CHAPTER 5

STANDARD V: EDUCATIONAL EFFECTIVENESS ASSESSMENT

Assessment of student learning demonstrates that the institution's students have accomplished educational goals consistent with their programs of study, degree level, the institution's mission, and appropriate expectations for institutions of higher education.

V.1-3: Lehigh has clearly stated student learning outcomes, which are interrelated with one another, with relevant educational experiences, and with the mission; and has established organized and systematic assessments, conducted by faculty and/or appropriate professionals, evaluating the extent of student achievement of institutional and degree/program goals. Lehigh considers and uses assessment results to improve educational effectiveness.

As noted in the previous chapter, institutional planning at Lehigh integrates goals for academic and institutional effectiveness and improvement, student achievement of educational goals, student learning, and results of academic and institutional assessments, which fulfills **MSCHE Standard V** and **Requirement of Affiliation 10**. Moreover, Lehigh systematically evaluates its educational and other programs, and applies its findings to practical improvements, which meets the expectations of **MSCHE Standard V** and **Requirement of Affiliation 8**.

This chapter provides evidence of student learning outcomes and their assessment, which at Lehigh is college-based. Although separated by discipline and independent in design, college assessment regimes have been established within the context of the university's overall plans. This information was previously discussed in the 2013 MSCHE PRR, Section 5.2, Assessment of Student Learning.

This chapter demonstrates that the academic colleges have developed and are assessing student-learning outcomes that are interrelated with one another, with relevant educational experiences, and with the mission, fulfilling the expectations of **MSCHE Standard V, Criterion 1**.

Institutional Support for Assessment

Assessment of SLOs in one form or another is part of the accreditation process of numerous accreditation agencies, including MSCHE, the Association to Advance Collegiate Schools of Business (AACSB), ABET, and the Pennsylvania State Department of Education (PDE). Each agency has a different scope, focus, reporting system, and timing, and each also has different criteria and standards. Satisfying the diverse demands can be challenging for many reasons, including leadership and coordination at many levels, avoidance of duplicative effort, faculty support of the effort, and availability of resources. Yet, the added requirements add weight to the argument that SLO assessment is important to the work of faculty in

those programs and that assessment be multifaceted. Programs at Lehigh with "mature" SLO assessment practices include the accredited programs (undergraduate and graduate) of the CBE, the programs in the COE (all graduate), and many in the P.C. Rossin College (primarily undergraduate).

Lehigh allocates resources in a variety of ways to help units support faculty responsible for student learning assessment in those units (departments, programs, and colleges). Assessment practices and assessment-related duties vary by unit, and it is difficult to quantify the specific total resources allocated for assessment activities. Departments do not track even significant amounts of effort for such things as college or program accreditation compliance. For example, faculty put considerable time into course-level assessment of student outcomes, as well as service on program-, department-, and college-level committees with assessment as part of their charge.

Lehigh has invested additional staff resources in the support of student learning and assessment. Examples of positions, some with explicit assessment duties, are as follows:

- Deputy Provost for Academic Affairs, the Academic Liaison Officer (ALO) who has a specific major accountability for leading the accreditation for MSCHE
- Director of Institutional Assessment
- Undergraduate associate deans in each college
    - RCEAS: coordinates the accreditation of engineering programs by ABET, including chairing an accreditation committee with leaders of the programs being accredited and working closely with the chair of the College Policy Committee
    - CBE: lead role in AACSB accreditation, and chair of Undergraduate Curriculum Committee (UCC)
    - CAS: oversight of the CAS repository for learning outcomes and assessment reports, facilitates compliance and ensures quality in assessment; sits as an ex officio member of the College Policy Committee
- Graduate associate deans in each college provide guidance to programs on program review and assessment of student learning outcomes; present program review reports to the university-wide Graduate Research Committee.
- Vice Provost for Institutional Research and Strategic Analytics (OIRSA)
- Associate Vice Provost for Teaching, Learning and Technology and Director of the Center for Innovation in Teaching and Learning
- Coordinator of Writing Across the Curriculum
- Assistant and associate deans of students

Lehigh has committed resources to send faculty and staff to MSCHE and other accreditation organization conferences and workshops and supports training efforts to improve assessment practice on campus. Lehigh allocates other resources to support assessment, mainly through LTS, for ongoing hardware costs and staff, primarily for the learning management systems that are used for assessment at the course, program, college, and university level. Lehigh makes extensive use of course management software using Course Site (Lehigh's branded Moodle platform). **Table 5.1**, compiled from data supplied by the Office of Institutional Research and Strategic Analytics,

shows that all programs or majors (depending on the college's assessment practice) have assessment programs with documented goals, outcomes, or competencies, and that most have been recently assessed. The exception is tiny majors and degree programs (note 2), defined as those with averaging fewer than three graduates per year since the last Middle States periodic review (2014-2016). Some tiny majors, generally in the College of Arts and Sciences, are out-of-use majors that are still on the books (e.g., International Careers). In many cases, tiny majors are offered by departments that also offer much larger majors. For example, the Department of International Relations offers a popular international relations (IR) major and two much smaller joint majors: IR and economics, and IR and modern languages and literatures.

TABLE 5.1 LEARNING OUTCOME AND ASSESSMENT PARTICIPATION BY UNDERGRADUATE MAJORS/ PROGRAMS, BY COLLEGE, AS OF DECEMBER 2017

Home College(s)	Disciplinary or Professional Accrediting Agency, if applicable	Number of Majors or Degree Programs[1]	Subset that are Tiny Programs[2]	% (#) Majors/ Programs with Learning Outcomes (including tiny programs)	% (#) Majors/ Programs with Recent Assessments (excluding tiny programs)
CAS – Accredited Majors/Programs[3]	ACS; ABET-CAC; NAST	3	0	**100%**	**100%**
CAS – Non-accredited majors	(None)	45	20[4]	**93% (42)**	**88% (22)**
CBE programs	AACSB	2	0	**100%**	**100%**
Rossin – Accredited Degree Programs	ABET	10	0	**100%**	**100%**
Rossin – Non-Accredited Degree Programs	(None)	4	4[5]	**100%**	**N/A (all tiny programs)**
Inter-College					
CAS & P.C. Rossin (IDEAS)	(None)	1	0	**100%**	**0%**
CBE & P.C. Rossin (IBE Program)[6]	AACSB	1	0	**100%**	**100%**
CBE & P.C. Rossin (CSB Program)	AACSB & ABET	1	0	**100%**	**100%**

