2026 ASEE ANNUAL CONFERENCE June 21–24, 2026 | Charlotte Convention Center, NC
Host Sponsor UNC Charlotte
Paper ID #52520

Preparing for ABET Site Visit for an Engineering Technology Degree – A Regional Campus Model

Dr. Qudsia Tahmina, The Ohio State University at Marion

Dr. Qudsia Tahmina, The Ohio State University at Marion

Dr. Qudsia Tahmina is an Associate Professor of Practice at The Ohio State University at Marion, where she specializes in instruction for first- and second-year Engineering courses. Beyond the classroom, she serves as the Engineering Program Coordinator, leading strategic scheduling and supporting community outreach initiatives. Dr. Tahmina also plays a pivotal role in curriculum development as the ABET assessment lead, overseeing revisions and accreditation efforts for the Engineering Technology program.

Ms. Kathryn Kelley, The Ohio State University

Kathryn Kelley serves as executive director of OMI; she has more than 20 years' experience in program leadership and strategic communications at industry-oriented higher education, economic development and statewide technology organizations. She collabora

Dr. Sandra L. Furterer, The Ohio State University

Dr. Sandy Furterer is a Professor of Practice in the Integrated Systems Engineering Department, within the College of Engineering at The Ohio State University. She is also Lead Faculty in the Engineering Technology program across the regional campuses. She has applied Lean Six Sigma, Systems Engineering, and Engineering Management tools in healthcare and other service industries. She previously managed the Enterprise Performance Excellence center in a healthcare system. Dr. Furterer received her Ph.D. in Industrial Engineering with a specialization in Quality Engineering from the University of Central Florida in 2004. She received an MBA from Xavier University, and a Bachelor and Master of Science in Industrial and Systems Engineering from The Ohio State University. She is an ASQ Certified Six Sigma Black Belt, Certified Manager of Quality/ Organizational Excellence, Certified Quality Engineer, an ASQ fellow, and a certified Six Sigma Master Black Belt.

Dr. David L. Tomasko, The Ohio State University

David Tomasko is a Professor of Chemical & Biomolecular Engineering at The Ohio State University. He also serves as Associate Dean for Academic Programs and Student Services for the College of Engineering

Preparing for ABET Site Visit for an Engineering Technology Degree – A Regional Campus Model

Background

The goal of this full paper is to offer guidance for the new engineering technology programs planning on initial accreditation. The assessment strategy implemented at this large research university for its B.Sc. in Engineering Technology program, delivered across regional campuses, for its initial ABET accreditation under the Engineering Technology Commission (ETAC), will be shared. The program was launched in 2020 to meet the local industry workforce needs, which were studied through the US Economic Development Agency and subsequent industry focus groups. Due to its governance structure and the comprehensive data-driven outcomes assessment plan, the readiness of the program for accreditation demonstrates academic excellence and industry relevance. At this large research institution, there is a collaborative effort between the Engineering College and the regional campuses. The Curriculum Development and Assessment Committee is the governing body made up of administrators and program coordinators responsible for reviewing and approving revisions to Student Outcomes (SOs), managing course changes, and initiating continuous improvement efforts. The program has established a robust outcomes assessment plan based on the adoption of ABET ETAC Student Outcomes and the development of corresponding measurable Performance Indicators (PIs) with rubrics for direct implementation within the university's learning management system. The continuous improvement process is a systematic feedback loop that drives programmatic change. The assessment and evaluation process that generates recommendations for improvement is discussed in this paper. These recommendations are prioritized, assigned to specific owners, and implemented through the formal curriculum change process involving the CDAC and university-level committees. This paper discusses the preparation of the self-study document and the coordination for the site visit at multiple regional sites. Building upon our previous work on the implementation of our assessment process for accreditation, we would like to continue sharing best practices with institutions preparing and planning for the initial ABET site visit.

Introduction

Accrediting Board for Engineering and Technology (ABET) has four accreditation commissions that accredit post-secondary degree-granting programs [1]. It provides institutions with an opportunity to demonstrate that their programs meet the standards to offer quality education to their graduates and remain relevant to the continuously evolving professional landscape. Accreditation also helps align the degree program with the industry standards and sets the institutional reputation for employers seeking talent. The majority of the state-funded institutions are required to maintain accreditation for various degree programs, especially in engineering [2].

Many programs have sailed successfully through previous ABET visits, but some still find it intimidating. This is perhaps due to the heavy emphasis on the continuous improvement process (Criteria 4) that demonstrates the rigor and quality of the program and higher expectations of the faculty. A common dilemma arises in how to effectively demonstrate the quality while showcasing the rigorous assessment process and the essence of the faculty roles in owning the assessment process. Preparing faculty requires planning, communication and building trust in the process. Programs that have consistently demonstrated excellence in continuous improvement recommend that new programs adopt fundamental preparatory strategies [3, 4]. To ensure a robust program that meets accreditation standards efficiently, programs must implement these strategies during the initial development phase. In the prior work, authors have shared some best practices from the launch of our engineering technology program to offer guidance for new programs [5].

Fourteen ABET-accredited engineering degrees are offered at The Ohio State University. Launched in 2020, the Engineering Technology program offers students practical knowledge, leadership and management skills and industrial expertise. There has been a recent surge in the demand for industrial automation and robotics. The Bureau of Labor Statistics of the United States reports a post-pandemic recovery in manufacturing employment with increased hourly and annual wages, due to which a shortage of highly skilled labor is expected [6]. In the local region of Ohio, the scarcity of qualified candidates is largely due to a lack of available engineering technology programs that support the talent pipeline. To bridge this gap, our institution introduced an engineering technology program specializing in manufacturing, leveraging a unique partnership with co-located community and technical colleges to facilitate resource sharing. Industry 4.0, or advanced manufacturing, represents the digital transformation of traditional industrial processes. This evolution is driven by the integration of robotics, big data analytics, and artificial intelligence, and embedded systems into the manufacturing environment [7, 8]. Our faculty has been trained in the core concepts included in the Industry 4.0 framework to provide students with a strong foundation in the modern manufacturing landscape.

In this paper, we will discuss the programmatic developments since the publication of our prior work. As all newly developed programs go through several rounds of restructuring and reorganization, we will share the changes to our governance structure. Assessment results and continuous improvement, evaluation procedures and Self-Study documentation. We will also discuss the preparation of the faculty and staff for the site visit that the department has recently completed. This paper presents the following sections sequentially: I. Engineering Technology Program, II. Program Governance and Constituents, III. Student Outcomes and Evaluation of Performance, IV. Curriculum and Assessment, V. Evaluation of Results for Continuous Improvement VI. Self-Study Documentation and Site-Visit Preparation.

I. Engineering Technology Program

Although engineering courses are offered at the regional campuses of this large research institution, there wasn't a pathway for students to complete all four years. So, students usually transition to the central campus after completing some courses at the regionals. These regional campuses began offering the new Engineering Technology (ET) program in 2020. With its focus on applications, it satisfies the high demand for manufacturing occupations in the area. This degree falls under the ETAC of the ABET accreditation commissions. ETAC requires an industry advisory board for all programs. Therefore, our industry advisory council, comprised of engineering and manufacturing professionals, became an integral part of the curriculum development for guidance. Our program equips students with technical careers in high-demand fields like manufacturing, focusing on diverse applications and industrial problem-solving.

