver the certificate programs. Thus, even though the enrollment is low, the graduate certificate programs contribute significantly to

the overall portfolio of academic offerings available to students with various professional development goals.

(3) Cost:

Discipline Cost: According to IBHE data book for FY2016, the academic discipline cost for the Graduate Programs in Technology is \$285.00 per credit hour {Instructional Less Physical Plant}, with a ratio to statewide average of 130% {Ratio of Reported Average}. This ratio is well within the range among peer institutions in the State since the highest ratio is 176% {UIUC} and the lowest 104% {CSU}.

Program Major Cost: Table 3 illustrates program major cost data for Master of Science in Technology, and four post-baccalaureate Certificate Programs in Quality Systems, Computer Technology, Work Performance Improvement, and Cybersecurity, respectively.

<i>Program and CIP Code</i>	<i>Cost per Credit Hour</i>	<i>Institution Total Relative to State Average</i>
MS in Technology, 15.0612	\$318.88	110%
Post-Baccalaureate Certificate in Quality Systems, 15.0799	\$318.88	100%
Post-Baccalaureate Certificate in Computer Technology, 15.1202	\$318.88	100%
Post-Baccalaureate Certificate in Work Performance Improvement,	\$318.88	100%
Post-Baccalaureate Certificate in Cybersecurity, 43.040	\$318.88	100%

(4) Institutional support and context for offerings the degree:

The university has been very supportive of the Graduate Programs in Technology. Particularly, the Graduate School and the International Office staff provide very extensive support for the programs including marketing, admission and student support. One challenge for a sustainable enrollment is our ability to offer graduate assistantships (GA). For instance, while the enrollment of the Programs has doubled over the past decade, the GA allocation remained the same.

b. Description of major findings and recommendations, including evidence of learning outcomes and identification of opportunities for program improvement;

The Graduate Programs in Technology have developed and implemented a systematic program assessment plan. Student learning objectives are in alignment with goals of graduate education at the university. The learning outcomes are assessed with both direct and indirect measures. For example, students' ability to research and to lead effectively are assessed through class projects as well as employer surveys. Their oral and written communication and critical thinking skills are assessed during the process of either or both the student's coursework completion or through their Certification of Comprehensive Knowledge before graduation.

In addition to direct measures within the class setting, input and feedback are collected from students and their supervisors if students are employed at the time of graduation. Graduates are surveyed on how satisfied they are with their experience in their graduate education including faculty accessibility and student interactions, and what kind of skill and knowledge help them in their respective jobs and in attaining promotions. Employers were asked in terms of the knowledge and skills most relevant to the functions of their employees and how EIU graduates distinguish themselves from other institutions.

The program assessment has clearly demonstrated students' success in their graduate studies. For example, it is expected that every student will be able to design a valid original research proposal that conforms to the prescribed form and format specified in TEC 5143 Research in Technology course. During Fall 2018 and Spring 2019, out of 82 students enrolled in four classes, 27 students {33.0%} met expectations, 55 students (67.0%) exceeded expectations, and 0 students {0.0%} did not meet the expectations. In terms of communication and critical thinking skills, out of a total of 51 students who completed their Certification of Comprehensive Knowledge {CCK} in Fall 2018 and Spring 2019, 51 students {100%} met expectations; 0 students (0.0 %) exceeded expectations; and 0 student {0%} failed to meet expectations.

The assessment plan for the Graduate Programs in Technology has been effective in helping continuously improve the programs. The plan was deemed mature by the Director of the Center for Academic Support and Achievement at EIU and thus was promoted to a two-year reporting cycle, from the previous annual reporting. The Dean of the Graduate School has commended the program assessment plan as one of the exemplary plans on campus. The programs have received the EIU Graduate School's First Choice recognition.

c. Description of actions taken since the last review, including instructional resources and practices, and curricular changes; and

Based upon the last review and information gained during the program assessment, strong efforts have been to continuously improve and update the curriculum. For example, based upon feedback from students, several new courses were developed and offered including: TEC 5823 Big Data – Map Reduce, TEC 5853 System Analysis and Design, ATD Facilitating Talent Development, and ATD Talent Development Administration. The graduate certificate program in "Technology Security" has been changed to "Cybersecurity" has been approval by the Council for Graduate Studies. The change was to better identify the field of cybersecurity.

d. Description of actions to be taken as a result of this review, including instructional resources and practices, and curricular changes:

The Graduate Programs in Technology will remain committed to embrace diversity for its student body, to stay current and responsive in the discipline and to continue its global reach. Specifically, a systematic recruitment effort will be developed by the Graduate Committee.

## **7. Responses to Institution-Assigned Issues**

1. What strategies has the department implemented and/or begun to develop that will
  - a. Support the Integrative Learning Experience at EIU

- b. Improve students' critical thinking skills

The School of Technology has been able to capture a few major opportunities during the past few years. Two recent opportunities include the expansion of both the 1) Training and Development; and 2) Cybersecurity certificates into two Masters degreed program. The MS in Talent Development and MS in Cybersecurity has seen significant growth over the past couple of years.

The addition these two (2) MS programs have helped in increasing the research aspect in both the Talent Development/Training and Development and Cybersecurity.

- 2. What one unique, noteworthy activity is the department involved in that will enable the IBHE to distinguish its program from other similar programs in the state?

The program has continued the recruiting of both domestic and international students. Over the past few years we have seen an increase with both of these populations. It is believed that the increase of these groups is based on the promoting of the different Post-Baccalaureate certificates available in the MS in Technology program.

## 8. Outcome

### a. Decision:

- Program in Good Standing
- Program flagged for Priority Review
- Program Enrollment Suspended

### b. Explanation

This report combines and bundles post-baccalaureate certificates that extend from and/or are embedded within the MS in Technology with the MS degree. The MS program enrollments are robust and exceed the minimum benchmarks for total students and degrees awarded. For that reason, the MS program is in good standing. In the area of assessment, the MS program references their plan and it is clear that the regime, anchored by course-based rubrics and supplemented via the "Certification of Comprehensive Knowledge", extends from and integrates the graduate school learning goals while also focusing on core discipline-specific knowledge and skills.

With respect to the post-bacc certificate programs, no IBHE APEER benchmarks or requirements exist. The most popular and highest performing non-degree program is the computer technology option. The enrollment in the other options is minimal and the program is encouraged to review these options for efficiency. Of course, if the enrollments are embedded within existing highly enrolled courses across the MS in technology or the MS in cyber security programs cost (or efficiency) should not be an issue. In the end, the Office of Academic Affairs does not have any specific concerns; but would urge the program to consult the dean of the graduate school to determine if all 4 certificates remain central to the mission of the School.

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