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Jill M. Simpson, Janet T. Jenkins, M. Shane Banks, and Xihui "Paul" Zhang

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Invited Paper
Navigating ABET Accreditation: A Computing Department Case Study

Jill M. Simpson
Janet T. Jenkins
M. Shane Banks
Xihui "Paul" Zhang
Sanders College of Business and Technology
University of North Alabama
Florence, AL 35632, USA
jmsimpson1@una.edu, jltruitt@una.edu, mbanks@una.edu, xzhang6@una.edu

ABSTRACT

Computing programs in higher education often pursue third-party accreditation to assure students, employers, and university administrators that their programs meet quality standards established by external experts in the relevant disciplines. ABET (Accreditation Board for Engineering and Technology) is one such accrediting body that accredits programs in computing disciplines. In this paper, we present a case study examining how the Department of Computer Science and Information Systems in the Sanders College of Business and Technology at the University of North Alabama developed a process over several accreditation cycles to successfully navigate the ABET accreditation process. We provide examples of our process, the challenges we faced and overcame, lessons learned, and recommended best practices.

Keywords: ABET accreditation, Computing education, Program assessment & design, Case study, Best practice

1. INTRODUCTION

In higher education, accreditation bodies provide a set of standards that are often used to assess the quality of educational programs and services. Accreditation standards are typically developed by an external organization in coordination with domain experts in the area to be accredited. There are numerous accrediting bodies in the higher education setting, and they can be focused on the university, college, or program level. Challa et al. (2005) stated, "Although these different levels of accreditation are independent of each other from the accrediting body's perspective, collectively they reinforce each other by developing and advancing the critical dimensions of higher education" (p. 208). Navigating these disparate, constantly evolving, and sometimes conflicting accreditation standards can be extremely challenging, especially for a computing department in a regional university with constrained resources.

The Department of Computer Science and Information Systems (CSIS) in the Sanders College of Business and Technology at the University of North Alabama (UNA) sought to develop a unified process to satisfy the accreditation requirements for three different computing programs, Computer Information Systems (CIS), Computer Science (CS), and Information Technology (IT) with three different accreditation bodies, the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC), the

Association to Advance Collegiate Schools of Business (AACSB), and ABET, originally known as the Accreditation Board for Engineering and Technology.

In this paper, we provide an in-depth examination of the process we developed, focusing on our most recent ABET accreditation for our computing programs, which concluded with the ABET team's site visit in October 2025. The ABET board will determine the final accreditation decision in July 2026. We provide background information on our university, computing programs, accreditation history, an overview of the ABET accreditation requirements, and our approach to meeting them. In addition, we discuss challenges encountered along the way and our solutions. Finally, we offer suggested best practices based on our experience.

2. BACKGROUND

2.1 Academic Structure

UNA is a regional university in the northwest corner of Alabama, the state's oldest university, founded in 1830, with an enrollment of approximately 10,000 students. The CSIS department is part of the Sanders College of Business and Technology. Currently, it has approximately 350 computing majors across our three computing programs: computer information systems (CIS), computer science (CS), and information technology (IT). Having CIS, CS, and IT programs within a single college and department has fostered an environment in which we can share faculty, lab, administrative, and accreditation resources.

2.2 Accreditation History

This section provides an overview of the university, college, and department's accreditation history.

2.2.1 University Level. The Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) is a regional accrediting body that accredits degree-granting colleges and universities, ensuring schools meet standards for quality education (Southern Association of Colleges and Schools Commission on Colleges, n.d.). The University of North Alabama is accredited at the university level by SACSCOC. Initial accreditation began in 1934, with the most recent review and reaffirmation in 2023. The next review will occur in 2033.

2.2.2 College Level. The Association to Advance Collegiate Schools of Business (AACSB) is the "global standard-setting body for business education, strengthening the world's business schools through accreditation, thought leadership, and transformative learning" (AACSB, n.d.). At the University of North Alabama, our Sanders College of Business and Technology houses five business programs:

- Bachelor of Business Administration (BBA)
- Master of Business Administration (MBA)
- Master of Accountancy (MAcc)
- Master of Health Administration (MHA)
- Executive Doctor of Business Administration (EDBA)

The BBA, MBA, and MAcc programs were first accredited by AACSB in 2016. These programs are currently under review for reaccreditation, while the MHA and EDBA are under review for initial accreditation following a site visit in Spring 2026. Our Computer Information Systems (CIS) program is a BBA degree and is reviewed under the college-level accreditation process as a BBA program.

2.2.3 Department Level. ABET is a "nonprofit, non-governmental agency that accredits programs in applied and natural science, computing, engineering, and engineering technology" (ABET, n.d.-a). ABET accreditation ensures that an academic program meets the industry standards needed to prepare students for their profession. The CSIS department houses three computing programs, all accredited by the Computing Accreditation Commission of ABET under the commission's General Criteria and Program Criteria for the respective programs:

- Bachelor of Business Administration in Computer Information Systems (BBA in CIS)
- Bachelor of Science in Computer Science (BSCS)
- Bachelor of Science in Information Technology (BSIT)

The CIS program was first accredited by ABET in 2006; the CS program in 2012; and the IT program in 2018. All three programs are currently under review for reaccreditation, with the site visit completed in Fall 2025.

3. THE ABET ACCREDITATION PROCESS

3.1 ABET Accreditation Overview

We have a core accreditation process for all three programs because most ABET requirements are consistent across computing programs. We add to the core in the areas where the ABET criteria have differing requirements across programs. ABET publishes updated criteria each academic year. We review changes each year and implement them into the process. Our most recent Self-Study was submitted in July 2025, and the onsite visit followed in October 2025. Our work described in this paper is based on the "Criteria for Accrediting Computing Programs, 2025-2026" (ABET, n.d.-c).

3.1.1 ABET Criteria for the Computing Accreditation Commission. ABET has eight General Criteria that computing programs must meet to be successfully accredited.

1) Students: admissions, advising, progress, graduation
2) Program Educational Objectives: what graduates are expected to achieve a few years after graduation
3) Student Outcomes: what students should know/do by graduation
4) Continuous Improvement: how outcomes are assessed and used to improve the program
5) Curriculum: alignment with computing discipline standards
6) Faculty: qualifications, workload, sufficiency
7) Facilities: labs, computing resources, buildings
8) Institutional Support: overall university infrastructure and financial means

Programs must submit Self-Study reports, including support for meeting each of the eight criteria. ABET provides Self-Study Templates that also include requested Background Information, Program Criteria, Course Syllabi, Faculty Vitae, Equipment, and an Institutional Summary. The most recent Self-Study Templates can be found on the ABET website (ABET, n.d.-d).

3.1.2 ABET Timelines. If you are just starting the accreditation process, ABET suggests several steps to take before the 18-month accreditation process. These steps help you determine whether your program is ready to begin the accreditation process by providing assessment planning and readiness reviews. This information can be found on ABET's website (ABET, n.d.-b). Each ABET commission has the authority to set the initial accreditation date retroactively from the final approval date to no more than two academic years prior to the on-site review (ABET, 2026). The timeline for our most recent ABET visit is shown in Table 1.

Date	Process
2024-2025	Program Reviews and Self-Study Preparation
January 31, 2025	Request for Evaluation Due to ABET
July 1, 2025	Self-Study Report Due to ABET
October 5-7, 2025	On-Site ABET Review Team Visit
July 2026	Final ABET Decision

Table 1. Accreditation Timeline

3.2 Our Processes and Approach

We will now show samples of how we addressed each of the eight General Criteria. It should be noted that evidence supporting some of the criteria merely represents a current snapshot of your Institution and Program (Criteria 1, 6, 7, and 8). In contrast, support for other criteria requires demonstrating an iterative process of review, updating, and implementation (Criteria 2, 3, 4, and 5). Also, note that each program should write a Self-Study that supports its own story.

3.2.1 Criterion 1 - Students. ABET requests support to demonstrate that student performance is evaluated. Students should have proper advising and career guidance. We also describe the university's process for admitting new and transfer students, how credit is awarded, and how graduation requirements are demonstrated. Here are samples from our 2024-2025 academic year admissions process.

At UNA, student applications and admissions are coordinated through the University Office of Admissions. To apply for undergraduate admission, students complete the application and submit their most recent official high school transcript electronically to the Office of Admissions. If applicable, they also send official ACT or SAT scores; however, UNA is currently test-optional, so these are not required for admission.

For unconditional admission to UNA, applicants must have a high school GPA of 2.5 or higher on a 4.0 scale and have completed at least 13 high school units in specific subject areas: 4 units of English, 2 units of mathematics (including algebra I, algebra II, geometry, and other advanced math courses), 2 units of natural or physical sciences, 3 units of social studies (including U.S. history, government, and other related subjects), and 2 units in other areas like foreign language or computer sciences. Conditional admission is available for students with a GPA between 2.0 and 2.49, who have completed at least 11 of the required units.

Students who meet the requirements for university admission can declare a major in one of our computing programs at any time. There are no additional requirements.