[1] Numbers exclude majors and degree programs that have had no graduates from 2014 to 2016.
[2] Tiny programs are ones with an average of fewer than three graduates per year from 2014 to 2016.
[3] In CAS, the B.S. in chemistry is certified by the American Chemical Society (ACS); the B.S. in computer science is accredited by ABET-CAC (Computing Accreditation Commission). The theatre program, whose major leads to the B.A. degree, is accredited by the National Association of Schools of Theatre (NAST).
[4] The twenty tiny majors/degree programs in CAS are: Africana studies; art; art history; Asian studies; astrophysics; Chinese; classical civilization; classics; German; joint international relations/economics; joint international relations/modern languages and literatures; journalism/science writing; music; music composition; philosophy; religion studies; science, technology & society; sociology/anthropology; statistics; and women's studies.
[5] The four tiny B.S. programs offered to students in the Rossin College are: chemistry; applied science; engineering mechanics; and engineering physics. The B.S. chemistry and B.S. engineering physics degrees are managed through the chemistry and physics departments in CAS, respectively. The B.S. engineering mechanics degree is administered by the mechanical engineering department within the Rossin College, and the B.S. applied science degree is managed directly by the Rossin College.
[6] IBE's assessment of programmatic learning outcomes for majors in both CBE and RCEAS are reported annually.

As discussed, Lehigh's academic curricula are college-centric. Lehigh has no university-wide course requirements, though two English composition courses—typically English 1 and English 2—are required by all three undergraduate colleges. (Note that AP exam scores may reduce or exempt students from composition course requirements; furthermore, non-native English speakers may take an alternate composition course.) As a result, not only majors but also general education requirements are housed in the colleges. (As noted in Chapter 3, some aspects of Lehigh's programming on such general education components as cultural and global awareness and cultural sensitivity are also incorporated in such places as bLUeprint activities.)

Because Lehigh has placed the core of its assessment activities within the colleges and their component departments, we present an overview of assessment of learning separately for each of Lehigh's four colleges. In each college, Lehigh faculty and staff conduct organized and systematic assessment activities, and evaluate the extent of student achievement of institutional and program goals. The listed strengths and weaknesses to be addressed are discussed separately within each college. Taken together, the overviews demonstrate that Lehigh's established organized and systematic assessments, conducted by faculty and appropriate professionals, evaluate the extent of student achievement of stated goals, fulfilling the expectations of **MSCHE Standard V, Criterion 2**.

The College of Arts and Sciences (CAS)

The CAS, with approximately 1,900 undergraduate students and some 250 full-time faculty members, is the most complex and diverse of Lehigh's three undergraduate colleges. The college is distinguished by the disciplinary breadth, comprehensive programmatic offerings, and wide-ranging faculty research interests. Faculty teach in the arts, humanities, social and natural sciences, and many contribute to interdisciplinary programs. Most departments offer undergraduate (B.A., B.S.) and graduate degrees (M.A., M.S., Ph.D.).

The College of Arts and Sciences offers 53 degree programs (majors), not double-counting for certain programs that offer both the B.A. and the B.S. (e.g., the B.A. and B.S. in biological sciences). These majors are distributed across 18 academic departments and many interdisciplinary programs that span the college. According to the profiles published by the Office of Institutional Research and Strategic Analytics (OIRSA), the average number of B.A. degrees issued between 2013 and 2015 was 328; the average number of B.S. degrees issued between 2013 and 2015 was 121. Eight departments in the college offer Ph.D. degrees; the average number of Ph.D. degrees issued between 2013 and 2015 was 32.

In contrast to the other colleges, only a small number of CAS programs are formally reviewed and accredited or otherwise certified by a body other than MSCHE. The B.S. in chemistry offered by the chemistry department is approved by the American Chemical Society (ACS); the B.A. in theatre is accredited by the National Association of Schools of Theatre (NAST).

General Education Assessment

The CAS college-wide learning outcomes include outcomes that cover the Middle States general education requirements, and also extend to other competencies. For example, they include oral and written communication skills, quantitative reasoning, and information literacy; they cover such areas as inquiry across disciplines, independent discovery, and professional and disciplinary standards. College requirements provide students with multiple opportunities to engage in academic experiences designed to broaden intellectual horizons. The current learning outcomes were approved in 2010. As discussed later in this chapter, the college is revising its learning outcomes, and has discussed the draft learning outcomes at a CAS college faculty meeting.

Through a combination of college-wide distribution requirements and major field requirements, Lehigh Arts and Sciences students investigate and acquire knowledge of:

Human cultures and the physical and natural world by studying in these required areas:

- Arts and Humanities
- Mathematics
- Natural Sciences
- Social Sciences

Studying broadly in the areas above and concentrating deeply in a major field will help develop intellectual traits and skills needed to create the lifelong learning habits necessary to confront constantly changing social conditions, emerging technologies, careers, and lives.

Intellectual and practical skills

- Inquiry and analysis
- Critical and creative thinking
- Effective written, oral, and visual communication
- Quantitative, visual, and information literacy
- Teamwork, collaboration, and problem solving

Breadth of study combined with advanced work in select academic areas provides opportunities to integrate knowledge, skills, and achievements across disciplinary boundaries.

Personal, social, and professional responsibility

- Self-reflection, evaluation, and expression
- Social and civic awareness and engagement
- International and intercultural awareness and competence
- Ethical reasoning and action
- Professional and disciplinary standards

Advanced, integrative, and independent learning

- Inquiry across disciplines
- Synthesis within and between disciplines

- Navigating uncertainty, complexity, and ambiguity
- Independent discovery
- Application of knowledge and skills to new settings and complex problems

CAS course distribution requirements, combined with requirements within the major, ensure that all students' curricula cover these learning outcomes. Students' success in mastering the general education requirements is assessed by the departments that offer related courses. For example, the Calculus Committee engages in regular and systematic review of students' quantitative reasoning efforts. The committee is comprised primarily of faculty in the Department of Mathematics and faculty members from programs that require the calculus sequence. Other participants include the undergraduate associate deans in CBE and the P.C. Rossin College as well as other administrators and professional staff members across the university whose duties focus on student success. Meeting at least once a year, the committee prepares extensive documentation on the success of students in gateway mathematics courses. The committee looks beyond examination scores to broader issues of placement and success in subsequent mathematics courses, if pursued.