It is delivered across four regional campuses (Lima, Mansfield, Marion and Newark), each offering facilities that support student learning outcomes and foster a collaborative, hands-on learning environment. In 2016, an Ohio State team conducted a study on the technological skills needed for the industry's future workforce, conducting focus groups of potential employers and employing Bureau of Labor Statistics O*Net skills data. The background of the program development and proposal is discussed in our prior work [9]. Curriculum development began in 2018, and the inaugural Engineering Technology (ENGRTEC) classes began at three of the four regional campuses in autumn 2020. Third & fourth-year courses were developed and approved by industry partners. The Newark campus began offering first-year courses in 2023.

It is an affordable pathway for students to earn a four-year degree credential. In contrast with other national engineering technology programs, this degree is offered exclusively at regional campuses, offering a unique model for large institutions to utilize resources in rural areas. This arrangement was approved to address the space and infrastructure limitations at the central campus. The curriculum for this ET program is 120.5 total credits, concluding with a year-long capstone project. To maintain consistency across all regional locations, the curriculum has been refined since previous publications to foster greater inter-campus collaboration. Course coordinators are assigned to the core courses to take ownership of curriculum revisions and communicate updates with faculty. The faculty teaching in the program has a range of backgrounds necessary to provide coverage of manufacturing, controls, computation, and business-related topics in the curriculum. Some faculty hold a terminal degree in their fields, such as Electrical, Computer Science, Mechanical, Industrial and Manufacturing Engineering.

All four campus houses classrooms and offices within the academic buildings to support student learning, advising, administrative coordination, and faculty engagement. Each campus provides access to modern, industry-aligned laboratories either on-campus or through strategic partnerships that support core competencies in automation, robotics, integrated system design, prototyping, and manufacturing.

Delivery times for courses include days and evenings during the week. The program is delivered predominantly in person, on campus, using traditional lecture/laboratory courses. Some courses are available online for students at other regional campuses to make progress if their home campus is unable to offer the course in person. The program is not available for full-time online enrollment.

Across all campuses, faculty and staff are trained in equipment calibration and remain current with safety policies and compliance updates. These measures collectively ensure that all the facilities and resources are safe, appropriate, and conducive to high-quality instruction and student success in engineering technology education. The program at this institution strives to create well-prepared students who, upon graduation, can begin productive careers in a variety of industries.

II. Program Governance and Constituents

The ET program strives to produce well-prepared graduates who meet the needs of the modern workforce. The program is focused on establishing an effective governance structure and defining our core constituencies. Campus deans, administrative staff and academic advisors collaborate among all regional campuses to ensure that students take full advantage of campus resources.

A formal governance structure was recently established, providing a framework for the operations and task execution. The Curriculum Development and Assessment Committee (CDAC) is a governing body that adopted the Student Outcomes (SOs) in 2020 and reviews and approves/rejects the request to revise the SOs. The committee also reviews the curriculum change and new course requests and reviews any policy changes and votes on the programmatic decisions and moves them forward to the College and University levels for approval. Furthermore, the committee provides essential oversight for ABET planning and development, faculty alignment, enrollment management, career services and any outreach engagement.

The most important roles in the governance structure are listed below:

- The **Curriculum Director** of the program is responsible for organizing the curriculum, managing alignment of faculty, courses, and delivery of the content. They support student success, collaborate with industry partners, oversee accreditation efforts and supervise program coordinators.
- **Regional campus deans** serve on the steering committee overseeing the university policies and ensuring the program adheres to the academic policies to attain institutional goals.
- **Associate deans** of each regional campus meet biweekly to discuss programmatic updates, review and approve budget and equipment requests. They support the program through faculty hires, course assignments, and advancement and funding opportunities.
- **Program Coordinators** coordinate courses to ensure consistency across campuses and achieve shared program goals, manage class schedules, support faculty, maintain lab inventory and manage equipment and software requests.

The program constituencies are:

1. **Faculty**: The faculty members are committed to the success of the undergraduate program, as part of their overall engagement in scholarship, research, instruction, advising, and administrative service activities. The educational objectives of the program address the faculty's needs by summarizing the expectations we hold regarding our graduates' accomplishments.
2. **Alumni**: Alumni are the strong voice in the development of the program. Their career and success demonstrate the achievement of the program. The program educational objectives are developed with Alumni of the program in mind. Alumni pursue careers in industry and further education in manufacturing and graduate school, in addition to other career placements.
3. **Industrial Advisory Council** (IAC): The program is enriched and improved by the input from this council, which is composed of industry representatives. There are 12 members: two representatives from the regions surrounding each campus program for a total of eight members; four at-large members representing statewide and national manufacturing organizations and large companies. The regional campuses take pride in the longstanding professional relationships, commitment, experience, and knowledge of the IAC members. The IAC members belong to the entities that are most likely to recruit our graduates and evaluate their performance in the workforce.

It is worth noting that all the constituencies have a unique perspective and role in program improvement efforts. The feedback from all constituents is reviewed and incorporated into the changes that guide decision-making.

III. Student Outcomes and Evaluation of Performance

The regional campuses meet the educational needs of each local community through open access to all people seeking higher education. Regional campuses only accept residents of the state. Admission is overseen at the university level, and students can apply directly to any of the regional campuses through a customized admissions portal for new and transfer students.

Once admitted as a regional campus student, they may request to join the program without any additional requirements or application. Students can also transfer into the program from the central campus or other majors by requesting a transfer through an academic advisor. Students can also transfer to a different campus while staying in the ET program.

SO1 - An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
SO2 - An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
SO3 - An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
SO4 - An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
SO5 - An ability to function effectively as a member as well as a leader on technical teams.

Table 1: ***SOs for the ET Program adopted from ABET ETAC SOs***

Faculty adopted the Student Outcomes (Table 1) from ABET ETAC at the time of the program's launch in Autumn 2020. These outcomes describe what undergraduate students are expected to have achieved at the time of graduation. CDAC approved the adoption of the Student Outcomes in AU2020. There are three ways that the Student Outcomes are revised:

1) Based on ABET ETAC changes to the Student Outcomes.
2) Significant changes requested by faculty in the assessment, evaluation and continuous improvement process that could affect the Student Outcomes.
3) Review and request by the Industry Advisory Council (IAC) and Alumni.