3.2.2 Criterion 2 - Program Educational Objectives. The Program Educational Objectives (PEO) are developed by our constituencies and our faculty and are aligned with our university's mission. These are the objectives we want graduates of our programs to achieve five years after they complete our programs. We systematically review these PEOs in collaboration with our advisory council, including alumni, faculty, university administration, and current students. Our university has a five-year cycle in which its mission is reviewed and updated. We have aligned our major PEO review with that process to ensure our PEOs align with the university's mission. Our current PEOs and the complete review process are in Appendix A.

3.2.3 Criterion 3 - Student Outcomes. ABET provides five Student Outcomes under the General Criteria and a unique sixth Student Outcome specific to each program in Program Criteria. Programs must have adopted, documented, and published Student Outcomes. Programs may add additional outcomes; however, in our three programs, we have adopted the ABET Student Outcomes precisely without additional outcomes. Internally, we often refer to these as Student Learning Outcomes (SLO). These student outcomes become the initial framework for our Continuous Improvement Process and Curriculum Documentation and Review. These outcomes, along with the shorter names we use internally in our system, are shown in Table 2.

3.2.4 Criterion 4 - Continuous Improvement. ABET requires that "The program must regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. The results of these evaluations must be systematically used as input to the program's continuous improvement efforts. Other available information may also be used to assist in the continuous improvement of the program." (ABET, n.d.-c).

This flexible requirement allows programs to build continuous improvement processes tailored to their specific programs. However, a mature, active, continuous improvement process must be clearly and thoroughly documented to demonstrate that a program meets continuous improvement goals. This criterion

has been our greatest challenge by far. As such, we will dedicate an entire section to this criterion in Section 3.4 of the paper.

Student Outcome	Student Outcome Shorter Name
1. Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.	SLO 1 Computing Problem
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	SLO 2 Computing-Based Solution
3. Communicate effectively in a variety of professional contexts.	SLO 3 Communication
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.	SLO 4 Legal and Ethical
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.	SLO 5 Teamwork
CIS 6. Support the delivery, use, and management of information systems within an information systems environment.	CIS SLO 6 Support of MIS
CS 6. Apply computer science theory and software development fundamentals to produce computing-based solutions.	CS SLO 6 Computer Science Theory
IT 6. Use systematic approaches to select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals.	IT SLO 6 User Goals

Table 2. Student Outcomes

3.2.5 Criterion 5 - Curriculum. ABET provides computing curriculum guidelines in the General Criteria that apply to each computing program. In addition, ABET provides Program Criteria with specific curriculum guidelines per program. We have a robust curriculum that exceeds the basic requirements of the ABET guidelines in many cases. To show that we meet the guidelines, we use a variety of techniques and processes.

For each of our programs, we build curriculum maps. In our curriculum map, we list our core courses for each program, along with supporting courses used to meet SLOs, across the top of the matrix. The SLOs are listed on the left side of the matrix. In the middle, where the SLOs and courses cross paths, we indicate whether the SLO is covered in a course and, if so, the level of coverage. During department-wide faculty meetings, faculty are presented with blank curriculum maps and asked to determine the level of coverage at each intersection of a row and a column. Multiple faculty review it so that we get an accurate representation of what we actually cover. Secondary to this step, but also important in our curriculum review, we make sure the course objectives and topics are clearly represented in the course syllabi. Syllabi and/or the Curriculum Maps are changed to reflect what we are doing in the program. This process also has the side effect of engaging all faculty in reviewing the curriculum and course coverage. New faculty can learn about the curriculum, while seasoned faculty can ensure that assumptions about curriculum coverage are not made based on past iterations. Table 3 shows our CIS Curriculum Map for Student Outcomes. We use the same process to break down the General and Program Criteria into smaller chunks for our internal

review and curriculum mapping. We then share that in the Self-Study to provide support for our curriculum coverage.

			CIS Required Courses in Major							
			CIS 225	CIS 315	CIS 330	CIS 344	CIS 366	CIS 376	CIS 476	CIS 486
Criterion 3. Student Learning Outcomes (SLOs)										
SLO 1 Computing Problem	Coverage	Incidental								
		Introduced								
		Emphasized								
		Reinforced								
SLO 2 Computing-Based Solution	Coverage	Incidental								
		Introduced								
		Emphasized								
		Reinforced								
SLO 3 Communication	Coverage	Incidental								
		Introduced								
		Emphasized								
		Reinforced								
SLO 4 Legal and Ethical	Coverage	Incidental								
		Introduced								
		Emphasized								
		Reinforced								
SLO 5 Teamwork	Coverage	Incidental								
		Introduced								
		Emphasized								
		Reinforced								
SLO 6 Support of MIS	Coverage	Incidental								
		Introduced								
		Emphasized								
		Reinforced								

Table 3. CIS Curriculum Map

3.2.6 Criterion 6 - Faculty. In this criterion, ABET expects detailed information concerning the department faculty that support the programs. Programs are expected to have Ph.D.-level faculty in each program area and to provide evidence of faculty competency across all areas. Information is also requested regarding faculty workload, professional development opportunities, and faculty authority and responsibilities. We provided this information in the Self-Study through a series of tables, and we included faculty vita in an appendix. Below is a summary of the faculty qualifications that we provided in our Self-Study.

Among the fifteen tenured and tenure-track faculty employed within the department,

- six hold Ph.D.s in Computer Science,
- four hold Ph.D.s in Information Systems,
- two hold Ph.D.s in Computer Engineering,
- one holds a Ph.D. in Information Technology,
- one holds a Ph.D. in Instructional Leadership with emphasis in Technology, and
- one holds a Ph.D. in Information Science.

Two additional faculty have been hired to begin in Fall 2025:

- one holds a Ph.D. in Computer Science, and
- one holds a Ph.D. in Information Technology.

Tenured and tenure-track faculty are actively involved in scholarly research in their field, resulting in journal and conference publications and presentations. Multiple faculty members have extensive industry experience.

The department has two full-time non-tenure-track faculty members. Each held a master's degree with at least 18 hours of graduate coursework in computing, and each was an ABD.

- one was working on a Ph.D. in Computer Science, and
- one is currently working on a DBA in Information Systems.

Additional full-time non-tenure track faculty to begin in Fall 2025:

- one with a master's in information systems.

The number of adjunct teaching faculty varies slightly from semester to semester (typically 3-5). All adjuncts have at least a master's degree with a minimum of 18 hours of graduate coursework in computing.

3.2.7 Criterion 7 - Facilities. In this criterion, ABET asks for details concerning facility support for the department, faculty, and students, specifically offices, classrooms, and labs. Below is an example from our Self-Study.

Offices. The faculty and support staff for the CIS, CS, and IT programs are housed in the offices of the Computing and Mathematics (CM) building. Each full-time faculty member has a dedicated office that is sufficient to support all academic preparation and scholarly duties. The offices of the department chair and administrative assistant are conveniently located in the center of the building, with an open reception area for student workers. The offices are equipped with large-screen LCD monitors to facilitate instructional demonstrations and advising assistance.

Classrooms. Classrooms and labs used by the CIS, CS, and IT programs are housed in both the CM building and the Raburn Wing of Keller Hall. The lab configurations support a variety of teaching paradigms. All rooms have tables and computers arranged to support individual work, while two rooms are specifically configured to also accommodate small teams. Seating capacity is limited, and this allows the entire class to comfortably engage in meaningful discussion. These classrooms are equipped with 24, 30, or 32 computer workstations, each loaded with the software required for course instruction. The instructor has a computer workstation at the front of the classroom. The instructor can control their computer, the projection/display system, and all student computers from this workstation. Each teacher console has software to monitor student machines, share files with and from them, or share a student's screen with the class. This is particularly helpful in sharing a variety of problem-solving techniques with students. In addition, this software provides the option to perform interactive assessments during class, allowing for immediate feedback to the instructor.

3.2.8 Criterion 8 - Institutional Support. In this criterion, ABET seeks information concerning the level of institutional support, including leadership, budget and financial support, staffing, faculty hiring and

retention, support for faculty development, and efforts to maintain a respectful environment. We provided a detailed explanation in each of these areas. Below is an example of our Self-Study response on faculty hiring and retention.

The hiring process for new faculty in the CSIS department follows a structured, transparent approach, as outlined in the faculty handbook and supporting documents available on the UNA Human Resources website. This process ensures that all faculty hires align with the university's academic and diversity goals while maintaining the highest standards of instructional and research excellence.

Before initiating a faculty search, all employment opportunities must first receive institutional approval. Once approved, the position is posted through the Online Employment System, ensuring broad visibility to attract qualified candidates. The department works in conjunction with the Provost's Office to release job postings earlier in the hiring cycle, maximizing the opportunity to recruit top-tier faculty.

Search Committee and Candidate Evaluation. A search committee composed of departmental faculty members is appointed to oversee the hiring process. The committee is responsible for:

- Drafting the job posting with required qualifications, preferred expertise, and responsibilities.
- Reviewing applications to identify highly qualified candidates.
- Conducting interviews, both telephone/video-based preliminary interviews and on-campus interviews for finalists.
- Evaluating candidates based on teaching experience, research contributions, and alignment with department needs.