The Department of English supports the university's undergraduate writing program, including the review of student learning in the English courses that are officially college-level requirements, but that in effect are the university's only common courses for nearly all students.

Assessment in the Undergraduate Programs

In 2008, MSCHE identified what can be called an "assessment gap" in the CAS, resulting in a recommendation that the university submit a progress report showing improved assessment of SLOs in CAS programs by April 2010. In response, CAS developed an in-house data management tool, to be used by academic departments and interdisciplinary programs to document evidence of student learning. A significant advance was the ongoing annual call for and report of assessment activities in all CAS departments, with documents related to undergraduate program assessment placed in this repository. In 2010, MSCHE received the college's progress report, and in 2013, the university as a whole received praise for the work it had done on assessment.

Two combined events led to a change in the documentation process for undergraduate program assessments in the summer of 2017. First, a review in 2016 determined that, while most departments were conducting these assessments, in many cases these assessments reflected standards from 2010 rather than from 2016. For example, many departments were using indirect measures to assess student learning. The college determined that it would initiate an effort to strengthen its assessment practices, putting a stronger emphasis on the direct assessment of student learning outcomes at the program level. The college recognized that the assessment tool—so important in the 2010 progress report—no longer met CAS needs. The college maintained its online assessment tool for one more year, but its structure was not well matched to the current best practices for assessment. Then in 2017, a broader streamlining of college technology systems and resources facilitated a transition to a simpler repository that could serve program assessment needs in a more straightforward way. The new repository was more appropriate for

the assessment documents that faculty members were submitting following 2016 trainings on updated student learning assessment best practices.

Because full program reviews are not sustainable on an annual basis, units typically perform reviews of selected aspects of their programs to ensure their ability to meet stated LOs at various levels within their programs. Units report the results of these reviews to the CAS dean's office, where they are reviewed and archived for dean's office use and for periodic reviews by the programs themselves. Undergraduate program reviews are also posted to Course Site for review by all CAS department chairs and interdisciplinary program directors.

Several programs have used recent assessments to alter their course offerings and revise the structure of their majors. Specific examples include the Department of Psychology revising its major to include an additional research methods course to ensure students in their programs are trained in the most up-to-date research methods in the discipline. Additionally, the Department of Mathematics used their most recent assessment to alter the structure of MATH 205 to better reflect the needs of their students who pursue applied mathematics and engineering. Finally, a college assessment of the First-Year Seminar series revealed gaps in students' basic information literacy. This skills deficit led to the creation of an Information Literacy course being offered to first-year students for the first time in the fall 2017 semester.

While virtually all 53 undergraduate majors—excepting two that are undergoing transition—have up-to-date, clear learning outcomes, and participation in program assessment has been consistent, the quality of program assessment has varied across programs. In many cases, programs have been following best practices for years. In other cases, programs have focused more heavily on indirect assessment or on assessment only at the course level. The college has planned additional trainings and workshops, and created a CAS Dean's Assessment Committee to lead the ongoing effort. In the fall of 2017 (with additional financial support from the provost) the CAS dean sent the faculty member who is chairing the new committee to the MSCHE assessment workshops in Philadelphia.

In sum, clear statements of learning outcomes have been developed on the college, program, and course level and have appropriate interrelationships to the relevant majors. CAS efforts to assess student learning outcomes are at different levels of implementation in the disciplinary departments and interdisciplinary programs. In programs where student learning assessment has fallen short of best practices, the programs are moving forward with concrete, feasible, and timely plans to improve their assessment practices. The following statement applies to CAS undergraduate programs as a whole: CAS leaders at the college and program level demonstrate sustained support for faculty in promoting an ongoing culture of assessment and for efforts to improve teaching.

Assessment in the Graduate Programs

Starting in 2008, CAS implemented a program review process based on the Council of Graduate Schools (CGS) approach to program review and assessment. The cycle of program reviews is managed by the associate dean for research and graduate programs, and the documents are maintained in that office.

This graduate review process was approved by the Lehigh Graduate Research Committee. Graduate programs in CAS conduct self-reviews every three years (approximately) and external reviews every six years. External review committees are composed of two external reviewers from the discipline at peer or aspirational-peer institutions (typically senior faculty with administrative experience) and three internal reviewers from other graduate departments at Lehigh (usually within the same division, i.e., social science, natural science, or humanities). The associate dean provides the GRC with annual reports of reviews conducted in the previous academic year.

In 2016-17, self-reviews of graduate programs were conducted by English, Earth and Environmental Sciences (EES), Mathematics, Political Science, and Psychology; external reviews were conducted for English, EES, and Mathematics. In 2017-18, self-reviews are being conducted by History, Physics, Chemistry, Environmental Policy, and Sociology; external reviews are being conducted for History, Physics, and Chemistry. In 2018-19, self- and external reviews will be conducted for Biological Sciences, Political Science, and Psychology. All graduate programs in a CAS department will be reviewed by the GRC the year after they undergo college review. For the full schedule of program reviews, please see the CAS Graduate Program Review Schedule, which is included in the published GRC review schedule.

In 2012, the GRC identified five core competencies (i.e., learning outcomes) to be defined by graduate programs in discipline-appropriate ways. In 2016, CAS updated the format of the college self-reviews to focus programs more directly on a set of core issues. These changes included the addition of a question specifically regarding development and assessment of learning outcomes (in terms of the GRC-specified core competencies). The self-review process also directs programs to self-assess in other domains, including: curriculum (and any gaps therein), professional development, recruitment, retention/completion rates, diversity, morale, and alumni success. For the full set of questions graduate programs are asked to answer, see the CAS Grad Program Review Rubric 2017.

In order to accelerate updating of learning outcomes and their assessment (beyond the three-year, self-review cycle), all graduate departments in CAS have been engaged since the fall of 2016 in a process of defining/updating learning outcomes, mapping program components to core competencies, and defining/developing assessment plans. By the end of the fall 2017 semester, graduate directors in each department have been asked to provide the associate dean with reports detailing: updates in definitions of learning outcomes, assessment plans, procedures by which faculty consider how well their students are performing and the program is achieving its learning objectives, and conclusions arising from these procedures regarding needed improvements and plans for implementing changes.

Because of the small number of students in most graduate programs, assessment of student learning often relies on committee discussions of clusters of students, rather than on gathering of quantitative outcomes. The associate dean facilitates warranted program changes through the program modification process that involves votes by the department, college, GRC (typically at a subcommittee level), and full faculty (typically on a consent calendar).

