

2014-15 SAS Annual Assessment Report

Executive Summary

The School of Arts and Sciences 2014-15 assessment record is robust, as we would expect given SAS's success in establishing a strong culture of assessment and evidence-based undergraduate curriculum development. SAS emphasizes sustainable, efficient, and authentic assessments that provide valid practical information for decision-making about how to improve student learning and promotes a culture of evidence-based continuous improvement.

All of the 42 SAS departments and undergraduate programs* have aligned learning goals posted online and are actively engaged in regular direct assessment of student learning outcomes, or are working together as a faculty to develop and implement such plans. To date, all **42** programs serving 99.7% of the students who have declared majors offered by SAS departments/programs have filed their 2014-15 annual assessment reports. These are reviewed first in the SAS Office of Undergraduate Education and then audited by the faculty-based SAS Assessment Committee in the fall.

On the key criteria of developing effective, efficient, and sustainable assessment plans, half (**21/42**) of the reporting departments are making 'exemplary' or 'very good' progress on all three of these measures. Only **4** reporting departments were deficient enough on any of these three criteria to trigger a request for a mid-year follow-up report. Seventy-nine percent of the reporting departments (**33/42**) have developed and are using 'exemplary' or 'very good' direct assessment tools. Most notably, **86** percent (**36/42**) of the reporting departments included descriptions of curricular and/or assessment improvements they have made, or will make, in light of what they have learned from their assessment results --- the key indicator of efficacious assessment practices.

In sum, across SAS, assessment is being successfully used as an important tool in maintaining excellence in undergraduate education.

2014-15 SAS Annual Assessment Report

The overarching undergraduate education [vision](#) of the School of Arts and Sciences is to "offer a liberal arts education of the highest quality to a student body that uniquely combines academic excellence and social, economic, and cultural diversity." In addition to the Core Curriculum goals,¹ our students will achieve:

- rigorous disciplinary learning goals in major and minor fields of study (or a single credit-intensive major field of study),
- an advanced level of achievement on those Core Curriculum learning goals of particular relevance to the individual student's major, minor, and areas of elective interest.

¹ The Core Curriculum is addressed in a separate annual assessment report submitted to the Executive Council on Assessment, the Core Requirements Committee, and the Executive Dean of SAS.

*Herein "department" refers to any department *or* program offering an undergraduate curriculum including Organizational Leadership which offers only a minor.

2014-15 SAS Annual Assessment Report

The SAS faculty Assessment Committee, along with the SAS Dean's office, oversees department-based assessment of disciplinary learning goals and advanced achievement of Core learning goals through the major.² Throughout the year, the SAS Dean's office assists departments in designing, implementing, interpreting, and improving their assessment efforts. Departments submit annual assessment reports by June 15st, using a [reporting form](#) that allows for the attachment of additional materials at the department's discretion, and prompts for the following information:

- the learning goals for the major, minor, or course being assessed;
- the strategy or site for student achievement of the learning goal(s): e.g., major requirements, specific courses, internships where students actually demonstrate the learning outcomes;
- a description of least one direct measure of student learning outcomes for the goal(s), and the benchmarks (the minimum acceptable performance standards) for these;
- a summary of the results of the assessment; and
- any planned or implemented changes in light of the results, as well as a projected timeline for the follow-up re-assessment of student outcomes on the goal(s).

This year the reporting form included an additional question on the most significant challenges faced in developing and implementing an assessment plan.

These annual departmental reports are reviewed in the Dean's office and by the SAS Assessment Committee; this annual summary report is prepared for the SAS Executive Dean and the University's Executive Council on Assessment (ECA). The SAS Assistant Dean for Assessment prepares drafts of individual reviews of each department's assessment report noting "strengths of the plan," "points of concern," and "suggestions for moving forward." The SAS Assessment Committee reviews these drafts and makes modifications as needed. These reviews are then returned to the departments. All SAS departments are either already actively engaged in regular direct assessment of student learning outcomes, or are working together as a faculty to develop and implement such plans. For the latter, the SAS Assessment Committee, with the assistance of the Assistant Dean, does mid-year follow-ups to ensure departments are moving forward and to providing assistance where desired.