On-Campus Interviews and Presentations. Finalists invited for on-campus interviews participate in a comprehensive evaluation process that includes:

- Teaching presentations, allowing candidates to demonstrate their instructional effectiveness and ability to engage students.
- Research presentations, showcasing their contributions to their field and potential for future scholarly work.
- Meetings with faculty, administrators, and key stakeholders to assess their fit within the department and broader university community.

Final Selection and Offer Process. The hiring process is thoroughly vetted at multiple institutional levels to ensure compliance with university policies, diversity goals, and academic standards. The process involves approvals from:

- The Sanders College of Business and Technology Dean's Office
- The Academic Affairs Division
- The Office of Human Resources

Once the department and search committee finalize a candidate selection, the Vice President for Academic Affairs and Provost submits a formal recommendation to the President of the University, who extends the official written offer of employment upon completion of all approvals.

3.3 Summary of the On-Site ABET Review Team Visit

The ABET team comprises a Team Chair and a Program Evaluator (PEV) for each program being reviewed, in our case, that consisted of 3 PEVs plus the chair. The Chair served as the point of contact for all communication between our school and the team. We completed a Self-Study for our programs and submitted it on July 1 of the year of our site visit. Between the Self-Study submission and our visit (which was in October), the Team Chair sent questions as they arose regarding the Self-Study information provided. This allowed us to address as many questions as possible prior to the visit. By the time the review team arrived on campus in October, most of their questions had already been satisfied. The Team Chair initially provided a sample schedule ahead of the site visit. We used the sample as a guide to schedule all

requested meetings logistically on campus, and then confirmed the schedule with the Team Chair (see sample schedule in Appendix B).

Upon their arrival on Sunday, the review team joined us for a campus tour. They then retreated to their reserved conference room to begin working on their report. The following day was filled with meetings. The review team met with various people across campus, including most faculty within the department, the ABET coordinators, those involved with the AOL process, Interim Dean, Associate Dean, Previous Dean, Business Manager, Success Center, Admissions, Advisory Council, ITS, current and former students, President, Provost, Registrar, Mathematics, Library, Human Resources, University Police, and program coordinators. Throughout the first two days, the Team Chair continued to funnel any new or outstanding questions through the department's ABET leadership team. The leadership team then worked with faculty or other university departments to address these questions and communicate the answers to the Team Chair.

On Day 3, the review team finalized their reports and met with the ABET coordinators to informally discuss the results. The Dean and program coordinators were then debriefed on the results, followed by a debriefing with the President and Provost; after which, the ABET team departed campus.

3.4 Zooming in on the Continuous Improvement Process

As you design and implement a Continuous Improvement Process, you are not only working to improve your program but also continually improving your process. The goal is a mature Continuous Improvement Process that gives you quality actionable information you can use to improve. However, getting to the point of a mature process is no easy feat. In this section, we describe our current process and will later discuss some of the pitfalls we encountered along the way. Since AACSB, our college-level accrediting body, refers to "Continuous Improvement" as "Assurance of Learning," some of our task forces bear the name AOL to align with accrediting procedures in other departments in our college. We see Continuous Improvement and Assurance of Learning as synonymous for this paper.

3.4.1 Aligning PEOs, Student Outcomes, Curriculum Coverage, and Assessment. As stated earlier, Criteria 2 (PEO), 3 (Student Outcomes), 4 (Continuous Improvement), and 5 (Curriculum) all require continual review throughout our ABET accreditation cycle. These four criteria must also be aligned in the process. We start with the university mission and align our PEOs, then review our Student Outcomes to ensure they align with our PEOs. We then assess where in our curriculum we meet our Student Outcomes. This helps us show coverage and also informs us where we want to assess our Student Outcomes in our programs. If you attend assessment training, you will likely hear that we do not assess faculty or courses; we assess programs. However, if we are assessing a program, we will most likely do so within a specific course with a specific faculty member. We select the course based on its content and how it supports the Student Outcome being assessed.

3.4.2 Building an Assessment Schedule. To maintain compliance with institutional requirements (requiring yearly reports), and since the CSIS department has 6 student learning outcomes per program, our department faculty voted in 2023 to move to a 2-year assessment cycle, alternating the SLOs being assessed each year as per the following:

- SLOs 1, 2, 6 (hard skills) are assessed each even-numbered academic reporting year.
- SLOs 3, 4, 5 (soft skills) are assessed each odd-numbered academic reporting year.

As shown in Appendix C, data is collected each fall semester and then evaluated in the subsequent spring semester. Our departmental Assurance of Learning (AOL) Task Force first reviews the data, identifies gaps in student learning, and proposes possible action plans. The task force then brings the analyses and proposed action plans to a departmental faculty meeting for discussion. Action plans may be revised based on faculty feedback. Once all action plans are approved by faculty, they are implemented for the following academic year. That gives us a full year of implementation before we collect data again to see whether the action plans were successful. A more specific breakdown of our assessment timeline over the past few years is provided in Appendix D.

3.4.3 Building Common Rubrics and Assessments. Building rubrics and assessments is a multi-step process. We started by selecting courses in which the assessments would take place. In a departmental meeting, the ABET coordinators led a discussion around Student Learning Outcomes (SLOs) and where in our curriculum those were covered. After identifying courses in which the SLOs were covered, faculty helped determine which courses would be appropriate for data collection (see Appendix E). Now that we had mapped out where each assessment would take place, we were ready to build the rubrics/assessments. To build out the rubrics and assessments, we created two task forces within the department: one for the soft-skills SLOs and one for the hard-skills SLOs. We asked our faculty to volunteer for these task forces.

During the year we assessed hard skills, the respective task force met once in the early fall to review the SLOs being assessed that year and determine whether the proposed assessment activity and rubric were aligned with them. Since hard skills are program-specific, we did not try to create common rubrics or assessments; instead, we started with the assignments and rubrics submitted by faculty and tweaked them as needed to ensure alignment with the SLO. Essentially, since we had already identified the courses where assessments would take place, faculty teaching those courses were asked to submit an activity (assignment, exam, etc.) they felt would be a good fit to use for assessment. If they had an existing rubric for the activity, they were asked to submit it as well. The task force reviewed the activities and rubrics, and if they felt they all aligned with the SLO, that activity was adopted as the assessment for that SLO. If the task force felt the activity and rubric were misaligned, they would recommend ways to align them, and we would take that back to the course faculty member for review. The activity would bounce between the task force (for approval) and the faculty member (to ensure it aligned with the course's content and structure) until the task force approved it for adoption as the assessment for that SLO. During the same academic year, the task force met again in the spring semester to review the data collection results and propose possible action plans to address the identified learning gaps.

During the year we assessed soft skills, we took a different approach. Since soft skills (i.e., communication, ethics, and teamwork) are consistent across the board, we wanted to develop a common rubric for each that could be used in all three of our programs. The task force for soft skills came together in early fall to review the SLOs for that year and develop common rubrics that would align with them and could be used across our programs. Those rubrics were later discussed in a departmental meeting and approved for use by all department faculty. We still asked faculty teaching courses in which the assessments would take place to submit a proposed activity (assignment, exam, etc.) that we could use for assessment. The task force reviewed the activities and, if they felt they aligned with the SLO and rubric, adopted that activity as the assessment for that SLO. If the task force felt the activity was misaligned, they would recommend changes to bring it into alignment, and we would take them back to the course faculty member for review. The activity would be exchanged between the task force (for approval) and the faculty member (to ensure it aligned with the course's content and structure) until the task force approved it for adoption as the assessment for that SLO. During the same academic year, the task force met again in the spring semester to review the data collection results and propose possible action plans to address the identified learning gaps.

In each subsequent assessment cycle, the task forces review the SLOs, assessments, and rubrics to ensure alignment prior to data collection. After the task force review, one of the department's ABET coordinators sends a reminder to faculty teaching courses with embedded assessments, asking them to include the assessment in their course for that term and to provide a copy of the approved assessment and rubric.

3.4.4 Faculty Involvement in Implementation and Maintenance of the Process. Much of the assessment process is carried out and documented through the Watermark Student Learning & Licensure (SLL) platform. Performance indicators (measures), assessments, and assessment rubrics are built in SLL. Student assessment artifacts are uploaded into the system and then assessed by faculty using the designated assessment rubric(s). The system then generates reports that our departmental AOL task force reviews and evaluates for potential action plans. The task force then presents those reports and proposed action plans to

the CSIS faculty. The action plans may be approved as is, or revisions may be made during the department meeting. After action plans are approved by the department, they are entered into the Watermark Planning & Self-Study (PSS) system, alongside student outcomes, performance indicators (measures), and data results, to finalize our annual reports. At the beginning of the following academic year, one of the department's ABET coordinators sends a reminder to faculty outlining which action plans should be implemented in their courses.