In order to track key indicators, graduate departments also complete and submit annual data reports to the associate dean. These reports include metrics for admissions, student demographics, faculty demographics and contributions to the graduate mission, tuition and financial support, student productivity/scholarship, time to degree, retention, and alumni success. For the format of these data reports, see the CAS Annual Data Report Template document.

Programs are encouraged to engage in continual, ongoing assessment, punctuated by the self- and external review processes. Overall, there is sufficient engagement, momentum, and simplicity in current assessment expectations to provide assurance that assessment processes will be sustained.

The College of Business and Economics (CBE)

The College of Business and Economics is home to over 1,600 undergraduate students, over 350 graduate students, and 78 full-time faculty members. At the undergraduate level, the college offers eight majors as part of the B.S. in Business and Economics degree, and two intercollege B.S. degrees in collaboration with the P.C. Rossin College. At the graduate level, the college offers four graduate programs leading to the M.S.; four graduate programs leading to the MBA, including two joint MBA programs and an accelerated MBA program; and one graduate program leading to the Ph.D. in business and economics.

The eight undergraduate majors within the B.S. in Business and Economics degree are: Accounting; Business Information Systems; Business Economics; Economics; Finance; Management; Marketing; and Supply Chain Management. Its joint degree programs are Integrated Business and Engineering, which is an honors program, and Computer Science and Business. It offers M.S. degrees in Accounting and Information Analysis; Analytical Finance; Economics; and Management. It offers MBA degree programs which include the 1-MBA intensive one-year degree program; the 1-MBA and Technical Entrepreneurship dual-degree program; and two flex-MBA degrees, the MBA & Engineering degree (MBA & E) joint degree program that is offered with the P.C. Rossin College, and the MBA & Educational Leadership (MELBA) joint degree program that is offered with the College of Education. The college also offers a Ph.D. in Business and Economics.

Some of the masters-level programs have an online component or are fully online.

The College of Business and Economics is accredited by the Association to Advance Collegiate Schools of Business (AACSB), which reviews both undergraduate and graduate programs, as shown by the 2015-16 annual AACSB Business School Questionnaire. The AACSB general orientation code for the college is BPA-5, "equal for teaching and intellectual contributions," and the scholarly orientation code is BPB-11, "high emphasis" on discipline-based scholarship and "equal emphasis on contributions to practice and learning & pedagogical research." The most recent accreditation took place during the 2016-17 academic year, and covered program years from 2011-12 through 2015-16. (Because the 1-MBA program was

not operational until 2016-17, it was not reviewed per se, but the accreditation team was aware of its impending launch; and all programs within the College of Business and Economics will undergo AACSB accreditation under that organization's regular five-year timetable.) AACSB Assurance of Learning (AoL) processes and results are documented in an AACSB Continuous Improvement Review (CIR) Report every five years and are evaluated by an external review team. The 2017 review, and the preceding 2012 review, found CBE to be fully meeting accreditation standards.

Because the accreditation standards for undergraduate and graduate programs include extensive and specific assessment expectations, the assessment practices in CBE conform to those standards. Lehigh's college-based assessment structure allows for this flexibility.

General Education Assessment

The AACSB expectations for general education "general skill areas" are similar in content and spirit to MSCHE general education expectations. CBE uses the AACSB general skill areas to guide their curriculum requirements at the undergraduate level.

AACSB General Skill Areas

- Written and oral communication (able to communicate effectively orally and in writing)
- Ethical understanding and reasoning (able to identify ethical issues and address the issues in a socially responsible manner)
- Analytical thinking (able to analyze and frame problems)
- Information technology (able to use current technologies in business and management contexts)
- Interpersonal relations and teamwork (able to work effectively with others and in team environments)
- Diverse and multicultural work environments (able to work effectively in diverse environments)
- Reflective thinking (able to understand oneself in the context of society)
- Application of knowledge (able to translate knowledge of business and management into practice)

As stated on its website page describing the undergraduate curriculum,

> The CBE's integrated core emphasizes essential business concepts and skills throughout the college experience. Courses in the core curriculum are required of all CBE students and are logically sequenced in a building block approach.
>
> The core introduces foundational basics, advances to more complex concepts and real-world issues, and culminates in a senior capstone on strategic decision-making. Upon graduation, CBE students are able to add value in a real-time context to solve intricate, often unstructured, business problems.

> The core distribution requirements, and a requirement to take 33 additional credits outside of the College of Business and Economics, ensure that all students take a mix of liberal arts and business experiences that include global and diversity courses. The focus is to provide students with an essential understanding of critical skills, including communications and applied critical thinking through a variety of disciplines including English, mathematics, business, and economics courses.

For general education components that are not part of CBE coursework or the core curriculum, such as scientific reasoning, the college defers to the learning outcomes and assessment programs of the CAS departments that offer those courses.

Assessment in the Undergraduate Programs

CBE faculty have been following best practices in assessment for many years. In the 2004-05 academic year, the college formalized a program of direct assessment for the twelve programs then undergoing AACSB review. All learning outcomes are assessed using direct measures, and the assessment process links and assesses course, program, and college outcomes. Cognizant of AACSB professional accreditation requirements, CBE faculty now lead intra-college coordination, alignment, and measurement of college-wide learning objectives; they also engage with others outside the department (e.g., Department of Mathematics faculty; Writing Across the Curriculum staff) on these efforts. At the course level, faculty are engaged in assessments of both individual and group learning. At the program level, faculty demonstrate commitment to student learning assessment through annual, evidence-driven assessment reports that augment a larger culture of mapping program goals to the college's learning objectives and mission.

Learning objectives for the undergraduate program were developed by a college committee and endorsed by the full CBE faculty. The criteria to assess each learning objective are documented on every annual assessment report and archived in a Course Site repository that the college maintains. *(Please see the CBE Undergraduate Learning Outcomes folder in the Course Site documentation repository.)* Annual assessment reports are retained by the college; these are available in the self-study documentation repository. The CBE collects data annually and uses these data to inform regular program-level assessments. Those responsible for program-level assessments identify opportunities for continuous improvement, and improvements are vetted by the CBE and university faculty for implementation. Undergraduate learning objectives are posted to the CBE website and are included in first-year orientation materials for the B.S. in Business and Economics degree.