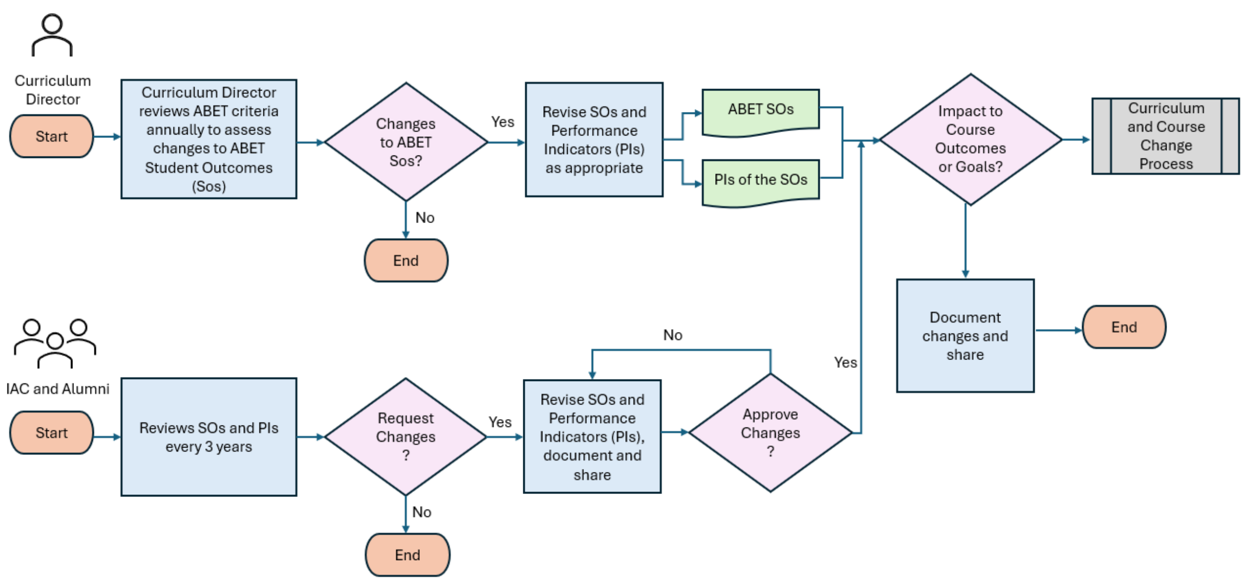

Figure 1: ***Process of Reviewing Student Learning Outcomes***

Review of Student Outcomes

The request to revise the Student Outcomes is received by the Curriculum Director. Their request is also initiated by the surveys and reviews from Alumni and IAC. The CDAC reviews and approves or rejects the requests from the Curriculum Director. The Student Outcomes are updated in the Continuous Improvement Quality Management Plan document and appropriate constituents are notified, as well as posted to our websites. Impacted syllabi are updated and sent through the established curriculum review processes to the registrar. Requests from Alumni surveys and IAC go through a separate review process where the Curriculum Director approves or rejects the requests and communicates the revisions with the CDAC (Figure 1). Any changes that impact the course outcomes or goals will be incorporated in course revisions.

Evaluating student academic performance and monitoring students' progress toward graduation

At this institution, student progress is monitored in many ways. Progress Reports are sent out in the form of surveys to faculty to gather feedback in Weeks 4 and 10 of the semesters. As a result of these surveys, at-risk students are identified, and intervention is offered through the Student Success Center. An end-of-semester review of students' academic status is conducted. Advisors are notified of any student on academic probation or special action probation via electronic reporting. Students placed on probation receive outreach from the dean about their status and notification of consequences. The reward system (High-Fives) allows professors to send encouraging notes if students are doing well

Students are encouraged/required to meet with advisors to make an academic plan within the first two weeks of the semester and meet regularly with their advisor. Students can monitor their progress toward graduation using Degree Audit Software. They are encouraged to meet with their advisor once per semester to ensure adequate progress toward their degree. The Program Coordinators at the regional campuses have discussions as needed with students to assess their progress and help overcome any scheduling or course issues.

IV. Curriculum and Assessment Process

Designed with a focus on industrial relevance, the coursework covers key domains including industrial automation, network security, and leadership and change management. There are six courses (20 credit hours) in Math and Physical/Natural Sciences (i.e., mathematics, physics, and chemistry) and twenty-seven courses (74.5 credit hours) in engineering topic courses (Figure 2). In addition to these two categories, there are nine general education courses (25 credit hours) to meet the requirements for graduation and there is one exploration course (1 credit hour) needed for all students in the College of Engineering. Thus, students need 120.5 credit hours to obtain a B.S. in Engineering Technology. For calculus-ready students, the Engineering Technology Program is achievable in four years. However, completing the degree will take longer for those not calculus-ready. The two-semester capstone courses are integrated into the curriculum, where the students work on a real-world design and development project or the management of a process. The course instructors, industry mentors and project sponsors guide the students in applying both technical and professional development skills. Upon graduation, this curriculum provides the students with a broad-based background in vital disciplinary areas in Engineering Technology.

To oversee transfer credits, the Curriculum Development and Assessment Committee (CDAC) reviews and approves requests and completes the process with the institution. This multi-campus model relies on shared resources, including faculty expertise, software, and laboratory equipment, to ensure the sustainability and rigor required for ABET accreditation.

Program and course changes are initiated by CDAC and transmitted by the program's Curriculum Director to the College Committee on Academic Affairs (CCAA) for review, approval, and transmittal to the university Council on Academic Affairs (CAA) for final approval.

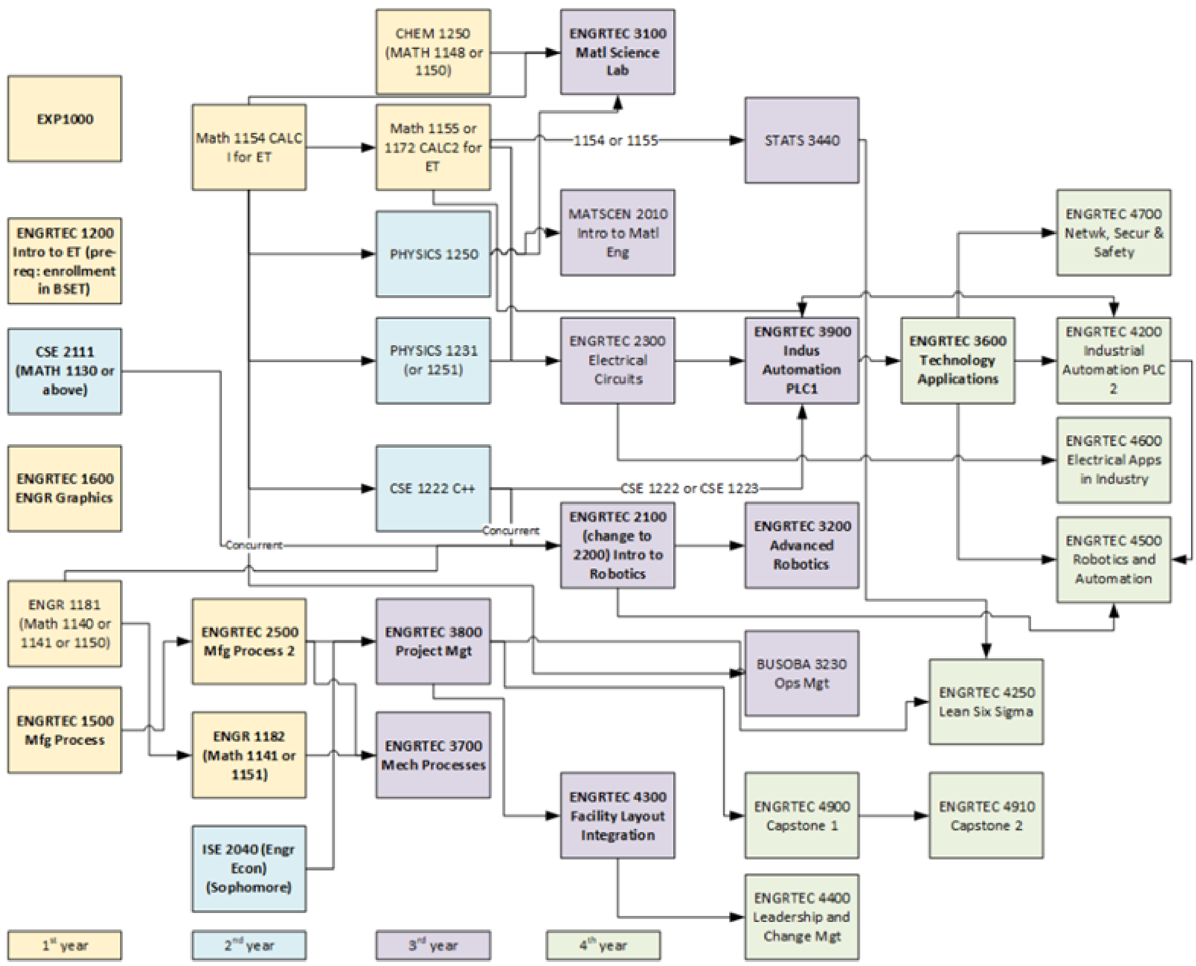

Figure 2: ***Engineering Technology Program Prerequisites***

The assessment process is primarily defined by Criterion 4 (Continuous Improvement) and documented in the Self-Study. Building and implementing an effective assessment plan from the inception of the new program was shared in our prior work [10, 11]. Three faculty accreditation coordinators have led the assessment and evaluation process for the program from the start of the program. They have worked with faculty who teach each required ET course each semester to identify assessment instruments and performance indicators aligned to the student outcomes. A course coordinator is assigned for each course that coordinates meetings each semester with the course faculty across the regional campuses. Upon initial review of the courses, the faculty across the regional campuses collectively agree on the PIs aligned to the SOs and the assessment instruments. The course coordinators also maintain a "master" shell for their assigned courses, so the most updated version is shared with the faculty. The faculty meet at the end of the semester or the beginning of the following semester to identify recommendations for improving the curriculum and program.