Faculty play an active role in our assessment process. Some of the ways in which faculty are engaged include (but are not limited to):

- Developing, approving, and validating direct assessment instruments and rubrics to ensure reliability and consistency.
- Establishing performance benchmarks and targets that reflect appropriate levels of student achievement.
- Administering and scoring assessments, ensuring integrity and fairness in evaluation.
- Serving on the department's AOL task force to review and interpret assessment data and identify opportunities for improvement.
- Recommending and implementing curricular and pedagogical action plans based on assessment results.
- Proposing process enhancements to strengthen the overall AOL infrastructure and improve efficiency.
- Engaging in indirect assessment activities, such as interpreting survey data and feedback from alumni and employers.

3.4.5 Assessment Sample for Computing Information Systems Student Outcome 6. In the 2025-2026 academic year, we collected data on the hard skills SLOs, which included Information Systems Student Outcome 6: "Support the delivery, use, and management of information systems within an information systems environment." This will be provided as our assessment sample.

Step 1: On August 26 of that academic year, the hard skills task force met to review the SLOs being assessed that year and the proposed activities and rubrics to ensure alignment. Once approved, emails were sent to faculty teaching the courses in which those assessments were embedded. Emails included copies of the approved assessment and rubric. Faculty were reminded to embed the activity in their fall courses. See Appendix F and Appendix G for a copy of the assessment activity and rubric, respectively.

Step 2: Over the next month, the Watermark Student Learning and Licensure (SLL) system was set up for assessment. One of the ABET coordinators created the shell in SLL, uploaded the assessment and the rubric to the platform, and documented the desired benchmark/target for our students.

Step 3: The assessment was completed by students on October 7. On November 20, the ABET coordinator exported the student artifacts from the institution's Canvas LMS and imported them into Watermark's SLL platform. The SLL assessment was then linked directly to the Canvas course to make access user-friendly for the faculty assessor. The faculty was notified that the assessment was ready and due on December 15.

Step 4: The faculty assessor logged directly into their Canvas course, clicked the assessment link (which redirected them to the SLL site), and filled out the online rubric for each student, submitting the assessment results on December 15.

Step 5: The ABET coordinator ran a report within SLL that produced the percentage of students who met or exceeded each rubric criterion for the SLO. In a class where multiple majors were enrolled, the data was filtered to show only those majoring in Information Systems. For ease of readability, the ABET coordinator took those percentages from the SLL report and plugged them back into the original rubric so faculty could see the results. See Appendix H for a copy of the results. That data was then compared with the previous cycle to identify trends (see Appendix I). Both the rubric results and the data trend comparisons were compiled by January 12.

Step 6: The task force met on January 22 to review the data results and trends. The task force identified

the learning gaps and proposed action plans to address them (Appendix J).

Step 7: The learning gaps and proposed action plans were presented at a departmental meeting on February 13, and the faculty voted to approve or revise them. Once all action plans were approved, they were documented in our annual institutional report.

Step 8: The ABET coordinator will send the action plans out to faculty at the beginning of the 2026-2027 academic year to remind faculty what to implement in their classes.

4. CHALLENGES AND SOLUTIONS

As with any long-term process, we faced multiple challenges during the accreditation cycles. In this section, we highlight some of these challenges and describe the solutions we implemented.

4.1 Performance Indicators/Measures

4.1.1 The Challenge. Previously, the ABET Computing Accreditation Commission (CAC) student outcomes were numbered a-j; we had anywhere from 2-5 measures (performance indicators) per student outcome. This was a combination of direct and indirect measures. For example, one outcome may have 3 direct measures plus 1 indirect measure. Each of these measures was assessed within different courses/activities. To give you an idea of what this meant for us, during our 2012-2013 academic year, we collected data from 29 activities for our CIS program and 28 for our CS program. That is a total of 57 different assessments for our department faculty in one academic year.

By the 2021-2022 academic year, we followed the new ABET standards, which were numbered 1-6 (instead of a-j), resulting in fewer assessments in general. However, by then, we had started the IT program, so we had 3 programs with 6 outcomes each (18 total outcomes to assess for our department) with 2-4 measures per outcome. During the 2021-2022 academic year, we collected data from 16 activities in our CIS program, 20 in our CS program, and 16 in our IT program. That is a total of 52 different assessments for our department faculty in one academic year. Our faculty were feeling burnt out, and finding meaningful analyses from this much data proved challenging.

4.1.2 The Solution. In 2022, our institution developed new policies for annual reporting to improve our SACSCOC continuous improvement process. Our department found it challenging to merge these new institutional policies with the processes we already had in place for ABET and AACSB. In April 2023, the ABET coordinators met with a respected accreditation consultant to help consolidate our department, college, and university accreditation into a single, sustainable process. The most impactful thing the consultant said was "You've got to walk before you can run." Working with the consultant and adhering to university policies, AACSB requirements, and ABET requirements, we reduced our ABET assessment workload to 2 measures per outcome. We also split our data collection into a 2-year cycle, alternating the Student Learning Outcomes (SLOs) being assessed each year as per the following:

- SLOs 1, 2, 6 (hard skills) are assessed for each even-numbered academic reporting year.
- SLOs 3, 4, 5 (soft skills) are assessed for each odd-numbered academic reporting year.

We assessed soft skills and developed action plans in one academic year, then assessed hard skills and developed action plans in the following academic year. We then continuously implement the action plans determined for each academic year. For all three of our programs, we now collect data from 6 different activities per program per year. This is a total of only 18 different assessments for our department faculty per academic year. This is sustainable, and we can build on this in the years to come, as needed. The two-year pattern is long enough to assess, analyze, take action, and reassess. The two-year pattern is also short enough for faculty to remain engaged in yearly activities for the current set of SLOs.

4.2 Assessment Rubrics

4.2.1 The Challenge. Following the 2019 ABET visit, it became clear that some of the rubrics we were using were not sufficiently granular to provide us with the necessary information on student outcomes. For example, one of the student outcomes being assessed was regarding ethics. The assignment used as an artifact for the ethics assessment was appropriate for determining whether action plans were needed. However, the rubric used to evaluate the artifact included additional performance indicators. In the rubric used to evaluate whether students were meeting our expectations regarding ethics, we were also collecting data on students' use of grammar and sentence structure, which are not relevant to the learning outcome. That means the metric provided to faculty as met or not met was not granular enough to support the development of appropriate action plans for improvement.

4.2.2 The Solution. Once we identified the rubric issues, we realized we needed to create better mappings from our Program Educational Objectives to our Student Outcomes and to the specific area we wanted to review, to properly assess student learning for that outcome. Faculty from each of our three programs met to redesign the assessment rubrics (see example in Appendix K) in a way where the instructor could still use anything not related to the outcome for grading, but was not included in the assessment results and therefore not part of the determination of whether a benchmark was met or not met.

In addition, the software discussed in Section 4.3 allowed us not only to see whether an entire rubric was met, but also to examine each row in the rubric to determine whether individual criteria within it were met in specific areas (see Appendix L). Each row of the rubric helps us to determine how our students are achieving our expectations regarding ethics. Also note that faculty helped to develop these rubrics as members of specific task forces, as discussed in Section 3.

4.3 Manual Assessment/Reporting

4.3.1 The Challenge. Historically, institutional SACSCOC annual reporting was submitted in a web-based form on the university's website. This was a clunky process and ineffective for maintaining data and sustaining consistent records. Reports were not stored in a way that was easily accessible. Additionally, the annual report was insufficient for the program- and college-level Continuous Improvement or Assurance of Learning reports. The college-level process was only partially reflected in the web-based form, and it did not align well with program-level assessment.

The assessments that fed into the institutional annual report were conducted mostly on paper rubrics using Microsoft Word, calculated manually or via a Microsoft Excel spreadsheet formula, and charts/graphs were generated in Excel to display the results. This information was distributed to faculty for review and feedback before entering action plans into the web-based form. At the college level, we used the web-based form for annual reporting but eventually subscribed to Portfolium to report assessment data to AACSB. At the department level, we also used Microsoft Word and Excel to collect and analyze data and then report to ABET. Additionally, in some cases, we have classes that include multiple majors, so we had to look up each student's major and manually separate the assessment results by program.

4.3.2 The Solution. In early 2020, the University implemented a software solution, Watermark Planning & Self-Study (PSS), to house our internal annual reports. This web-based platform allows us to upload our assessments, rubrics, and data into a report template and then provide a narrative explanation. We can then upload a copy of our summarized data, write a narrative describing our analysis, and enter action plans directly into PSS. These reports are maintained by PSS indefinitely, making it easy to review data and action plans from previous assessment cycles. All uploaded files are active hyperlinks within the report. Once a report is downloaded as a PDF, all active hyperlinks remain accessible, so the report can be disseminated as needed.

After we started using PSS, the CSIS department began exploring other Watermark products to determine whether they offered a software solution for assessment. After several demos and a pilot study,

we purchased access to Watermark's Student Learning and Licensure (SLL) for data collection and reporting. This software solution integrates directly with our Canvas LMS, so it is easy for faculty to click a link in their course to view the assessment, student artifacts, and rubric. Faculty complete the assessment rubric for each student and then submit it. The system admins can then pull reports for each learning outcome to determine the levels of student achievement as compared to our benchmark/target. The reports provide both percentages of attainment and charts of the data results. The great thing about the SLL software is that we can filter the results so that, if we have multiple majors in a single class, we can collect data, assess it once, and then ask the system to automatically separate the results by program.