CBE faculty updated their core curriculum map in 2016, adjusting some mapping and some global-related LOs as part of a continuous improvement process. Since the core curriculum map is the foundational map for all three undergraduate degrees, CBE also updates all maps by major (for the B.S. in Business and Economics) and by interdisciplinary program (for the B.S.-CSB and B.S.-IBE) within the context of learning goal 6, i.e., build proficiency in a functional area of the student's choice. CBE very recently updated its major assessment guidelines.

Program-level reports are prepared by each program on a regular basis and stored in an archive for AACSB review. Undergraduate curriculum-level reports are also posted to the CBE information Course Site that is accessible to all CBE faculty and staff.

In 2009, the CBE faculty participated in college-wide training on assessment practices; this training was conducted by Dr. Katrina Zalatan, associate dean and director for undergraduate programs, with Dr. Greg Reihman, Lehigh's associate vice provost and director of the Center for Innovation in Teaching and Learning. Since then, new faculty receive training from Dr. Zalatan; all CBE faculty have access to *Tips on Writing an Effective Course-Specific Assessment Report*, prepared by Dr. Reihman. Thus, all CBE faculty have received training in assessment practices. New faculty and course coordinators of undergraduate programs are oriented to the assurance of learning process by the associate dean for undergraduate programs. Instructive materials from workshops and other assessment tools are also posted to the CBE Information Course Site for easy access by faculty.

Assessment in the Graduate Programs

Assessment practices in CBE graduate programs mirror those in CBE undergraduate programs, and are aligned with best practices for AACSB accreditation. In 2012, the GRC identified five core competencies (i.e., learning outcomes) to be defined by graduate programs in discipline-appropriate ways. These core competencies were modeled on those practices already in use by CBE graduate programs (and those in other colleges), and continue to be reflected in the learning outcomes for the graduate programs in CBE. As with the undergraduate programs, all graduate programs have learning outcomes, and all programs submit annual assessment reports.

In addition to the annual assessment activities and reports, CBE graduate programs undergo periodic reviews that are managed by the associate dean for graduate studies, and are aligned in timing with the AACSB accreditation cycle. Documents related to these reviews are maintained on Course Site. This graduate review process was approved by the Lehigh Graduate Research Committee (GRC), and a report detailing the assessment of CBE graduate programs is presented to GRC every five years. Graduate programs in CBE conduct external reviews every 5 years. The CBE also annually reviews the market relevance of its graduate programs, and makes adjustments to the portfolio of programs accordingly. In the past seven years, this has resulted in the creation of two new graduate programs, the M.S. in Management (M^2) and the one-year MBA (1-MBA), and the discontinuation of one program, the M.S. in Biopharmaceutical Economics. Other programs have had changes in composition of courses and tracks within the program.

When the faculty determine through the assessment process that program changes are warranted, the associate dean for graduate studies facilitates the program modification process that involves discussion and votes by the department, college, GRC (typically at a subcommittee level), and full faculty (typically on a consent calendar). There is sufficient engagement, momentum, and simplicity in current assessment expectations to provide assurance that assessment processes will be sustained indefinitely.

Assessment activities are supported by CBE administrative leadership, which emphasizes and reinforces the importance of learning outcomes assessment to student achievement and success. Each program's faculty is committed to documenting learning outcomes and documenting learning objectives throughout the core of each program, with overarching assessments provided by the program director to the associate dean. CBE has maintained archives of annual assessment reports and associated evidence (graded samples of student work) throughout the MSCHE cycle.

The CBE collects data annually and uses this data to inform regular program-level assessments. Those responsible for program-level assessments identify opportunities for continuous improvement, and improvements are vetted by the CBE and university faculty for implementation. The criteria to assess each learning objective are documented on every annual assessment report, which are archived.

Undergraduate Programs - Assurance of Learning and Examples of Continuous Improvement
Faculty members remain engaged in the assurance of learning process. Continuous improvement occurs at the course level (e.g., adjusting methods and materials) and at the program level to modify courses and curriculum. Examples of program-level continuous improvement over the past five years include:

2011-12:

- The UCC (Undergraduate Curriculum Committee) led a process to identify 13 core courses with substantive global content across the undergraduate core curriculum, and specify a process of assessment including 13 "mini-LOs" that were proposed by core course coordinators, approved by the CBE Global Steering Committee, included on the curriculum map, and assessed annually starting in 2012-13.

2012-13:

- The Management major was revised to include a new core course (MGT 342: *Managing in the International Organization*), a new configuration of tracks for specialization (*Managing Human Resources* and *Small Business and Non-Profit Management*), and a new course in the Managing Human Resources track (MGT 363: *Diversity & Inclusion in the Workplace*).

2013-14:

- Approval was given for a new professional elective course titled CSB 256: *Computing/Business Seminar* that was proposed after two experimental offerings of the course and input from the CSE course assessment review process.

2014-15:

- The marketing major was revised to align with five career tracks (retail management; brand management and innovation; marketing analytics; sales management; and marketing communications). Two marketing major courses were dropped, four were changed, and four new

courses were added.

- Upon the recommendation of the UCC, LAW 201: *Legal Environment of Business* was revised to increase emphasis on ethics and corporate social responsibility.

2015-16:

- After a one-year pilot implementation, approval was given for a new variant of BUS 001 (numbered BUS 002).

Graduate Programs - Assurance of Learning and Examples of Continuous Improvement

Each fall and each spring, program directors receive a directive from the Graduate Programs Office to provide assessment materials for core courses offered in that particular term. Program directors must ensure that these assessments are completed and are charged with collecting syllabi and direct measures of student achievement. After a review of all materials, the program director will meet with program committee members to review the assessments and propose course or program changes that increase assurance of learning, thereby closing the assessment loop. The director then submits a year-end report that details changes, achievements, and challenges for their program.

For example, the M.S. in analytical finance assessment process identified a need to increase student participation in class. On a program level, all instructors are attempting to get more participation during the class period. The identification of this issue occurred through assessments that each instructor must submit to the program director each year. A sample assessment is included for GBUS 421 *Advanced Investments: Fixed Income*. Tactics for increasing participation are listed in the assessment: a.) All students were formed into groups for presenting homework assignments and current events. b.) More time will be devoted to reinforcing the previous lecture at the beginning of each class session. The assessment indicates that these improvements are gaining traction.