The University's Assessment Checklist for Academic Programs provides the basis for review of department reports. The Assistant Dean for Assessment does a preliminary scoring of each department report along a scale

from "best practices" to "progress slow or stalled." This scoring rubric was slightly modified to clarify the intermediate ratings following the SAS Assessment Committee review in Fall 2012, and the modified rubric was used in 2012-13 and 2013-14; in Fall 2014, the Assessment Committee further revised the ratings categories from 5 to 4 levels, and revised the category descriptions to emphasize the continuing progress of departments over time. As SAS department assessment activity has

<i>Best Practices department</i>	3.0
<i>Very good progress</i>	2.5
<i>Making good progress</i>	2.0
<i>Progress is slow or stalled - mid-year progress report (to be) requested</i>	1.5- 1.0

² [Developing a Program Assessment Plan](#)

2014-15 SAS Annual Assessment Report

developed, our expectations have increased. The SAS Assessment Committee will review this scoring again when the faculty reconvenes in the fall, and further modifications to the process are possible.

2014-15 Results:

42/42 reporting	Annual Report on Assessment ✓ Filed ✓ Comprehensive - includes a report on the various elements below as appropriate
--------------------	--

All of the 42 departments or major programs in SAS filed comprehensive assessment reports this year. These departments account for 99.7% (9,986) of the 10,021³ students who have declared majors in SAS departments or programs. These reporting programs plus the Writing Program (which is included in the Core Curriculum Report) account for 99.5% of the total enrollments in SAS courses for 2014-15 (204,032 out of 205,015⁴).

Each of these assessment reports was reviewed and scored on each item listed on the ECA checklist. Assessment activities were scored on a 3-point scale from “exemplary” to “needs to make progress.” (See Appendix A). Chart 1 presents the SAS average score for all those departments scored on the item and Chart 2 presents the full results of this scoring. **In the ECA checklists, the SAS average score is given along with the number of departments scoring ≥ 2.5 over the number of departments reporting.**

3 42/42	Learning Goals ✓ Clearly defined ✓ Publicly posted – provide url http://sas.rutgers.edu/component/docman/doc_download/532-sas-learning-goals ✓ Aligned in hierarchy of learning goals (See Appendix B) ✓ University level ✓ Decanal Unit level ✓ Program/department level ✓ Course level
------------	---