The department's successful use of SLL for ABET assessments encouraged the college to adopt the same software to collect and report AACSB assessment data. Now, all our AACSB and ABET assessment data is processed by a single software solution, making the management and maintenance of this data more efficient. "Standardizing and automating data collection increases efficiency of faculty effort, improves the data's validity, and bolsters faculty confidence in the data and its use in the continuous improvement process" (Tarnoff et al., 2023, p. 53).

The university has not yet leaped into using SLL. Still, the Sanders College of Business and Technology and the Department of Computer Science and Information Systems now use a single software platform for assessment data, streamlining the process of collection, analysis, and reporting of assessment data and actions. Additionally, the PSS software is used by the entire university for annual reporting. Shifting the time and energy of leadership and faculty away from passing around spreadsheets and formulating results and reports to an efficient software system that helps us improve our programs was a huge win for us.

4.4 Faculty Workload/Participation

4.4.1 The Challenge. From the outset of the CIS program's first ABET accreditation in 2006, the entire department was involved in the process. Every accreditation cycle requires significant time, especially during the initial review. However, during the first two cycles, when CIS was initially accredited in 2006 and when CS was initially accredited in 2012, the faculty workload was enormous, including hours-long faculty meetings most Fridays and additional individual and small-group tasks between those meetings. During the gap between the 2013 and 2019 visits, there were leadership changes at every level of administration and changes to institutional assessment processes. Due to the loss of process knowledge, digital representation, and faculty desire for fewer time-consuming meetings, a smaller group of CSIS faculty led the overall accreditation efforts, with faculty supporting this effort as needed. Large faculty meetings were reduced, but the assessment load and processes were still confusing and strenuous for faculty. Faculty were now involved in specific areas of the accreditation process, but did not have a clear understanding of the overall process.

4.4.2 The Solution. During initial accreditation cycles, all faculty were heavily involved in every step of the accreditation and assessment processes. We first revised our process to allow faculty to be involved only in very specific tasks if they were interested. Most of the long meetings were reduced or eliminated. Unfortunately, this created a disconnect among faculty, as they were increasingly isolated from the overall process. This led to a different approach following the 2019 visit.

The ABET leadership team began requesting volunteers for a task force for the academic year to provide initial review and approval of assessment rubrics and assignments used to collect data, and then review results after the artifacts had been evaluated. The task force would develop a list of potential action plans to take back to the faculty at large. This allowed those interested in this part of the process to invest time in continuous improvement while also reducing the faculty review time during faculty meetings. Rather than meeting every week, we met as a whole faculty once every 1-2 months. Rather than meeting for 4 hours at a time, our meetings now last around 2½ hours each. We went into these meetings now with very specific, big-picture goals in mind, reviewing the information our task force had aggregated ahead of time. The ABET leadership team still led the overall process, but was able to include faculty in meaningful

ways that furthered the accreditation process while also reviewing our programs from curricular and continuous improvement standpoints.

While we initially had a very intensive and involved AOL process, we agree with Tarnoff et al. (2023), who suggest "faculty being overwhelmed by the AOL workload and the amount of time required" is a "common hallmark of unnecessary complexity driving dysfunctional AOL processes" (p. 49). On the other hand, having little involvement in the overall process proved Betters-Reed et al. (2008) correct, as they said that faculty often remain detached from the AOL/Continuous Improvement process because they feel like "individual contributors with sole purview over the courses they teach" (p. 238), meaning that they are not taking ownership or responsibility of the programs as a whole. By the time of the Fall 2025 ABET visit, all CSIS faculty had voluntarily participated in parts or all of the accreditation efforts. All faculty truly contributed to the process while also improving the programs. Importantly, each faculty member could speak of their specific involvement during the site visit, and their expertise and guidance were integral to a positive visit.

5. BEST PRACTICES AND LESSONS LEARNED

Many of these challenges and improvements may seem distinct. However, the improvement in all these areas, evolving over time, was not too dissimilar from developing an inheritance hierarchy, where we began to find commonalities among processes and extended specifications only when needed. It took several years of tweaking our processes. Still, we are confident that our assessment model has now reached Level 5 of the Capability Maturity Model Integration (CMMI), which is a process improvement framework used by organizations to improve how they develop products, deliver services, and manage work (Kulpa & Johnson, 2003). In practice, CMMI demonstrates that improving how work is carried out leads directly to better results. With a stable process now established, the focus shifts to incremental refinements and the implementation of concrete action plans that address identified gaps. These efforts are integrated into the day-to-day operations of our computing programs, ensuring that improvements are practical, repeatable, and sustainable over time.

Six major things we have learned over the last three accreditation cycles are:

- Know your accrediting body. Learn what they require and seek guidance from experts who have been involved in the process at other institutions. Attend an ABET symposium to understand accreditation standards. Participate in content-specific training sessions, such as CSAB training for computing—complete specialized training on assessment methodologies. The more knowledge you have, the better equipped you will be to lead the accreditation process.
- Start small and remember to "walk before you run." Part of an external review team visit is to provide an outside look at how to improve. It is not an indictment of weaknesses or proof of strength. This review is to determine whether you have met the standards and to provide suggestions for improvement as you go forward.
- Know current institutional support for accreditation and have a good understanding of faculty attitudes and aptitudes toward accreditation. Understanding your starting point helps you build a successful process with your faculty and your administration.
- Align processes where possible. Academic work should be rigorous and challenging, but the processes for getting that work done should not be. If you can align university-, college-, and program-level accreditation processes into a single, streamlined process, you alleviate strain on the process so everyone can focus on a strong program. The process should be a facilitation for improvement, not a hindrance to it.
- Find an assessment software solution that works for you and use it. Train your faculty and administrators to use the software. Provide ongoing support to faculty as they complete assessments within the software. Do the work on the back end to make the front end user-friendly. The easier you make the process for faculty, the happier they are to participate.

- Communicate your story clearly. Communicate it to administrators. Communicate it to other accreditation experts. Communicate it to the faculty. Communicate it to advisory boards. Communicate it to students. The more you communicate your story, the better you become at making it clear, allowing you to gain insight into ways to improve your process and program.

Accreditation will never be easy. That is not the goal. However, your own accreditation process and program improvement story can become familiar, repeatable, and suitable to pass on to the next shepherds of your program.

6. CONCLUSION

In this paper, we have provided a detailed examination of the ABET accreditation process developed by the Department of Computer Science and Information Systems in the Sanders College of Business and Technology at the University of North Alabama over multiple accreditation cycles. While the process at times may seem overwhelming, we have found that by using a systematic, technology-enabled process and securing buy-in from faculty and administration, the accreditation process is less painful and can provide valuable insights into ways to improve our computing programs. We hope that the discussion of our processes, the challenges we faced and overcame, and the best practices and lessons learned will provide guidance for those seeking accreditation, especially the ABET accreditation, for their computing programs.

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AUTHOR BIOGRAPHIES

Jill M. Simpson is an Associate Professor of Computer Information Systems in the Sanders College of Business and Technology at the University of North Alabama in Florence, AL. She received her Ph.D. in Instructional Leadership with an emphasis in Instructional Technology from the University of Alabama, Tuscaloosa, AL. She currently serves as the Chair of the Department of Computer Science and Information Systems and has been on active leadership teams in two ABET accreditation cycles, including multiple reaccreditations and one initial accreditation. She has also served on active leadership teams for the most recent AACSB and SACSCOC accreditation cycles. Dr. Simpson's research areas include online learning, instructional design, instructional technology, and accreditation processes. She has published in multiple peer-reviewed journals.

Janet T. Jenkins is a Professor of Computer Science and Director of Accreditation - CSIS in the Department of Computer Science and Information Systems in the Sanders College of Business and Technology at the University of North Alabama in Florence, AL. She received both her M.S. and Ph.D. in Computer Science from the University of Alabama in Tuscaloosa, AL. She is the Computer Science program coordinator and has been active on leadership teams in three ABET accreditation cycles, including multiple reaccreditations and two initial accreditations. Dr. Jenkins's research areas include computer science education, methods for explicitly teaching abstraction and generalization, and the use of computing to explore mathematical concepts. She has published in multiple journals and has been funded by the National Science Foundation and the Alabama State Department of Education with a Math Science Partnership grant.

M. Shane Banks is a Professor of Computer Information Systems in the Sanders College of Business and Technology at the University of North Alabama (UNA) in Florence, AL. He received a B.S. and an MBA from Arkansas State University and a Ph.D. in Management Information Systems from the University of Memphis. He has previously served as department chair of Computer Science and Information Systems at UNA. Dr. Banks joined academia after 15 years in industry, including IT Director and consulting roles. His research areas include information technology-enabled social enterprises and computing education. His research has been published in peer-reviewed journals, including the *Journal of the Association for Information Systems*, the *International Journal of Information Security and Privacy*, and the *Information Systems Education Journal*.