On a programmatic level, the Ph.D. program revised their admissions policy and instituted a cohort admissions cycle with an intake every other year. This restructuring has allowed more field courses to be offered on a rotating basis and more cohesion among the students. In addition, the program was able to set stable year-over-year funding packages for students, which resulted in increased yield. New students are funded primarily through teaching assistantships, which consist of full tuition and stipend awards. The university provides competitive Presidential Fellowships and University Fellowships, which provide tuition awards, enhanced stipends, and some research funds, to attract top Ph.D. applicants. The Fellowships also come with a recruitment budget and no service requirement from the student for a yearlong period during the student's course of study as determined by the program director.

New Flex MBA students meet with their advisor through the Graduate Programs Office prior to starting the program. An analysis revealed that the advisor would spend much of the advising appointment reviewing basic material. Based on this analysis, a video series has been developed that provides a baseline of college and university resources. This allows the Flex MBA advisor to spend more time in reviewing the student's goals and course work. Additionally, more time can be devoted to value-added activities,

such as the professional development program and international opportunities. Because of the program's flexibility, students connect with the advisor each semester prior to registration to review their degree plans and study goals.

The P.C. Rossin College of Engineering and Applied Science (RCEAS)

The P.C. Rossin College offers ten disciplinary programs that lead to the B.S. degree: Bioengineering; Chemical Engineering; Civil Engineering; Computer Engineering; Computer Science; Electrical Engineering; Environmental Engineering; Industrial and Systems Engineering; Materials Science & Engineering; and Mechanical Engineering. The college also offers, either singly or jointly with other colleges, four interdisciplinary undergraduate programs that lead to the B.S. degree, two of which are honors programs (B.S., Integrated Business and Engineering (Honors)**;** B.S., Integrated Degree in Engineering, Arts and Sciences (Honors)**;** B.S., Computer Science and Business**;** B.S., Applied Science) and one interdisciplinary five-year dual degree program that leads to two bachelor's degrees in five years, a B.S. from the P.C. Rossin College and a B.S. from CAS. Undergraduate students in RCEAS may pursue as their primary program a chemistry major that is offered by CAS; this leads to the B.S. degree and is not accredited by ABET. Students who are CAS students may pursue a B.S. in computer science as their primary degree.

At the graduate level, the P.C. Rossin College offers 23 programs that lead to the M.S., M.E., or M.Eng degrees. Eleven of these programs also offer the Ph.D. degree: Analytical Finance (an inter-college program); Bioengineering; Biological Chemical Engineering; Business Administration and Engineering; Chemical Energy Engineering; Chemical Engineering; Civil Engineering; Computer Engineering; Computer Science; Electrical Engineering; Energy Systems Engineering; Environmental Engineering; Healthcare Systems Engineering; Industrial and Systems Engineering; Management Science and Engineering; Manufacturing Systems Engineering; Materials Science and Engineering; Mechanical Engineering; Photonics; Polymer Science and Engineering; Structural Engineering; Technical Entrepreneurship; Wireless and Network Engineering.

All but three undergraduate disciplinary programs, each of which is very small, are accredited by ABET. Nine programs leading to the B.S. degree are accredited by the Engineering Accreditation Commission of ABET (EAC-ABET), as follows: Bioengineering; Chemical Engineering; Civil Engineering; Computer Engineering; Electrical Engineering; Environmental Engineering; Industrial and Systems Engineering; Materials Science & Engineering; and Mechanical Engineering.

Two undergraduate programs—including the B.S. in Computer Science (P.C. Rossin College) and the B.S. in Computer Science (CAS)—are accredited by the Computing Accreditation Commission of ABET (CAC-ABET). The B.A. with a major in computer science, offered by CAS, is not ABET-accredited.

The Computer Science and Business (CSB) program leading to the B.S. degree is accredited both by CAC-ABET and by AACSB. The Integrated Business & Engineering (IBE) honors program leading to the B.S. degree is accredited solely by AACSB. The Applied Science, Engineering Mechanics, and Engineering Physics majors that lead to the B.S. degree are not accredited by a disciplinary accrediting agency. Finally, as with most institutions that have undergraduate programs accredited by ABET, Lehigh does not seek accreditation for its engineering graduate programs.

General Education Assessment and Undergraduate Program Assessment

Assessment in the P.C. Rossin College is structured around ABET requirements and review processes; as such, assessment of general education is enmeshed in program assessment, and this section addresses both general education and program assessment. For many years, the P.C. Rossin College has identified and measured outcomes in a way that cuts across both individual programs and multiple course experiences; communication is the primary example. SLO assessment in the college is largely program-driven mainly because the professional standards established by ABET accredits programs (and specifically not colleges) on a six-year cycle. The ABET criteria specify that programs identify, develop, and measure student learning outcomes, and use results derived from these processes to improve how the college meets student needs in the classroom and in preparing students for highly technical careers. Faculty participate in the comprehensive process of integrating student learning objectives in each syllabus, mapping course goals to program outcomes, and aligning these outcomes to college-wide learning expectations.

Each program has a committee that has periodically reviewed student outcome results, typically on an annual or biennial cycle. The P.C. Rossin College has a comprehensive process of assessing the learning objectives of each of the accredited programs. The associate chair for each undergraduate program has primary responsibility for coordinating assurance of student outcomes, with coordination at the college level by the associate dean of undergraduate studies.

All the P.C. Rossin College engineering programs use the ABET a-k outcomes:

(a) an ability to apply knowledge of mathematics, science, and engineering

(b) an ability to design and conduct experiments, as well as to analyze and interpret data

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d) an ability to function on multidisciplinary teams

(e) an ability to identify, formulate, and solve engineering problems

(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(i) a recognition of the need for, and an ability to engage in, lifelong learning

(j) a knowledge of contemporary issues

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Recent ABET self-study program reviews include the following: Material Science (2013); CompE (2013); CSCEAS (2016); Chemical Engineering (2016); Electrical Engineering (2013); Industrial & Systems Engineering (2013); Mechanical Engineering (2013); and Civil Engineering (2013). The three computer science programs within the college, instead, share 17 outcomes that map to the ABET a-k outcomes; Computer Science and Business (CSB) adds four more to those. These 21 outcomes are available online.

The P.C. Rossin College assessment process commences with faculty in each undergraduate program setting student outcomes (SOs) and mapping specific courses to the SO. Each program has approximately eleven SOs. Faculty whose course has been mapped to a student outcome will determine how that SO will be measured. Measuring methods included exam questions, projects, presentations, homework assignments, labs, and essay. Faculty determine what level of performance constitutes a proficiency in the SO. In a continuous improvement process, faculty are required periodically to assess their SOs and report back to the program committee. The program committee will write a report with the results and recommendations for improvement in the assessment process.