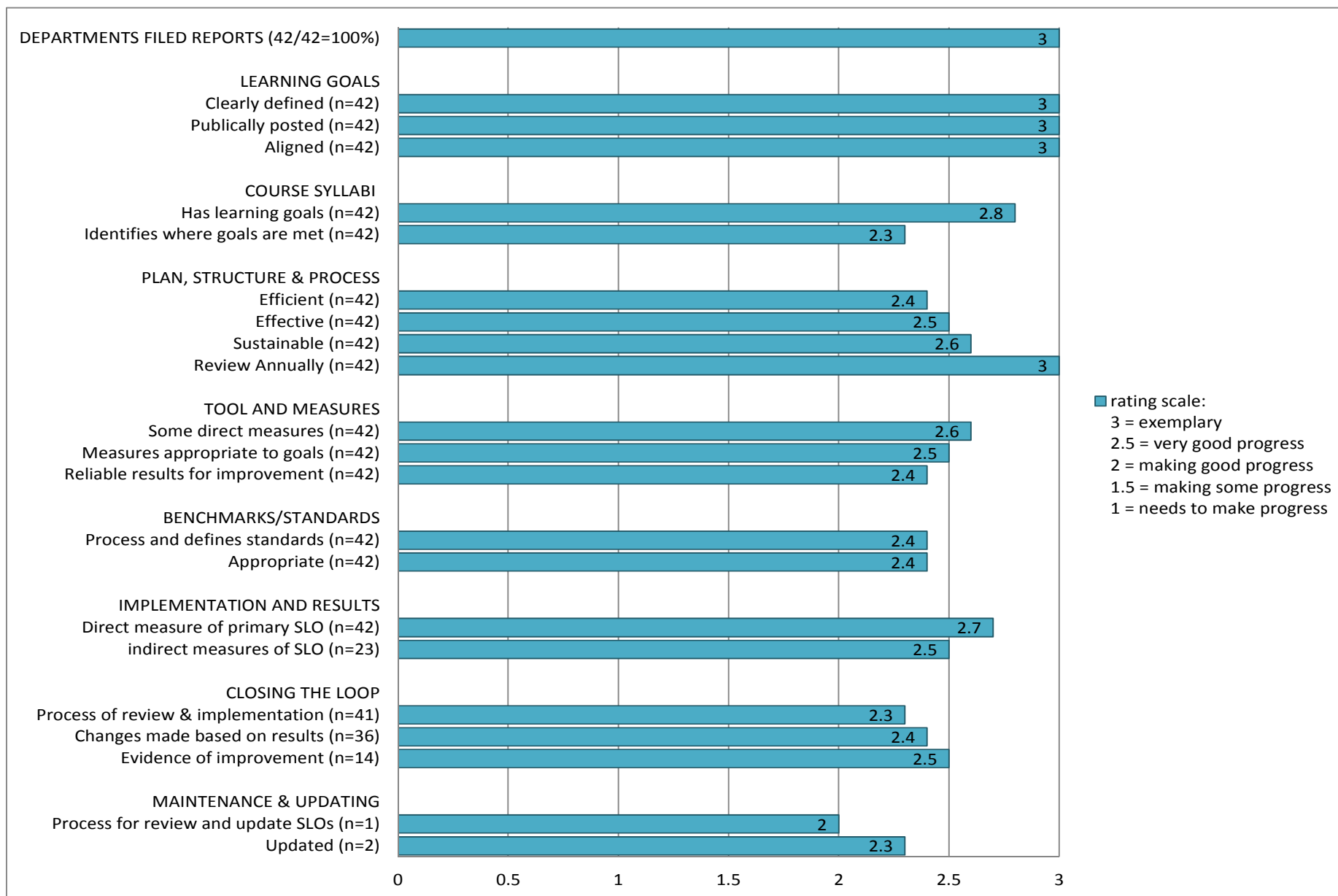
All of the SAS departments and programs have developed and published [programmatic learning goals](#) available on SAS and department web pages and in the [official catalog](#). As illustrated in Appendix B, department learning goals align with both university and Core learning goals, as well as meeting the SAS goal of rigorous disciplinary learning goals in major and minor fields of study (or a single credit-intensive major field of study).

³ This does not include SAS students who have declared majors in our sister schools, for example, those who have declared Communication in SC&I.

⁴ The Writing Program registered 15,308 students in 2014-15 and its excellent assessment program feeds into the Core Curriculum report. The remaining 983 students are registered under SAS numbers for interdisciplinary courses and a range of one-credit seminars such as Byrnes, Students in Transition, and Honors Colloquia.