Xihui "Paul" Zhang is Professor of Computer Information Systems in the Sanders College of Business and Technology at the University of North Alabama in Florence, AL. He received his B.S. and M.S. degrees in Earth Sciences from Nanjing University (1993, 1996), Nanjing, China, and his M.S. and Ph.D. degrees in Management Information Systems from the University of Memphis (2004, 2009), Memphis, TN. His work has appeared in journals such as the *Journal of Strategic Information Systems*, *Information & Management*, *Journal of Database Management*, *Journal of Computer Information Systems*, and *ACM Transactions on Software Engineering and Methodology*. He is currently the Editor-in-Chief of the *Journal of Information Systems Education*.

APPENDICES

Appendix A. Program Educational Objectives

Mission Statement
The Mission of the University of North Alabama is to be innovative, inclusive, engaged, evolving, and global.

Program Educational Objectives
Computer Information Systems: Within five years after completion of the program, students should be able to:

- Contribute to economic development and society through the application and management of computer information systems for business, government, service, and research.
- Progress in their careers in organizations by using computer information systems skills and by understanding evolving business and technological issues.
- Continue their professional development through advanced study and research as they stay abreast of emerging technologies and their societal impact.
- Hold a leadership position in their chosen career path.
- Effectively communicate technical concepts to a variety of audiences and stakeholders.
- Engage in their profession by participation in associations, community service, and/or mentorship opportunities.
- Demonstrate professionalism by showing integrity, punctuality, respect, and effective communication, thereby contributing positively to their teams and promoting a healthy, collaborative work environment.

Computer Science: Within five years after completion of the program, students should be able to:

- Contribute to technological innovation and society through the application of computer science to research, industry, or government.
- Progress in their careers in organizations by using computer science theory and skills, and by understanding evolving technological issues.
- Continue their professional development through advanced study and research as they stay abreast of emerging technologies and their societal impact.
- Hold a leadership position in their chosen career path.
- Effectively communicate technical concepts to a variety of audiences and stakeholders.
- Engage in their profession by participation in associations, community service, and/or mentorship opportunities.
- Demonstrate professionalism by showing integrity, punctuality, respect, and effective communication, thereby contributing positively to their teams and promoting a healthy, collaborative work environment.

Information Technology: Within five years after completion of the program, students should be able to:

- Contribute to technological innovation and society through the application of information technology to research, industry, and government.
- Progress in their careers in organizations by using information technology theory and skills, and by understanding evolving technological issues.
- Continue their professional development through advanced study and research as they stay abreast of emerging technologies and their societal impact.
- Hold a leadership position in their chosen career path.
- Effectively communicate technical concepts to a variety of audiences and stakeholders.

- Engage in their profession by participation in associations, community service, and/or mentorship opportunities.
- Demonstrate professionalism by showing integrity, punctuality, respect, and effective communication, thereby contributing positively to their teams and promoting a healthy, collaborative work environment.

Consistency of the Program Educational Objectives with the Mission of the Institution

The program educational objectives of the Computer Information Systems, Computer Science, and Information Technology programs support the philosophy of the University's mission by recognizing that our graduates will have taken advantage of the educational opportunities and will be making contributions valued by the University, as expressed in its mission. These include elements of discovery and creative accomplishment as well as participation in professional, civic, social, cultural, and economic development needs of our region in the context of a global community.

Program Constituents

The University of North Alabama is situated in northwest Alabama in the Shoals Metropolitan Area. UNA is within a triangle formed by the cities of Memphis and Nashville, Tennessee, and Birmingham, Alabama, and is about 130 miles from each. About 70 miles away is Huntsville, Alabama. Our student population is largely drawn from a 12-county service area within about 50 miles of campus, and it is these students who are the core of our targeted student services objectives. Our student population includes a large number of first-generation college students, many of whom are employed full-time or part-time. The programs in the Department of Computer Science and Information Systems are designed to meet the needs of regional, national, and global employers. Regional employers are our key stakeholders. Employer categories include defense and aerospace contractors, military and civilian government agencies, hospitals, manufacturing, professional and financial, and technology companies. Other key stakeholders include the students in our programs and our graduates. CSIS faculty and College administration also have a stake in our programs, in the success of each program, and in the success of our students.

Process for Review of the Program Educational Objectives

The process for program educational objectives review is described below:

1. The formal review of the program educational objectives will take place once every 5 years following the approval of the updated University Mission and 5-year Strategic Plan. However, the program educational objectives will be distributed at each Computing Advisory Council meeting for faculty and CAC members.
2. After review at the Fall CAC meeting, the PEOs will be distributed and reviewed by the following groups:
    a. Sanders College of Business and Technology Administrative and Curriculum Committee (COBACC).
    b. A group of CSIS students representing each major.
3. The Director of Accreditation and Department Chair will convene to make a final editorial review of the document and address any comments from COBACC and the student representatives.
4. The resulting program educational objective statements will be posted to the departmental website for public inspection along with contact information for making inquiries and suggestions. These items will be archived by the Departmental Administrative Assistant, the Department Chair, and the Director of Accreditation.

Appendix B. Sample Schedule for On-Site ABET Review Team Visit

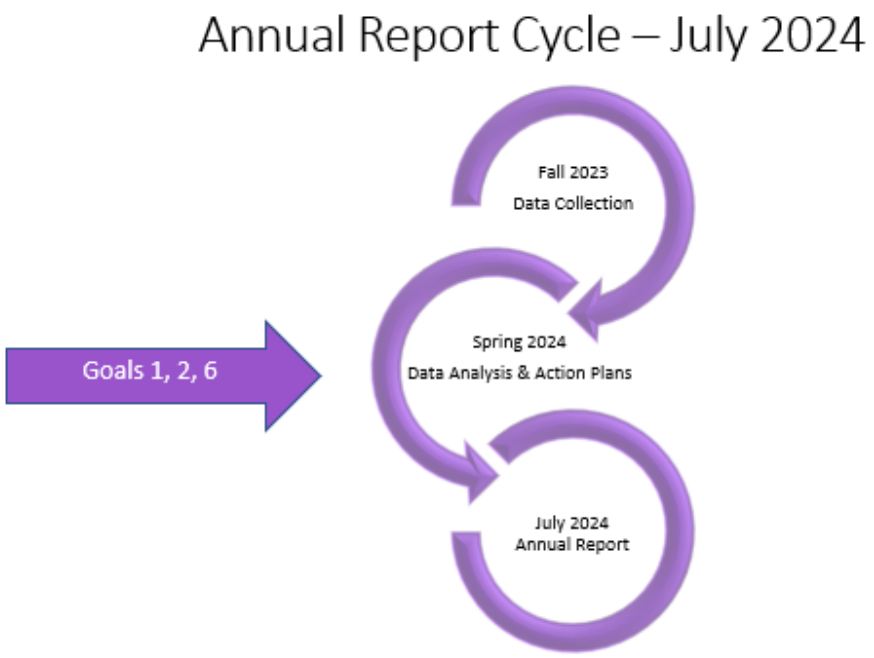
Sunday, October 5, 2025

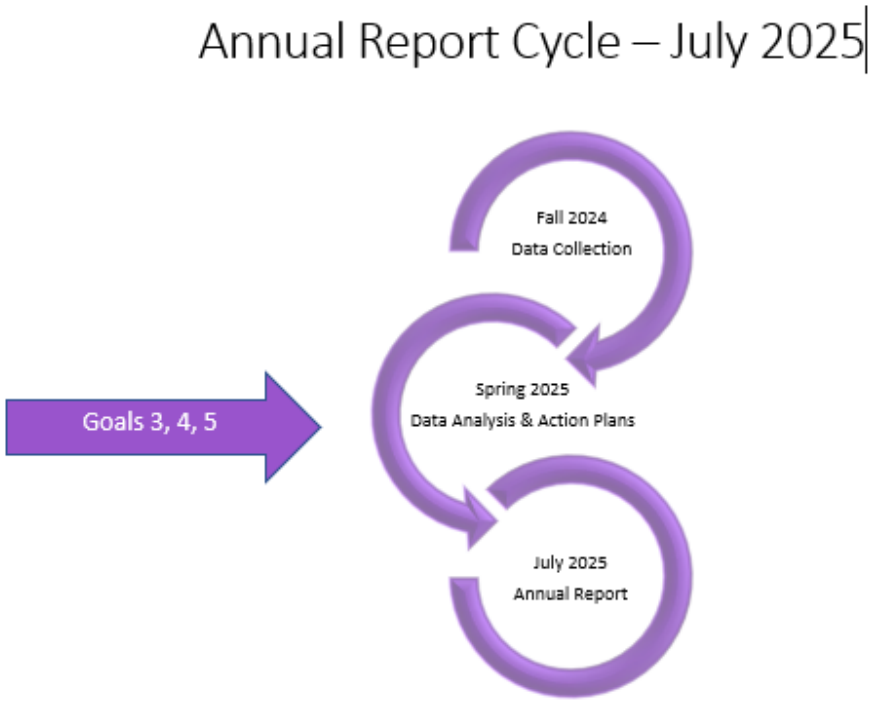
	Team Chair	PEV, Computer Information Systems	PEV, Computer Science	PEV, Information Technology
2:00 PM	Welcome Computing & Math 175 ABET Coordinators	Welcome Computing & Math 175 ABET Coordinators	Welcome Computing & Math 175 ABET Coordinators	Welcome Computing & Math 175 ABET Coordinators
2:15 PM	Campus Tour Main Campus & College Street ABET Coordinators	Campus Tour Main Campus & College Street ABET Coordinators	Campus Tour Main Campus & College Street ABET Coordinators	Campus Tour Main Campus & College Street ABET Coordinators
3:00 PM	Review Course Materials Computing & Math 175	Review Course Materials Computing & Math 175	Review Course Materials Computing & Math 175	Review Course Materials Computing & Math 175
6:00 PM	Dinner/Closed Planning Meeting Off Campus	Dinner/Closed Planning Meeting Off Campus	Dinner/Closed Planning Meeting Off Campus	Dinner/Closed Planning Meeting Off Campus