Assessment in the Graduate Programs

To assure Lehigh graduate programs appropriately support the mission statement, periodic program self-assessment reviews are undertaken. The goal of these reviews is continued improvement and enhancement to ultimately assure quality. The program review process will follow a centralized college schedule, using methodologies based on the type of degree program evaluated (e.g. M.Eng., M.S., or Ph.D.). Methodologies specific to each type of program are included. Program reviews take place every six years. In addition to the comprehensive six-year review, designated professional master of engineering degree programs will undergo a less intensive, "off-cycle" third-year review. The purpose of this extra review is to ensure the sustainability of these programs due to their market sensitivity. Guidelines for off-cycle review are also included.

The university's adoption of a vision for graduate education at Lehigh, calling in part for graduate students to be lifelong learners, collaborators, and mentors, marks the university's continued commitment to offer quality, relevant, and effective graduate degree programs to our students.

The College of Education (COE)

The College of Education is unique among the colleges at Lehigh University in that it is graduate-only and features only one department, Education & Human Services. Enrollment is more than 500 students per semester, with approximately 300 students pursuing masters-level degrees; more than 150 pursue doctorates. More than 50 students are nondegree students or are pursuing certificates; fewer than 20 students seek the educational specialist degree. COE is home to 30 tenure-track faculty members and approximately 8 full-time professors of practice.

The department is comprised of six academic programs: Comparative & International Education; Counseling Psychology; Educational Leadership; School Psychology; Special Education; and Teaching, Learning, & Technology (Instructional Technology Program and Teacher Education). The Comparative & International Education program is fully operational, but as of fall 2017, it is no longer admitting students. The program will serve the needs of all currently enrolled students until they receive their degrees.

As a graduate college, COE has no general education assessment or undergraduate learning assessment program. The college has stringent professional accreditation requirements for most of its programs. Five of the six academic programs prepare candidates for certification as school counselors, teachers, principals, superintendents, school supervisors, or school psychologists. These degree programs are certified through the Pennsylvania Department of Education (PDE). **Table 5.2** summarizes the COE degree programs and their accreditation agencies.

TABLE 5.2. COLLEGE OF EDUCATION PROGRAM ACCREDITATION SUMMARY

Academic program	Doctorate	Ed.S	M.A.	M.S.	M.Ed.
Ph.D. Comparative and International Education	(none)				
M.A. Comparative and International Education			(none)		
M.Ed. Globalization and Educational Change					(none)
Ph.D. Counseling Psychology	APA				
M.Ed. Counseling and Human Services					MPCAC
M.Ed. International Counseling					(none)
M.Ed. School Counseling					PDE
Ed.D. Educational Leadership	PDE				
M.Ed. Educational Leadership					PDE
M.Ed. Educational Urban Leadership					PDE
Ed.S. School Psychology		NASP, PDE			
Ph.D. School Psychology	NASP, APA, PDE				
Ph.D. Special Education	(none)				
M.Ed. Special Education					PDE
Ph.D. Teaching, Learning, & Technology	(none)				
M.Ed. Teaching and Learning					(none)
M.A. Teaching and Learning			(none)		
M.Ed. Secondary Education					PDE
M.A. Secondary Education			PDE		
M.Ed. Elementary Education					PDE
M.S. Instructional Technology				(none)	
Accredited	**3**	**1**	**1**	**0**	**7**
Not accredited	**3**	**0**	**2**	**1**	**3**

In addition to these PDE certifications, the Ed.S. and Ph.D. degrees offered by the School Psychology program are accredited by the National Association of School Psychologists (NASP). The Ph.D. programs in Counseling Psychology and School Psychology are accredited by the American Psychological Association. The M.Ed. in Counseling and Human Services and the M.Ed. in International Counseling are accredited by the Masters in Psychology and Counseling Accreditation Council (MPCAC). The certificate in Behavior Analysis is accredited by the Behavior Analyst Certification Board (BACB). The Comparative and International Education Program's degree programs do not fall under disciplinary accreditation or certification requirements.

All programs have rigorous requirements. The admission standard for all the degree programs in the college is 3.0, higher than the university minimum. The college faculty also approved more stringent academic *progress* standards than those employed at the university level, including raised expectations for student performance, accompanied by automatic triggering of review for students who do not appear to be making adequate academic progress. Any COE faculty member or instructor can request a review. In addition, some COE programs mandate periodic reviews of the academic progress of all students in those programs, and these reviews may take place without the necessity of a triggering event. Further, several programs in the college employ remediation plans for students whose performance within courses or outside them is below expectations.

All COE programs have core courses emphasizing competencies that practitioners must attain. Programs also employ sequences to foster and track cumulative growth. All programs leading to certification or licensure have capstone experiences in which students demonstrate their competence in the area of the certification or license sought. To obtain certification or licensure, students are required to complete an internship, field experiences, and/or a practicum. Throughout these experiences students are assessed on their content knowledge, their ability to apply that knowledge to practice in their field, their awareness of contexts and structures within a professional site, their ability to communicate appropriately with students/clients, and their ability to work effectively with instructional and/or treatment teams to enhance outcomes in education and human services.

Each year, the COE surveys recent graduates in their academic programs, talks with professionals in the field who have worked with current or former students, and collects and analyzes student performance data. These results are used in program assessment meetings conducted annually by each program. Results from these detailed analyses are considered for changes in curriculum, field placements, or pedagogy.

There is a high level of collaborative planning among programs in the college, principally because there are so many shared courses across programs. Programs in the College of Education are bound by common requirements for those seeking certification and/or licensure, as well as by shared values (as exemplified in the COE's strategic plan). The COE employs a one-department model in which all program faculty attend all college meetings, and key curricular and assessment issues are discussed regularly. The result is a common and current awareness among faculty across programs of key assessment issues; such issues are discussed and resolved *across* programs to create mutually acceptable solutions within the college. Student

learning assessment is largely driven by the Pennsylvania Department of Education's external accreditation standards.

At the doctoral level, faculty participate in sustained scholarly mentorships of students, as evidenced by student co-presentation and/or co-publication in scholarly venues. Faculty/student scholarly output is reviewed annually in evaluations of faculty, as well as during faculty reappointment, tenure, and promotion considerations. In addition, many doctoral students preparing for careers in higher education participate in mentored college teaching. The assessment standard for both student and faculty is output- and performance-based.