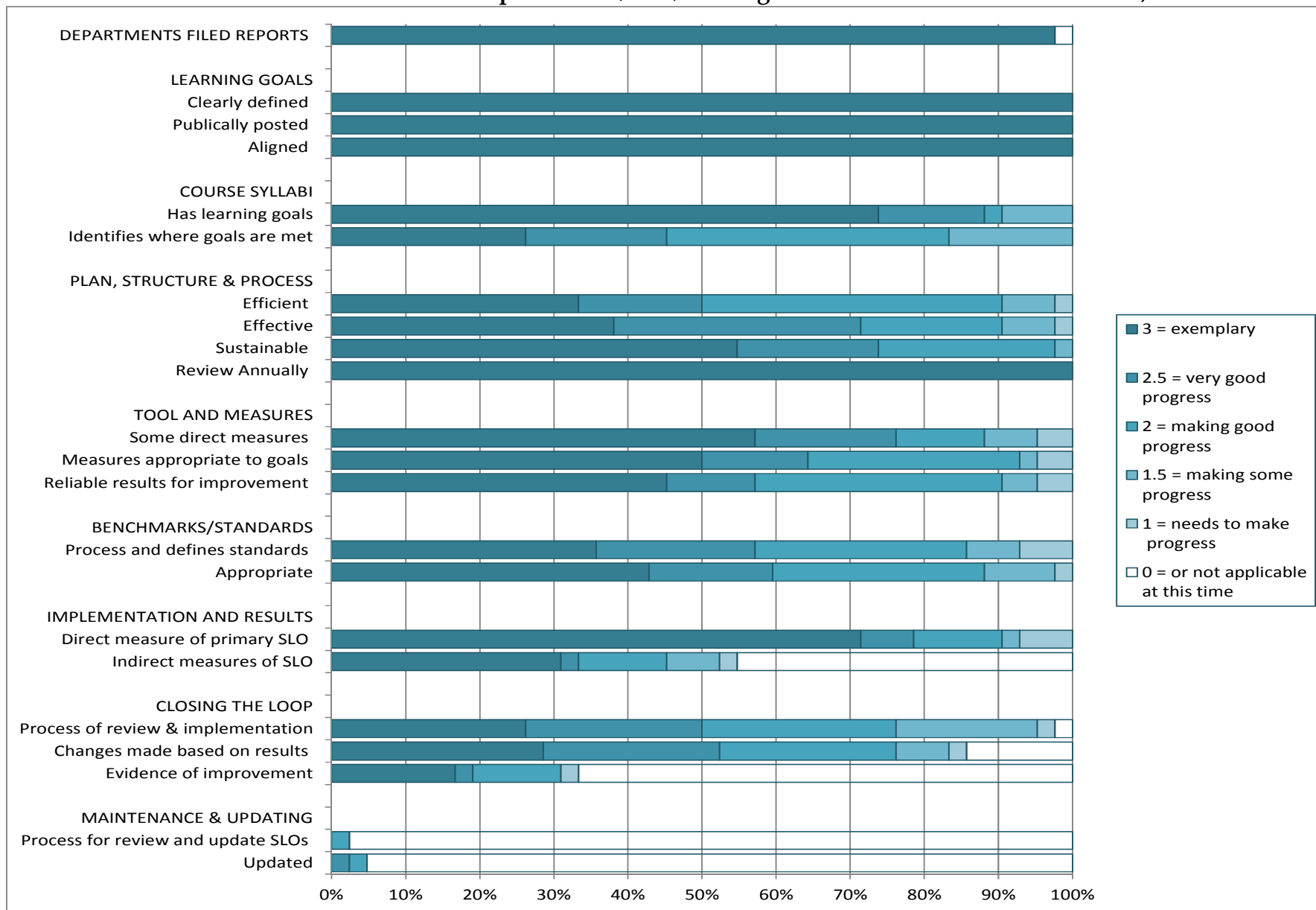
2014-15 SAS Annual Assessment Report

Chart 1: Average of SAS Department Scores, 2014-15



2014-15 SAS Annual Assessment Report

Chart 2: Percent of SAS Departments (n=42) Scoring at Each Level on Checklist Rubric, 2014-15



2014-15 SAS Annual Assessment Report

2.8 18/42 2.3 37/42	Course Syllabi: syllabi/synopsis/expanded course descriptions ✓ Includes appropriate learning goals ✓ Identifies where or how the goals are met
------------------------------	--

Overwhelmingly SAS syllabi include appropriate learning goals and syllabi or course synopses with learning goals are available to students before they register. Departments/programs vary in the extent to which they pursue specific program goals in particular targeted courses or whether program goals are achieved through an extended course of study involving multiple specific classes that students may mix in ways that fit their own specific needs. We expect that as departments find some of their benchmarks unmet they will target curricular points for student development of the skills and knowledge necessary to meet the particular goal.