We defined PIs for SOs to assess them more easily against assignments within courses. Table 2. below shows the PIs for two of the five SOs listed above.

ABET SO – General Criteria	Performance Indicators	PI Code
(1) an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problem appropriate to the discipline	a) Applies basic mathematical principles of algebra, trigonometry, calculus to model broadly defined manufacturing engineering problems.	PI 1-a
	b) Applies scientific principles used to solve broadly defined manufacturing engineering problems.	PI 1-b
	c) Applies engineering tools and/or methods to broadly defined manufacturing engineering problems.	PI 1-c
	d) Uses modern business/analytical/project management tools to broadly defined manufacturing engineering problems.	PI 1-d
(3) an ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature	a) Communicates technical or non-technical topics, data and information in an organized written format.	PI 3-a
	b) Presents technical and non-technical topics and data effectively in an oral format.	PI 3-b
	c) Uses visual aids (graphics, tables, charts) to illustrate technical and non-technical topics, data and results.	PI 3-c
	d) Uses graphical design tools to illustrate concepts.	PI 3-d
	e) Identifies and uses appropriate resources (library, online, books, articles, professional manufacturing standards, etc..) for researching technical and non-technical topics.	PI 3-e

Table 2: PIs for two SOs assessed in the ET Program

All the courses offered in this ET program at all regional campuses utilize Carmen Canvas as the learning management system for assessing SOs. Curriculum development experts offer support to new faculty with setting up the course shells in Carmen Canvas and preparing to teach the course utilizing the available resources. Course assessments are developed as an integral part of the curriculum development and evaluation of student performance.

Various performance indicators aligned to SOs were divided into two cycles, A and B. All SO are assessed across the two cycles. Different PIs are chosen to be assessed within each cycle. Since the program's inception, the SO were assessed in the following cycles: 1) Cycle A: FY 20-21, 2) Cycle B: FY 21-22, 3) Cycle A: FY 22-23, 4) Cycle B: FY 23-24, 5) Cycle A: FY 24-25. Assessment of SOs is conducted through a diverse range of coursework that is mapped to each PI of the SO. A code is assigned to help with data collection and evaluation for each PI. A sample of the mapping of the SO and PI to the courses (Table 3). As seen in the table, each PI is mapped to more than one core ET course. It can also be seen that the assessments in the 3rd and 4th year courses were conducted in the cycles for FY22-23 and FY23-24 as these were the years the courses were first offered.

The grades are not directly used as an assessment mechanism. Instead, the rubrics are used for more consistent assessment across the SOs, PIs, instructors and campuses. The rubrics are developed and incorporated into the courses to streamline the assessment task. Rubrics follow a standard 5-point Likert scale, with the following ratings: 5-4: Exceeds Expectations, 3: Meets Expectations, 2-1: Needs Improvement, and 0: Inadequate.

SOs	PI Code	Course	Cycle A: FY 20-21	Cycle B: FY 21-22	Cycle A: FY 22-23	Cycle B: FY 23-24
(3) an ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature	PI 3_a	3100				X
		3900			X	X
		4200				X
		4400			X	
		4500				X
		4700				X
		4900			X	
	PI 3_b	1200	X	X	X	X
		3800				X
		4400			X	
		4500				X
		4600				X
		4700				X
		4900			X	
	PI 3_c	2300			X	X
		3100				X
		3800				X
		3900			X	X
		4200				X
		4600				X
		4700				X
		4900			X	
	PI 3_d	1600	X	X	X	X
		3800				X
		3900				X
		4200				X
		4500				X
		4700				X
		4900			X	

Table 3: Mapping of SO3 and PI 3_a, 3_b, 3_c and 3_d to the courses

The rubric that is used for assessment includes the following rating scale, with example narratives related to Student Outcome (SO3) and Performance Indicator (PI 3-a) shown below (Table 4). These rubrics are placed into the Carmen Canvas Learning Management System for use by the instructors to assess each student on the identified assessment instrument assignments (labs, homework assignments, quizzes, project reports, presentations, etc.). Assessment Instruments are the mappings of the PIs to the course assessment. These are determined after discussions with the faculty to determine which outcomes and performance indicators map to the assessments in the courses they teach.

Assessment of SOs is highly dependent on the faculty at each regional campus and driven by their expertise in evaluating student performance in courses. The faculty and instructors of engineering technology, engineering, math, computer science, and science courses have collectively been involved in curriculum development as student outcomes (SOs) were incorporated into the courses. However, only the faculty and instructors of the ET program have been involved in the assessment process and improvement of courses. Faculty and instructors designed the courses, their outcomes, and assessment plans. Further, the IAC has been consulted on curriculum updates, and evaluation of assessment results has been regularly shared with its members.

Performance Indicator (PI Code)	Exceeds Expectations (4 - 5pts)	Meets Expectations (3pts)	Needs Improvement (1 - 2 pts)	Inadequate (0 pts)
PI 3-a: Communicates technical or non-technical topics, data and information in an organized written format.	Prepares/Writes a professional document - clear document - clear, coherent and concise. Uses proper articulation to communicate ideas. Includes concepts, experimental methodology, data, results and conclusion in an organized manner. Offers recommendations for improvement. Cites the sources.	Prepares a professional document. Uses proper articulation to communicate ideas. Includes concepts, experimental methodology, data, results and conclusion. Cites the sources.	Prepares a document that lacks coherence. Does not use proper articulation to communicate ideas. Makes grammatical errors and misspellings. Lacks some critical components. Incorrect style/format for citation.	Unable to prepare a professional document. Does not communicate ideas. Makes grammatical errors and misspellings. Lacks majority of critical components. Does not cite the sources.

Table 4: <u>Rubric for assessment of a PI in a course</u>

V. Evaluation of Results for Continuous Improvement

Programmatic success is fundamentally driven by the quality of the assessment process. Because the Self-Study report relies heavily on Criterion 3 and Criterion 4, the committees overseeing these areas play a significant institutional role. While ABET provides broad definitions for Student Outcomes (SOs), it mandates documented evidence of their periodic review and revision. To "close the loop" effectively, a program must demonstrate a clear alignment between predefined course-level outcomes and broader program goals through rigorous assessment data.

Although no formal program-specific criteria apply, this degree focuses heavily on manufacturing engineering and industrial systems. Leadership development is a central theme, viewed as a necessity for career success in the manufacturing sector. The program utilizes the five ABET student outcomes, broken down into specific performance indicators to ensure measurable achievement. These indicators are distributed across various course levels. Ultimately, the program offers combined technical and project management expertise required to design and manage modern industrial systems.