All programs in the college are reviewed on a 7-year cycle with strategic planning for enhancing each program as it is reviewed. Furthermore, the college periodically revisits and rebuilds its strategic plan through widespread discussion and consensus among faculty. All six programs within the COE have mission statements well aligned with the college's strategic plan and clearly focused on student learning and performance. These faculty-approved standards also align with the five Lehigh competencies for graduate programs: *Content Knowledge, Content Application, Awareness of Context, Skill in Communication,* and *Leadership Development and Growth.*

As the preceding examinations of the four colleges demonstrate, Lehigh considers and uses assessment results in order to make decisions with regard to the improvement of educational effectiveness, fulfilling the expectations of **MSCHE Standard V, Criterion 3**.

V.4. Lehigh conducts adequate and appropriate institutional review and approval of assessment services designed, delivered, or assessed by third-party providers.

Lehigh's use of third-party providers is limited to study abroad programs. These providers are rigorously vetted and regularly reviewed. Extensive additional information on study abroad programs is found in Chapter 8.

V.5. Lehigh undertakes periodic evaluation of the assessment processes that are utilized by the institution, and the results are used for the improvement of educational effectiveness.

Lehigh has a firmly embedded, strongly distributed culture of institutional and student learning assessment, demonstrated both in individual department and college examples, as well as in university-wide reporting. Assessment is a continuous process, as demonstrated by the college assessment programs. Across the university, actions will continue to enhance and expand the assessment activities, feedback loops, and data-management systems that underlie this important institutional priority to continuously improve our programs.

As the examples below demonstrate, Lehigh undertakes periodic evaluation of the assessment processes, and the results are utilized for the improvement of educational effectiveness, which fulfills the expectations of **MSCHE Standard V, Criterion 5**.

CAS

Undergraduate Improvement of Assessment Practices

- Since 2005, CAS has required individual units to subject programs to formal assessments in order to evaluate their effectiveness and identify areas for improvement. These assessment efforts center on making use of innovative pedagogies and curricular development in an effort to improve the educational opportunities for students. These reviews center on how well each unit is meeting its stated learning objectives as evidenced by various forms of student assessment. CAS developed an online assessment tool in 2009. In addition, all proposed programmatic changes are reviewed by the College Policy Committee. The Provost's Office offered an assessment workshop to CAS department chairs and program directors in August 2016. *(Please see the CAS Assessment Workshop folder in the Course Site documentation repository.)* The dean's office includes assessment training as part of new chair training.

Graduate Improvement of Assessment Practices

By spring 2017, as per administrative guidance, all CAS graduate programs have been asked to discuss how well students are meeting program objectives, and to consider potential program changes to better foster and assess student development of core competencies. For quite some time, all graduate programs in CAS have conducted regular self-reviews (now on a 3-year cycle) and receive regular external assessments (on an approximate 6-year cycle). These reviews cover all of these issues and more (also addressing issues of recruitment, retention, diversity, climate/morale, etc.). Programs are being encouraged moving forward to conduct the assessment procedures described in the first paragraph above (for example, program objectives/core competencies) on an annual basis. Many do this already as a matter of course; but not all.

Program-level assessment procedures are evaluated every 3 years as part of program self-reviews and every 6 years as part of the external review process. In each case, the reviews are reported to the CAS dean and graduate associate dean, who provide feedback. In 2016-17, the CAS self- and external-review procedures were revamped to, among other things, increase evaluation of core competency development and assessment.

CBE

Undergraduate Improvement of Assessment Practices

Continuous improvement of the assessment process happens at several levels in CBE undergraduate programs. At the core course level, faculty receive feedback about their application of assessment methods as a result of the curriculum-level review conducted by the Undergraduate Curriculum Committee (UCC). Examples of this feedback can be found in the Annual Assessment Reports posted to the curriculum-level folders of the CBE's AACSB-related course sites.

At the program level, faculty are encouraged to review learning objectives for ongoing relevance as part of the assessment process. For example, in 2015-16, the UCC invited faculty coordinators of courses mapped to Learning Outcome 1.3 to reassess and update their global mini-LOs, and the map was adjusted to reflect an updated set of 11 mini-LOs, effective 2016-17. Department chairs are also presently engaging in a process to streamline and standardize assessment practices at the major level (for curriculum goal 6). An Undergraduate Core Curriculum Review Committee was also charged by the CBE dean to review the core curriculum and its learning goals during the 2017-18 academic year.

Graduate Improvement of Assessment Practices

The CBE uses assessment results to improve educational effectiveness throughout its curriculum. *(For documentation, please see the 2016-CBE- supportDocsGradReport folder in the Course Site documentation repository.)*

RCEAS

Undergraduate Improvement of Assessment Practices

The P.C. Rossin College has both a college-wide committee and department committees that monitor assessment and recommend and implement improvements. At the college level, the Assessment Committee is focused primarily on ABET requirements, but also considers other accreditation organizations. The 2013 snapshot of the college assessment review is archived. This group meets approximately bi-monthly or monthly, depending where the meeting falls within the accreditation cycle. One example of recent work within this group is the development of surveys for constituents that focus on the PEOs (Program Educational Objectives) and the SOs (Student Outcomes) for recent graduates. Members of the committee are encouraged to attend professional society meetings and share best practices with the rest of the college, thus supporting the development of faculty expertise in assessment.

Graduate Improvement of Assessment Practices

To assure the P.C. Rossin College graduate programs appropriately support the university's vision for graduate education at Lehigh, periodic program self-assessment reviews are undertaken. The goal of these reviews is continued improvement and enhancement to ultimately assure quality.

COE

Improvement of Assessment Practices

Close upon an accreditation review—or in the case of the Comparative and International Education (CIE) program, in place of an accreditation review—each program goes through a self-study modeled on the Council of Graduate Schools' guidelines and standards for appropriate program assessment.

Prompted by this self-study, COE programs are reviewing their assessment processes. In the Teacher Education and Special Education programs, faculty are working on a portfolio review rubric. The Educational Leadership program is reviewing the process of doctoral exam grading. The program currently uses holistic grading, and will be moving to structured grading with a rubric to review specific criteria. The rubric design process is planned for the spring of 2018.

COE programs have had a steady record of improving assessment practices, as documented in this rubric.

Lehigh undertakes periodic evaluation of the assessment processes, and results are utilized for the improvement of educational effectiveness, fulfilling the expectations of **MSCHE Standard V, Criterion 5**.