Monday, October 6, 2025

	Team Chair	PEV, Computer Information Systems	PEV, Computer Science	PEV, Information Technology
8:00 AM	Intro Meeting w/ Dept. (Breakfast) Computing & Math 125 CSIS Faculty	Intro Meeting w/ Dept. (Breakfast) Computing & Math 125 CSIS Faculty	Intro Meeting w/ Dept. (Breakfast) Computing & Math 125 CSIS Faculty	Intro Meeting w/ Dept. (Breakfast) Computing & Math 125 CSIS Faculty
8:30 AM	SCOBT Dean Raburn Conference Dean, Associate Dean	SCOBT Dean Raburn Conference Dean, Associate Dean	SCOBT Dean Raburn Conference Dean, Associate Dean	SCOBT Dean Raburn Conference Dean, Associate Dean
9:00 AM	Finance Raburn Conference Dean, Former Dean, Business Manager	Faculty Keller Hall 222 Tenured faculty	New Faculty Keller Hall 227 New faculty	Faculty Keller Hall 222 Tenured faculty
9:15 AM	Finance - cont'd Raburn Conference Dean, Former Dean, Business Manager	New Faculty Keller Hall 227 New faculty	Faculty Keller Hall 222 Tenured faculty	New Faculty Keller Hall 227 New faculty
9:30 AM	University/College/Dept Assessment Raburn Conference AOL Personnel	University/College/Dept Assessment Raburn Conference AOL Personnel	University/College/Dept Assessment Raburn Conference AOL Personnel	University/College/Dept Assessment Raburn Conference AOL Personnel
10:00 AM	Department ABET Team Raburn Conference ABET Coordinators	Department ABET Team Raburn Conference ABET Coordinators	Department ABET Team Raburn Conference ABET Coordinators	Department ABET Team Raburn Conference ABET Coordinators
10:30 AM	University Success/Career 230J Collier Library Asst Director External Connections and Student Success	Faculty Computing & Math 266 Senior lecturer	Faculty Computing & Math 224 Tenured faculty	10:30 Faculty Computing & Math 266 Senior lecturer
11:00 AM	Admissions 3rd Floor Wendell W. Gunn University Commons Director Admissions	Faculty Computing & Math 254 Tenure-Track faculty	Faculty Computing & Math 230 Tenure-Track faculty	Faculty Computing & Math 254 Tenure-Track faculty

Appendix C. Two-Year Annual Report Cycle





Appendix D. Assessment Timeline

Student Learning Outcome (SLO)	2018-2019	2020-2021	2021-2022	2022-2023*	2023-2024	2024-2025
SLO 1 Computing Problem	Pilot new ABET Standards		Close loop		Close loop	
SLO 2 Computing-Based Solution	Pilot new ABET Standards		Close loop		Close loop	
SLO 3 Communication	Pilot new ABET Standards		Close loop			Close loop
SLO 4 Legal and Ethical	Pilot new ABET Standards		Close loop			Close loop
SLO 5 Teamwork	Pilot new ABET Standards		Close loop			Close loop
SLO 6 (CIS) Support of MIS SLO 6 (CS) Computer Science Theory SLO 6 (IT) User Goals	Pilot new ABET Standards	Pilot in Watermark SLL	Close loop		Close loop	

**The continuous improvement timeline continued this academic year. Still, since the university process required a cycle change, we used the remainder of this academic year to prepare for the new cycle. We collected data again using the new cycle the following academic year.*

Appendix E. Student Learning Outcome (SLO) Assessment Placement

Student Learning Outcome (SLO)	CIS Core Courses in the Program						
	CIS 315	CIS 330	CIS 344	CIS 366	CIS 376	CIS 476	CIS 486
SLO 1 Computing Problem				X			
SLO 2 Computing-Based Solution	X						
SLO 3 Communication		X					
SLO 4 Legal and Ethical						X	
SLO 5 Teamwork			X				
SLO 6 Support of MIS							X

Table D-1. CIS Assessment Placement

Student Learning Outcome (SLO)	CS Core Courses in the Program											
	CS 155	CS 245	CS 255	CS 310	CS 311	CS 355	CS 410W	CS 420	CS 440	CS 447	CS 455	CS 456
SLO 1 Computing Problem								X				
SLO 2 Computing-Based Solution						X						
SLO 3 Communication							X					
SLO 4 Legal and Ethical			X									
SLO 5 Teamwork						X						
SLO 6 Computer Science Theory					X							

Table D-2. CS Assessment Placement

Student Learning Outcome (SLO)	IT Core Courses in the Program												
	CS 135	CIS 225	ITE 249	CIS 289	CIS 315	CIS 330	CIS 344	CIS 366	CIS 376	CIS 444	CIS 445	CIS 476	CIS 486
SLO 1 Computing Problem								X					
SLO 2 Computing-Based Solution					X								
SLO 3 Communication						X							
SLO 4 Legal and Ethical												X	
SLO 5 Teamwork							X						
SLO 6 User Goals													X

Table D-3. IT Assessment Placement

Appendix F. Information Systems SLO 6 Assessment

Assignment Name
Dev Lab QUEBEC

Assignment Notes

- CIS 486 assignment naming follows the NATO phonetic designations. ALFA is the first assignment in CIS 376, and CIS 486 picks up with MIKE. QUEBEC is the final lab before students commence their Capstone Group Project.
- Assignment Instructions, Due Date, Submission, & Rubric are provided in Canvas.
- Additionally, the instructions are here: https://gist.github.com/barrycumbie/978e0a8f517669733f61d44008e6924c
- Assignments are presented in an Agile Systems Development "Story Card" format.

Assignment Instructions
Dev Lab QUEBEC
Satisfy the Agile System Development User Story & Meet all of the Minimum Acceptance Criteria

User Story

- As an individual dev
- I want to demonstrate a full-stack data round trip
- So that I am qualified to work on a capstone dev team (and get an awesome job)

Minimum Acceptance Criteria

- from scratch, create a web-based model-view-controller (MVC) single-page application (SPA)
- required technology stack: node.js, express.js, MongoDB, ejs
- source code: configure a local and remote development environment using git & gitHub with proper security and access configurations, gitignore
- development features to include: nodemon, representational state transfer (RESTful API), dotenv (for secrets/credentials)
- the APP must clearly demonstrate the create, read, update, & delete (CRUD) functionality as HTTP "verbs" of POST, GET, PUT, DELETE.
- a full stack, data round trip, with persistent data
- APP is deployed on Render or an alternative platform-as-a-service (PaaS)
- APP is self-describing, authorship attributed
- APP uses standard front-end frameworks: normalize.css, BS5, jQuery/UI

Submission

- To submit, create a verbose Pull Request (P/R) to our Class Repository
- The P/R updates the Class Page with a clean & described reference to your APP
- Do not merge the P/R or resolve any associated Issues (that's my job!)

Appendix G. Information Systems SLO 6 Rubric

6A Development Process

	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
1.0 Source Code Environment			
1.1 Local git repository configuration with commit history, development branches, and ignored files	0	1	2
1.2 Remote GitHub environment with configuration settings, described (readme), and secured	0	1	2
2.0 Code Organization			
2.1 Proper directory structure and naming	0	1	2
2.2 Use of packages	0	1	2
2.3 Code is logical, clean, readable, commented, error free	0	1	2
2.4 Extra code and files are removed	0	1	2
3.0 Hardened Secrets & Security			
3.1 Development and environment secrets not exposed	0	1	2
3.2 Emergent security issues considered	0	1	2
4.0 Product Submission			
4.1 Submitted link to a pending, open pull request to the class repository	0	1	2
4.2 Pull request is verbose: titled, commented, described, tagged, and configured	0	1	2
4.3 Pull request cleanly merges, no security alerts or major conflicts	0	1	2

6B Development Product

	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
5.0 Tech Stack			
5.1 Utilized the expected stack of technologies	0	1	2
5.2 Node, express, mongodb, ejs, render, dev packages and tools	0	1	2
6.0 Code Function			
6.1 Functional code	0	1	2
6.2 Requisite async endpoints per HTTP verbs	0	1	2