Assessment of SOs is conducted through a diverse range of assignments, including homework, quizzes, laboratory exercises, project reports, and exams. Faculty across all four regional campuses utilize standardized planning guides to collaborate on outcome mapping and assessment design. To ensure procedural alignment, the assessment team provides training on ABET terminology and assists faculty in linking specific assignments to learning outcomes. Each course is coordinated by a dedicated faculty who maintains content and provides instructional support. These coordinators meet with the ABET team every semester to review mappings, finalize planning documents, and integrate instructor feedback into the continuous improvement cycle.

There are several methods for continuous improvement of the various elements of the program and courses.

- The Program Educational Objectives are assessed every 3 years
- The SOs & PIs are reviewed annually by faculty, and every 3 years by the IAC and Alumni.
- Faculty, IAC and Alumni review the assessment and evaluation results and propose improvement ideas.

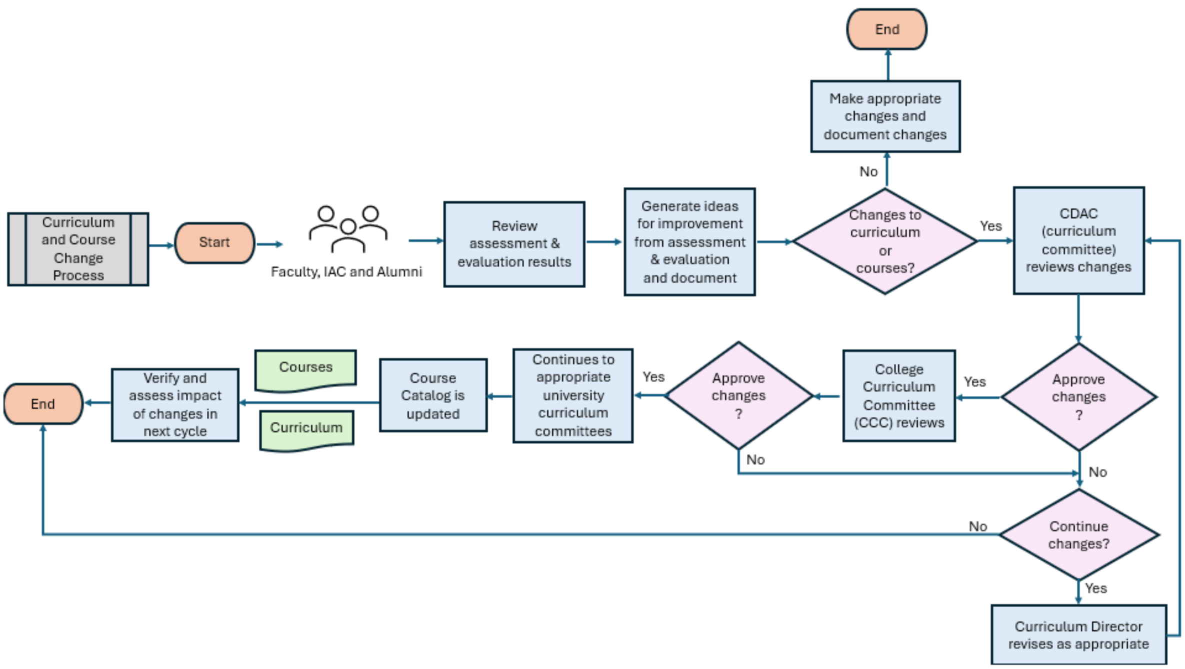

Figure 3: ***<u>Continuous Improvement Process for the ET Program</u>***

If the courses and/or curriculum are impacted, these changes go through the curriculum and/or course change processes provided by the ET program via CDAC, the College, and University levels, as appropriate. The continuous improvement process is shared in Figure 3 above. Alumni surveys will be conducted in Spring 2026 and results will be presented in future work. The accreditation team holds faculty meetings to brainstorm and discuss ideas for improvement.

Faculty assesses the PIs mapped to their courses and results are collected at the semester's conclusion. Assessment results from all campuses are collected through the Learning Mastery Gradebook in Carmen Canvas. For all students in the program, an average assessment score from the rubric (pts >= 3) is calculated. This shows the average number of students who "Meet Expectations" for a specific PI assessed.

The target to attain the outcome is set to 75% and all the students achieving a score of 3 pts on the assessment rubric meet this target. The accreditation team pulls the data from Carmen Canvas and evaluates the results. If there are any inconsistencies in the title of the assignment, incomplete or inaccurate assessment, the team follows up with the faculty. The faculty teaching the course across campuses discuss continuous improvement ideas based upon the results of the assessment and evaluation of attainment of student outcome targets.

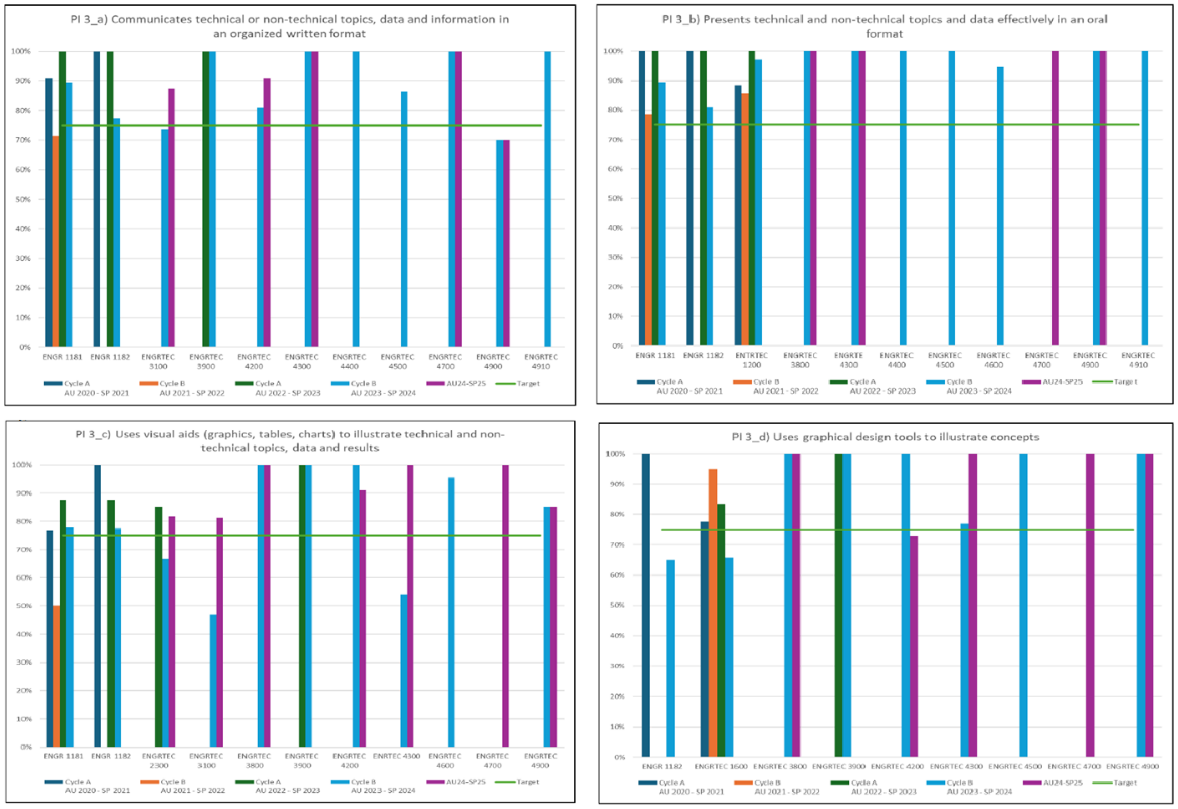

Figure 4: ***<u>Assessment result for PIs 3_a, 3_b, 3_c and 3_d</u>***

The evaluation cycle, target and evaluation result for two of the SOs (SO3 and SO5) are provided (Figures 4 and 5), as well as each evaluation cycle. As seen in Tables 2 and 3, there is more than one PI per SO, and more than one course mapped to each PI. Outcomes were attained in several courses except for a couple. The ET program exceeds the standard assessment requirement by mapping PIs to a wide range of courses. This approach provides evaluators with a broad dataset to verify that performance targets are consistently met throughout the curriculum.