2.4 21/42 2.5 30/42 2.6 31/42 3.0 42/42	Assessment Plan, Structure, and Process: Describes the assessment structure and the process by which the assessment plan was developed and shared within the unit ✓ Efficient ✓ Effective ✓ Sustainable ✓ Reviewed annually
--	---

SAS departments continue to progress in developing strong assessment plans, structures, and processes. (For previous years' results compared to 2014-15, see Appendixes C and D.) Our annual reporting system insures that all departments review their plans each year. The SAS averages on the efficient, effective, and sustainable criteria ranged from 2.4 to 2.6 and half (**21**) of the departments scored ≥ 2.5 on all four measures. Only **4** reporting SAS departments scored below 2 ('making good progress') on any of the four criteria in this category. Of the **42** reporting departments, **14** scored 'exemplary' on all four of these criteria: Africana Studies, Art History, Biological Sciences, Cell Biology & Neuroscience, Comparative Literature, Criminal Justice, Genetics, Italian, Mathematics, Molecular Biology & Biochemistry, Organizational Leadership, Physics & Astronomy, Psychology, and Spanish & Portuguese.

2.6 32/42	Assessment Tools/Measures ✓ Includes some direct measures
--------------	---

2014-15 SAS Annual Assessment Report

2.5 27/42	✓ Tools/measures appropriate to goals
2.4 24/42	✓ Designed to produce reliable results that can be used for program improvement

SAS departments have done well in developing direct, appropriate, and reliable assessment tools and measures. SAS averages ranged from 2.4 to 2.6; 55% (**23**) of SAS departments/programs scored ≥ 2.5 , and **17** 'exemplary', on all three of these criteria.

	Benchmarks/Standards
2.4 24/42	✓ Describes the process used define standards, targets, and relevant peer and historical comparisons
2.4 25/42	✓ Articulates appropriately rigorous standards for judging student achievement of learning goals and identifies unacceptable levels of performance for all learning goals

SAS departments employ benchmarks that incorporate rigorous standards for student achievement. The SAS average on both criteria was 2.4 and just over one-quarter (**11/42**) of all SAS departments/programs scored 'exemplary' on both of these criteria in AY 2014-15.

	Assessment Implementation and Results
2.7 33/42	✓ Conducted and reports on at least one direct assessment measure of at least one of the primary student learning goals; results included in report

SAS Departments particularly excelled in conducting and reporting direct assessments of student learning outcomes. The SAS average on this was 2.7 and **33** of the departments scored ≥ 2.5 on the conduct and reporting of direct assessments. Some specific assessment results were included in **38** of the annual reports. **23** SAS departments also conducted at least one optional indirect assessment of student learning, **14** of which earned a score ≥ 2.5 .

	Response to Assessment Results: "Closing the Loop" activities
2.3 21/41	✓ Describes the process used to review assessment information and use for improvement
2.4 22/36	✓ Modification/refinement of pedagogy, curriculum, assessment tool, or learning goal based on assessment results.

Almost all departments included information about the analysis and review of their assessment results this year, and half (**21**) of all departments scored ≥ 2.5 on 'closing the loop' activities, indicating that there is clear and substantial progress being made on implementing evidence-based decision-

2014-15 SAS Annual Assessment Report

making across SAS programs. In addition, 36 departments included at least some detail in their reports about the planning and/or implementation of modifications to courses, curriculum, and/or assessment processes in an effort to improve their student learning outcomes and the reliability of their assessments. Some of the modifications, based on the most recent assessment results, have necessarily not yet been implemented.⁵

The real proof of successful assessment in SAS is apparent in the examples of positive changes departments are making based on what they have learned from their assessments. Appendix E lists the changes SAS departments have reported that they have made, or are planning to make, to improve student learning by addressing concerns revealed by their assessment data.