6.3 Front-end framework used and connected	0	1	2
7.0 APP			
7.1 Deployed	0	1	2
7.2 Web-based, mobile-responsive app	0	1	2
7.3 Self-described	0	1	2
7.4 Demonstrates end-to-end data round trip	0	1	2
7.5 Demonstrates create, read, update, read	0	1	2
7.6 Demonstrates persistent data state	0	1	2

Appendix H. Information Systems SLO 6 Data Results

SLO 6: Support the delivery, use, and management of information systems within an information systems environment.
PI 6A: Delivery and Use of IS
PI 6B: Management of IS

6A Delivery and Use of IS					
n=8 Data collected from CIS 486	**Does Not Meet Expectations**	**Meets Expectations**	**Exceeds Expectations**	**Combined Meets & Exceeds Expectations**	**2025-2026 Outcome**
1.0 Source Code Environment					
1.1 Local git repository configuration with commit history, development branches, and ignored files	37.5%	50.0%	12.5%	62.5%	Not Met
1.2 Remote GitHub environment with configuration settings, described (readme), and secured	25.0%	25.0%	50.0%	75.0%	Not Met
2.0 Code Organization					
2.1 Proper directory structure and naming	37.5%	37.5%	25.0%	62.5%	Not Met
2.2 Use of packages	0.0%	0.0%	100.0%	100.0%	Met
2.3 Code is logical, clean, readable, commented, error free	25.0%	37.5%	37.5%	75.0%	Not Met
2.4 Extra code and files are removed	25.0%	50.0%	25.0%	75.0%	Not Met
3.0 Hardened Secrets & Security					
3.1 Development and environment secrets not exposed	12.5%	12.5%	75.0%	87.5%	Met
3.2 Emergent security issues considered	0.0%	87.5%	12.5%	100.0%	Met
4.0 Product Submission					
4.1 Submitted link to a pending, open pull request to the class repository	12.5%	25.0%	62.5%	87.5%	Met
4.2 Pull request is verbose: titled, commented, described, tagged, and configured	50.0%	37.5%	12.5%	50.0%	Not Met
4.3 Pull request cleanly merges, no security alerts or major conflicts	12.5%	25.0%	62.5%	87.5%	Met

6B Management of IS					
n=8 Data collected from CIS 486	**Does Not Meet Expectations**	**Meets Expectations**	**Exceeds Expectations**	**Combined Meets & Exceeds Expectations**	**2025-2026 Outcome**
5.0 Tech Stack					
5.1 Utilized the expected stack of technologies	0.0%	25.0%	75.0%	100.0%	Met
5.2 Node, express, mongodb, ejs, render, dev packages and tools	0.0%	0.0%	100.0%	100.0%	Met
6.0 Code Function					
6.1 Functional code	0.0%	12.5%	87.5%	100.0%	Met
6.2 Requisite async endpoints per HTTP verbs	0.0%	0.0%	100.0%	100.0%	Met
6.3 Front-end framework used and connected	0.0%	0.0%	100.0%	100.0%	Met
7.0 APP					
7.1 Deployed	0.0%	0.0%	100.0%	100.0%	Met
7.2 Web-based, mobile-responsive app	12.5%	25.0%	62.5%	87.5%	Met
7.3 Self-described	62.5%	25.0%	12.5%	37.5%	Not Met
7.4 Demonstrates end-to-end data round trip	0.0%	0.0%	100.0%	100.0%	Met
7.5 Demonstrates create, read, update, read	0.0%	0.0%	100.0%	100.0%	Met
7.6 Demonstrates persistent data state	0.0%	0.0%	100.0%	100.0%	Met

Appendix I. Information Systems SLO 6 Data Comparisons

Data collected from CIS 486	Does Not Meet Expectations			Meets Expectations			Exceeds Expectations		
	2023 - 2024 n=5	2025 - 2026 n=8	Increase/ Decrease	2023 - 2024 n=5	2025 - 2026 n=8	Increase/ Decrease	2023 - 2024 n=5	2025 - 2026 n=8	Increase/ Decrease
1.1 Local git repository configuration with commit history, development branches, and ignored files	20%	38%	□	60%	50%	□	20%	13%	□
1.2 Remote GitHub environment with configuration settings, described (readme), and secured	20%	25%	□	60%	25%	□	20%	50%	□
2.1 Proper directory structure and naming	20%	38%	□	0%	38%	□	80%	25%	□
2.2 Use of packages	20%	0%	□	0%	0%	□	80%	100 %	□
2.3 Code is logical, clean, readable, commented, error free	20%	25%	□	0%	38%	□	80%	38%	□

Note: This is just a small sample of a much larger table.

Appendix J. Information Systems SLO 6 Learning Gaps and Proposed Action Plans

Student Learning Outcome (SLO)	Performance Indicator (Measure) Rubric	Problem(s)	Proposed Action Plan(s)
SLO 6 Support of MIS	SLO 6A Business Problem	The following rubric criteria were not met: 1.1, 1.2, 2.1, 2.3, 2.4, 4.2, and 7.3. However, 16 criteria showed an increase in the number of students who met or exceeded them since the previous cycle, indicating that our previous action plan is partially working. Faculty teaching the course in which this outcome is assessed state that students make an app in that class, but that their Read Me is a mess, and/or the App doesn't describe what it is.	The proposed action plan for the current cycle is to provide more examples and more opportunities to practice this in CIS 486. Additionally, students will be asked to set up the development process sooner and then complete the coding, rather than vice versa. The assessment may be moved to the final exam or added as a separate individual assessment.
	SLO 6B Support of MIS		

Appendix K. Rubric for SLO 4 Legal/Ethical

4A Legal

	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
1.0 Definition & Framework			
1.1 Identifies the legal dilemma	0	1	2
1.2 Considers the stakeholders	0	1	2
2.0 Outcomes/Consequences			
2.1 Analyzes alternatives and/or consequences	0	1	2
2.2 Selects an action	0	1	2

4B Ethical

	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
3.0 Definition & Framework			
3.1 Identifies the ethical dilemma	0	1	2
3.2 Considers the stakeholders	0	1	2
4.0 Outcomes/Consequences			
4.1 Analyzes alternatives and/or consequences	0	1	2
4.2 Selects an action	0	1	2

Appendix L. Data Results for SLO 4 Legal/Ethical 2024-2025

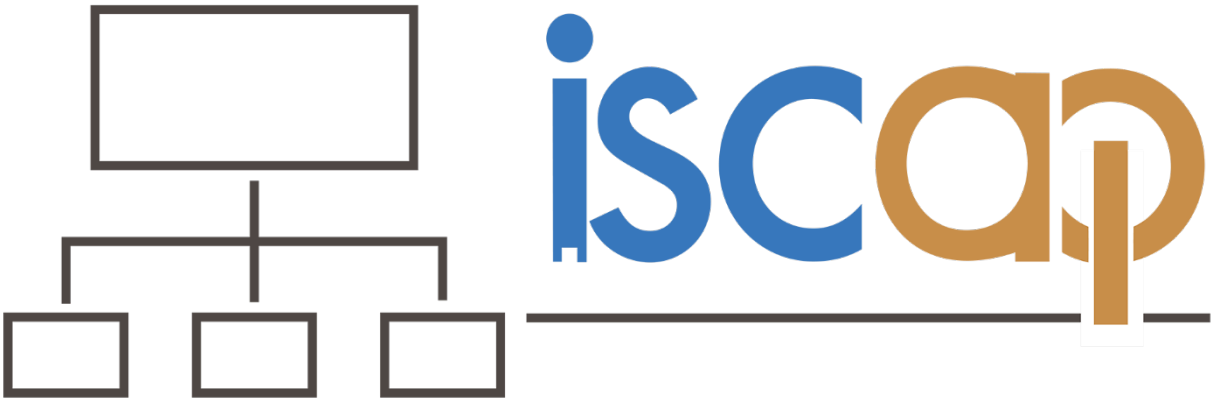
4A Legal

n=8 Data was collected from CIS 476	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations	Combined Meets & Exceeds Expectations	2024-2025 Outcome
1.0 Definition & Framework					
1.1 Identifies the legal dilemma	62.50%	37.50%	0.00%	37.5%	Not Met
1.2 Considers the stakeholders	75.00%	25.00%	0.00%	25.0%	Not Met
2.0 Outcomes/Consequences					
2.1 Analyzes alternatives and/or consequences	62.50%	37.50%	0.00%	37.5%	Not Met
2.2 Selects an action	100.00%	0.00%	0.00%	0.0%	Not Met

4B Ethical

n=8 Data was collected from CIS 476	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations	Combined Meets & Exceeds Expectations	2024-2025 Outcome
3.0 Definition & Framework					
3.1 Identifies the ethical dilemma	62.50%	37.50%	0.00%	37.5%	Not Met
3.2 Considers the stakeholders	75.00%	25.00%	0.00%	25.0%	Not Met
4.0 Outcomes/Consequences					
4.1 Analyzes alternatives and/or consequences	62.50%	37.50%	0.00%	37.5%	Not Met
4.2 Selects an action	100.00%	0.00%	0.00%	0.0%	Not Met

INFORMATION SYSTEMS & COMPUTING ACADEMIC PROFESSIONALS



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