For SO3, each of the PIs is mapped to assessments in introductory level courses (ENGR 1181, 1182, ENGRTEC 1200, 1600), intermediate level courses (ENGRTEC 2300, 3800, 3900) and advanced level courses (ENGRTEC 4600, 4700, 4800). In addition, most of the PIs are mapped to the assessments in the Capstone courses (ENGRTEC 4900 and 4910). Since SO3 is about communication of technical topics, there are several courses where students participate in written and oral communication of technical topics relevant to engineering technology. If the assessment score is below the target, the faculty will discuss whether the assignment needs to be revised, or the PI needs to be re-mapped to another assignment, or the mapping needs to be eliminated from the course. These are documented in the "*Course Planning Guides*" which include: a) list of SOs and respective PIs assessed in this course, b) educational strategies, assessment instruments used, and data analysis method, c) list of modifications made since the previous assessment, d) results of assessment, e) reflection on results, and f) actions to be taken which includes the continuous improvement initiatives.

For SO5, there is only one PI that is mapped to courses. This outcome relates to teamwork and demonstrates how students work effectively in organizing teams and accomplishing tasks while communicating information. The outcome was attained in all the courses to which it was mapped. This demonstrates that the program does an excellent job teaching teamwork and leadership skills.

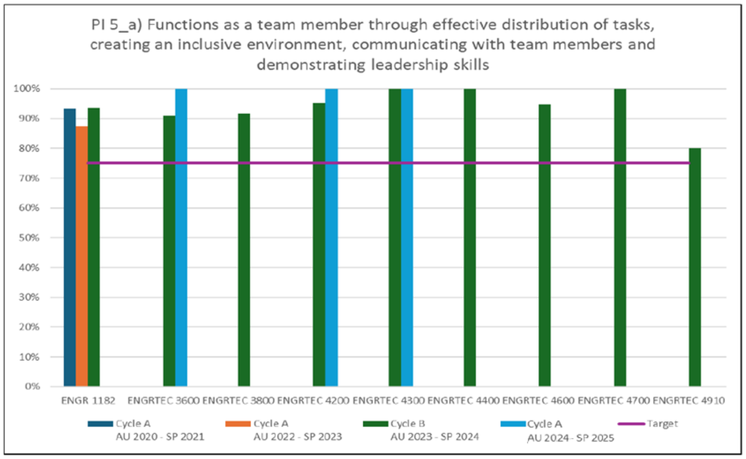

Figure 5: ***Assessment result for PI 5_a***

Continuous improvement recommendations for the program generated during the review cycles aligned to the SOs, PIs, courses and curriculum were consolidated during the Spring 2024 semester. Feedback was provided by students from each regional campus on courses and the ET program. The ET faculty then met to review the student feedback, provide additional feedback, and generate improvement recommendations. They prioritized the improvements and then developed a plan with resources and owners assigned to implement the improvements. Specific course-level improvements aligned to the SOs, PIs and the course data are shown in Table 5. This represents the most recent discussions of the ABET committee and CDAC evaluating the assessment data to inform changes.

Student Outcome, PI & Course Data Related to Improvements	**Improvement Idea**
SO 3 - PI 3_a – Course 3100, Cycle B: FY 2023-2024; SO 4 - PI 4_b, 4_c, 4_d and 4_e – 2500, Cycle A: FY 2020-2021, Cycle A: FY 2022-2023	Need more exposure in CNC programming and applications (possibly have a project that deals with CNC applications). Enhancing 1500 and/or 2500 to make it more valuable and effective.
SO 3 - PI 3_e – Course 2300, Cycle B: FY 2023-2024; SO 3 - PI 3_e – Course 4300, Cycle B: FY 2023-2024;	Need to explicitly mention standards and use of literature in the lab assignments or homework assignments in ENGRTEC 2300 and ENGRTEC 4300
SO 3, PI 3 D, 1600, All Review Cycles	CDAC: Add ENGRTEC 1600 as a prerequisite to ENGRTEC 4300 Facility Layout Integration to help build understanding of CAD.

Table 5: Recommendations based on evaluation of assessment results and Course feedback

The Industry Advisory Committee and other industry representatives have been involved in reviewing the courses as they were developed, approved and improved. Industry representatives meet with the faculty and review course topics and content and make suggestions to ensure that the program aligns to industry needs. The following are IAC subcommittee members' comments from a recent course review: a) Feedback seems pragmatic, value-added updates, b) Accelerate what students really want to do in their jobs and c) Good to see more in-person classes.

VI. Self-Study Documentation and Site-Visit Preparation

Since it is a new program, we submitted a "Request for Readiness Review" in Spring 2024 after graduating the first class of the ET program. The results of the readiness review clearly showed that the program was ready for the initial site visit. The program was approved to submit the "Request for Evaluation" in January 2025. The ABET team, faculty, staff and administrators were preparing for the Self-Study report in the summer of 2025.

The Curriculum Director and the three faculty accreditation coordinators who led the assessment and evaluation process attended webinars offered by ABET and also attended the "Self-Study Workshop" Pre-Conference session. After gaining insights from the workshops, the accreditation coordinators pointed out some key aspects to focus on while preparing the Self-Study Report for programs that follow a regional campus model:

1. **Criterion 1 - Students**: Clarifying the admissions and transfer credit process is critical with the regional campus model, especially when the program is not offered at the central campus. Ohio State regional campuses act as a portal to The Ohio State University system and seek to serve the community by providing the opportunity for educational excellence. Regional campuses only accept Ohio state residents.
    - *Student admissions and transfer credits:* These are overseen at the university level and students can apply directly to any of the regional campuses. With four campuses offering the program, it is important to document that there are staff advisors on each campus who collaborate and plan the semester and schedules together. Curriculum Director reviews requests for ET course transfers through a Qualtrics survey that the students complete. For non-ET courses, the appropriate department reviews those courses to assess transfer credit. For the general education courses, the university complies with the state articulation policy that requires that public institutions create pathways for students to transfer up to 36 credits of general education from any other public institution in Ohio.
    - *Career Guidance*: Most of the faculty have extensive industry experience and advise our students regarding their careers, courses, and the program, as well. It is worth noting that formal mentoring and advising occurred in ENGRTEC 1200 (Intro to Engineering Technology) course, in which faculty arrange seminars and networking with industry professionals.

2. **Criterion 2 – Program Educational Objectives (PEOs):** The accreditation team identified two critical items for : a) Process of reviewing the PEOs and the constituents and b) Published the most recent PEOs on the department's website before the scheduled review. Since there is no official department for the ET program, the PEOs are published under the College of Engineering webpages, where the program resides.

3. **Criterion 3 – Student Outcomes (SOs):** Developing performance indicators as measurable outcomes has become a necessity as it supports mapping specific curriculum goals to ABET SOs. The team recommends appointing a director of Curriculum Development and Assessment to ensure the process is managed effectively. Requests to revise the SOs and PEOs are initiated at this director's level to streamline the process.

4. **Criterion 4 – Continuous Improvement:** Periodic and systematic review of SOs is the goal for all new programs and a huge undertaking. However, if the programs proactively plan for assessment at the inception of the program/curriculum development, the daunting task becomes manageable.

- *Period and Systematic Assessment Process*: Mapping SOs across the curriculum is recommended. Not all SOs or the respective PIs have to be assessed in each cycle. We divided the PIs into two cycles from the initiation of the assessment. This was to ensure all PIs get assessed at least twice to show continuous improvement. If the target is not met in the first cycle, the PIs are assessed in the following scheduled cycle, where changes are incorporated for improvements. So, for new programs, it is critical to assess each PI at least twice before the ABET review or site visit. Although the paper talks about the direct assessment of SOs, we have an exit survey from the graduating class as a form of indirect assessment, which will be discussed in our future work.
- *Overall Program Assessment Data*: ABET strictly warns programs about the average of averages when reporting percent scores for the attainment of an outcome, as it hides diagnostic results of strengths and weaknesses in student learning. [12]. Therefore, the ET program provides comprehensive data on the assessment of each PI for all the students in the program (all campuses) combined. Data is also segregated for each campus for each PI assessed. Figure 6 provides a data collection sample from the ENGRTEC 4300 course. Only three campuses have offered this course at this time; therefore, data from three campuses is shown. Program Evaluators (PEVs) are provided assessment data at this granularity on each PI for their review at the site visit for which they were appreciative.
- *Assessment Results and closing the loop:* It was noted in the workshops that the assessment process does not discern attainment of each SO. From Figures 4 and 5, it can be observed that not all assessments attained the 75% target on each PI. The outcomes not met at a certain level will be reviewed by the faculty. The mechanism is to use "*Course Planning Guides*" to document evaluation of assessment and continuous improvement. These guides keep track of the changes and help close the loop on the assessment cycle. Assessment summary per course and per outcome is developed to have a holistic view of the assessment data.

5. **Criterion 5 – Curriculum:** The program requisites in Figure 2 serve as a curriculum map presented in the Self-Study. A critical point was noted in the ETAC workshop that the programs must have an advisory committee overseeing curriculum revisions. Out IAC actively engages in reviewing and advising on the program's curriculum. The committee meets twice a year, once in each semester. In Self-Study, we also highlighted the courses where topics such as applications of calculus, local and global impact, safety, engineering standards and codes, quality and continuous improvement in the curriculum.

6. **Criterion 6 – Faculty:** Our ET program is robust in terms of utilizing resources. Faculty teach courses at their assigned locations and offer classes remotely to students at other campuses when needed. This is specifically noted in the Faculty Workload table of the Self-Study. Professional development for faculty is offered through several university resources such as the Drake Institute for Teaching and Learning, offering assistance with designing or redesigning a course, assessing a course, or improving skills for effective teaching.

7. **Criterion 7 – Facilities and Criterion 8 – Institutional Support:** Our program is delivered across four regional campuses - Lima, Mansfield, Marion, and Newark, each offering facilities that support student learning outcomes and foster a collaborative, hands-on learning environment, such as classrooms, labs, faculty offices, library, advising office, career services office, and student union for engagement. Each campus has institutional support for curriculum oversight, funding and budget, staffing, and professional development support for faculty. Lack of institutional support for regional campuses and maintenance of the labs is something evaluators are concerned about. So, we addressed this

in the Self-Study that our regional campus budgets utilize the Responsibility Center Management (RCM) model and receive all the tuition revenue and state subsidy for the students enrolled on their respective campuses. The regional campuses use those funds to pay for all costs on each campus (including employee salaries and benefits, energy costs, and facilities and maintenance), as well as service fees to the central campus for centralized university services. Regional campus budgets are monitored and approved centrally.

Data Collection ENGRTEC 4300

LMA (Section 11905)																		
Student ID	SLO2_a result	SLO2_a mastery points	SLO2_b result	SLO2_b mastery points	SLO2_c result	SLO2_c mastery points	SLO3_a result	SLO3_a mastery points	SLO3_b result	SLO3_b mastery points	SLO3_c result	SLO3_c mastery points	SLO3_d result	SLO3_d mastery points	SLO3_e result	SLO3_e mastery points	SLO5_a result	SLO5_a mastery points
Student 1	3	3	5	3	5	3	5	3	5	3	5	3	5	3	3	3	5	3
Student 2	3	3	5	3	5	3	5	3	3	3	5	3	3	3	5	3	5	3
Student 3	5	3	5	3	5	3	5	3	3	3	3	3	5	3	5	3	5	3
Student 4	5	3	5	3	3	3	5	3	5	3	5	3	3	3	5	3	5	3
Student 5	5	3	5	3	5	3	5	3	3	3	3	3	5	3	5	3	5	3
	5		5		5		5		5		5		5		5		5	
	100.00%		100.00%		100.00%		100.00%		100.00%		100.00%		100.00%		100.00%		100.00%	

Campus 1 Data

MNS (Section # 12729)																		
Student ID	SLO2_a result	SLO2_a mastery points	SLO2_b result	SLO2_b mastery points	SLO2_c result	SLO2_c mastery points	SLO3_a result	SLO3_a mastery points	SLO3_b result	SLO3_b mastery points	SLO3_c result	SLO3_c mastery points	SLO3_d result	SLO3_d mastery points	SLO3_e result	SLO3_e mastery points	SLO5_a result	SLO5_a mastery points
Student 6	3	3	5	3	3	3	3	3	5	3	5	3	5	3	3	3	3	3
Student 7	3	3	5	3	3	3	3	3	5	3	5	3	5	3	3	3	3	3
	2		2		2		2		2		2		2		2		2	
	100.00%		100.00%		100.00%		100.00%		100.00%		100.00%		100.00%		100.00%		100.00%	

Campus 2 Data

MRN (Section# 11826)																		
Student ID	SLO2_a result	SLO2_a mastery points	SLO2_b result	SLO2_b mastery points	SLO2_c result	SLO2_c mastery points	SLO3_a result	SLO3_a mastery points	SLO3_b result	SLO3_b mastery points	SLO3_c result	SLO3_c mastery points	SLO3_d result	SLO3_d mastery points	SLO3_e result	SLO3_e mastery points	SLO5_a result	SLO5_a mastery points
Student 8	5	3	5	3	5	3	5	3	3	3	3	3	3	3	3	3	5	3
Student 9	0	3	0	3	0	3	3	3	3	3	3	3	3	3	3	3	5	3
Student 10	5	3	5	3	5	3	5	3	3	3	3	3	3	3	3	3	5	3
Student 11	5	3	5	3	5	3	5	3	3	3	3	3	3	3	3	3	5	3
Student 12	0	3	0	3	0	3	3	3	3	3	3	3	3	3	3	3	5	3
Student 13	5	3	5	3	5	3	5	3	3	3	3	3	3	3	3	3	5	3
Student 14	0	3	0	3	0	3	3	3	3	3	3	3	3	3	3	3	5	3
	4		4		4		7		7		7		7		7		7	
	57.14%		57.14%		57.14%		100.00%		100.00%		100.00%		100.00%		100.00%		100.00%	

Campus 3 Data

Program Overall (All Sections)																		
Student ID	SLO2_a result	SLO2_a mastery points	SLO2_b result	SLO2_b mastery points	SLO2_c result	SLO2_c mastery points	SLO3_a result	SLO3_a mastery points	SLO3_b result	SLO3_b mastery points	SLO3_c result	SLO3_c mastery points	SLO3_d result	SLO3_d mastery points	SLO3_e result	SLO3_e mastery points	SLO5_a result	SLO5_a mastery points
Student 1	3	3	5	3	5	3	5	3	5	3	5	3	5	3	3	3	5	3
Student 2	3	3	5	3	5	3	5	3	3	3	5	3	3	3	5	3	5	3
Student 3	5	3	5	3	5	3	5	3	3	3	3	3	5	3	5	3	5	3
Student 4	5	3	5	3	3	3	5	3	5	3	5	3	3	3	5	3	5	3
Student 5	5	3	5	3	5	3	5	3	3	3	3	3	5	3	5	3	5	3
Student 6	3	3	5	3	3	3	3	3	5	3	5	3	5	3	3	3	3	3
Student 7	3	3	5	3	3	3	3	3	5	3	5	3	5	3	3	3	3	3
Student 8	5	3	5	3	5	3	5	3	3	3	3	3	3	3	3	3	5	3
Student 9	0	3	0	3	0	3	3	3	3	3	3	3	3	3	3	3	5	3
Student 10	5	3	5	3	5	3	5	3	3	3	3	3	3	3	3	3	5	3
Student 11	5	3	5	3	5	3	5	3	3	3	3	3	3	3	3	3	5	3
Student 12	0	3	0	3	0	3	3	3	3	3	3	3	3	3	3	3	5	3
Student 13	5	3	5	3	5	3	5	3	3	3	3	3	3	3	3	3	5	3
Student 14	0	3	0	3	0	3	3	3	3	3	3	3	3	3	3	3	5	3
	11		11		11		14		14		14		14		14		14	
	78.57%		78.57%		78.57%		100.00%		100.00%		100.00%		100.00%		100.00%		100.00%	

Comprehensive Data

Figure 6: ***Assessment Data Collection for ENGRTEC 4300 course as a sample***

Site Visit: The ABET site visit for our ET Program was scheduled for September 2025. There were two program evaluators (PEVs) and a team chair visiting our institution. In a four-day visit, the team had a chance to visit all four regional campuses. The team arrived in Columbus on the first day. The following day, they visited Newark and Marion campuses, spending about half a day at each location. The second day, the team started at the Lima campus and then went to the Mansfield campus again, spending about half a day on each campus. The third day was all “Program Review” day, when all the interviews happened remotely via Zoom. The team chair had a chance to meet the administrators in person at all four campuses and remotely connected with the president, provost, and institutional leadership. The PEVs not only met the faculty in the program, but they also had a chance to meet the Math and Science faculty. They met with the staff, academic advisors, and accreditation team as well. The exit meeting was scheduled on the fourth day at the Mansfield campus.

Summary and Future Work

In this paper, the authors shared a regional campus model for offering a four-year degree program. The development of the assessment plan synchronously with curriculum development was an effective strategy, which was highlighted in this paper. Although offering a bachelor's degree at the regional campuses might be common, establishing a robust accreditation plan independent of the contributions from the central campus might be challenging. The PEVs did not find any concerns with our assessment process during the site visit and recognized that the process was well established. Hence, the authors wanted to share their experience in building a stand-alone assessment process for regional campuses. This paper provides guidance to new engineering technology programs with assessment strategies and preparation for site visit and documentation of the Self-Study report.

The authors believe that the faculty carried a heavy load of assessing student outcomes, teaching courses and continuously improving curriculum. In many scenarios, faculty served as mentors offering career advice. Due to a strong industry partnership, the faculty is equipped with the skills to guide students to find internship opportunities. The majority of the students successfully hired from this program have had internship experience either with the same employer or another relevant to the field.

Some best practices include developing performance indicators with rubrics and sharing course mappings and these rubrics with faculty to educate them about the process, especially the newly hired faculty. Streamlining the assessment and data collection via the university's learning management system was significantly better. Another recommendation for the site visit preparation is to have a veteran ABET evaluator conduct a mock visit with faculty and administrators. Programs should utilize the summer for such mock visits for an upcoming fall site visit to coordinate efforts across multiple locations.

Although this paper covered direct assessment as part of the continuous improvement, the goal is to incorporate exit surveys, alumni surveys and capstone surveys into the assessment process. The accreditation team has already been compiling the alumni surveys that are sent to students three years after graduation. Although the program is currently small, there are outreach and engagement efforts at all the regional campuses to improve enrollment and retention.

Acknowledgment

The authors acknowledge that the administrators, faculty and staff at all four regional campuses play a vital role in delivering the program. The authors also acknowledge the faculty who participated in the assessment process to ensure quality.

References

[1] "Accreditation Board for Engineering and Technology (ABET)," http://www.abet.org, 2024, [Accessed January 7, 2026].

[2] J. Asuncion Zarate-Garcia, A. Serrano-Reyes, M. X. Rodriguez-Paz, and I. Zamora-Hernandez, "A continuous improvement model to enhance academic quality in engineering programs," in *ASEE Annual Conference and Exposition, Conference Proceedings*, 2020, vol. 2020-June.

[3] B. L. Christe and S. C. Dunning, “Engineering Technology Accreditation: Avoid the Pitfalls and Be Prepared,” *American Society of Engineering Education Virtual Annual Conference*, June 2020.

[4] W. L. Baiocchi, O. R. Alden, M. Gutmann, R. J. Sheng, “Getting ABET Accreditation Right the First Time,” *2012 ASEE Annual Conference & Exposition*, San Antonio, June 2012.

[5] Tahmina, Q., & Kelley, K. (2024, June), *ABET Assessment Program for a Bachelor of Science in Engineering Technology Degree – Strategies and Best Practices* Paper presented at 2024 ASEE Annual Conference & Exposition, Portland, Oregon. 10.18260/1-2—46512

[6] US Bureau of Labor Statistics. https://data.bls.gov/timeseries/CES3000000001?amp%253bdata_tool=XGtable&output_view=data&include_graphs=true, 2024, [accessed 19-January-2024].

[7] National Institute of Standards and Technology (NIST), “Advanced Manufacturing Technology and Industry 4.0 Services,” *NIST Manufacturing Extension Partnership (MEP)*, June 4, 2020. [Online]. Available: https://www.nist.gov/mep/advanced-manufacturing-technology-and-industry-40-services (accessed Jan. 12, 2026)

[8] Fran Stewart and Kathryn Kelley, “Connecting Hands and Heads: Retooling for the “Smart” Manufacturing Workplace,” Economic Development Quarterly, February 2020.

[9] Ulstad, A. T., & Kelley, K., & Johnson, T. A. (2019, June), *Lessons Learned Creating a BSET with a Regional Campus Model* Paper presented at 2019 ASEE Annual Conference & Exposition, Tampa, Florida. 10.18260/1-2—33058.

[10] Tahmina, Q., & Kelley, K., & Ulstad, A. T. (2021, July), *Building an Effective ABET ETAC Assessment Program from the Ground Up* Paper presented at 2021 ASEE Virtual Annual Conference Content Access, Virtual Conference. 10.18260/1-2—36765

[11] Tahmina, Q., & Kelley, K., & Furterer, S. L. (2023, June), *Implementing an Effective ABET Assessment Program for a New Bachelor of Science in Engineering Technology Degree* Paper presented at 2023 ASEE Annual Conference & Exposition, Baltimore, Maryland. 10.18260/1-2—43538

[12] Institute for the Development of Excellence in Assessment Leadership (IDEAL) ABET Headquarters,https://www.abet.org/wp-content/uploads/2023/07/IDEAL-Participants-Packet-with-Resources-August-2023-1.pdf, [Accessed April 6, 2026].