2.5 8/14	Response to Assessment Results: Post-“Closing the Loop” assessments ✓ Successful Improvement: Provides evidence of improved student learning based on implemented changes
-------------	---

Because assessment is a neoteric enterprise in SAS, departments are still in early stages of collecting extensive evidence of improved student learning resulting from previous actions taken in response to earlier assessment data. However, it is possible to identify some notable examples from several assessment leaders in SAS: 14 departments included mention of SLO improvements in their reports; several departments discussed those post-CTL changes at some length, and Appendix F outlines some exemplary reports of post-CTL progress: Art History, Biological Sciences, Cell Biology & Neuroscience, Italian, Mathematics, Molecular Biology & Biochemistry.

2.0 0/1	Maintenance/Updating Process ✓ Describe the process used to review and update learning goals
2.3 1/2	✓ Learning goals are updated, as needed, in light of changes in University, unit, or program mission and strategic plans, advances in disciplinary knowledge, evolution of stakeholder needs, and changes in student preparation and capacity

Similarly, it is premature to expect many departments to have had occasion to update program learning goals. Like assessing the effect of changes made based on previous assessments, this is an area that the SAS Office of Undergraduate Education will continue to work on with departments as assessment matures in the School of Arts and Sciences. Even so, since 2009-10, 8 SAS departments, including 2 this year, have responded to their prior assessment results, changes in external disciplinary and/or professional standards, and the SAS Assessment Committee’s recommendations for moving forward, to focus attention on the review and revision of their program learning goals: American Studies, Asian Languages & Cultures, Biological Sciences, Earth and Planetary Sciences,

⁵ A number of those actions included in Appendix E were not scored on “Modification/refinement of pedagogy, curriculum, assessment tool, or learning goal based on assessment results” in the ECA chart because they have not yet been implemented.

2014-15 SAS Annual Assessment Report

Latin American Studies, Latino & Hispanic Caribbean Studies, Molecular Biology & Biochemistry, and Political Science.

In assessment of student learning outcomes, **29** SAS departments have an overall average for 2014-15 of ≥ 2.5 , indicating that their progress is 'very good' to 'exemplary'.

African, Middle Eastern & South Asian Languages & Literatures (AMESALL)	Computer Science	Linguistics
Africana Studies	Criminal Justice	Mathematics
American Studies	Earth & Planetary Sciences	Marine Sciences (<i>SAS & SEBS</i>)
Anthropology	English	Molecular Biology & Biochemistry
Art History	Exercise Science & Sport Studies	Organizational Leadership
Biological Sciences	French	Physics & Astronomy
Cell Biology & Neuroscience	Genetics	Political Science
Classics	Geography	Psychology
Comparative Literature	German	Spanish & Portuguese
	Italian	
	Latin American Studies	

Other departments and programs have farther to go, but SAS is committed to providing encouragement and technical assistance to these departments. The responses to the question asking about the most significant challenges faced in the process of assessment provide insights into the types of assistance that may be required. The SAS Assessment Committee will go through these responses carefully in the fall to develop strategies for advancing program assessment, particularly in the departments with deficiencies as identified in this report. Although the responses varied greatly reflecting the heterogeneity of the SAS departments, some common themes emerged. Many departments cited the challenges presented by the growing number of courses taught by PTLs and NTTs who are less familiar, and in many cases, less invested in the assessment process. The SAS Undergraduate Education Office must provide guidance to departments as to how to engage faculty, non-tenure-track and tenure-track alike, in program assessment. Many responses also noted the impact of shifting enrollments, leaving some departments unable to run capstone courses for their majors due to lack of enrollment and others unable to staff enough such courses to meet demand. The SAS needs to work with departments to develop strategies for addressing these enrollment changes.

As a school, SAS has made remarkable advances in assessment of student learning outcomes, and we appreciate the impetus to continually reexamine the quality and success of the undergraduate education our students enjoy, and to address the array of challenges that have been identified by our departments as they move ahead with evidence-based decision-making processes in assessment and curriculum development.

In sum, the SAS uses assessment practices as an important tool in maintaining excellence in undergraduate education. SAS emphasizes sustainable, efficient, and authentic assessments that

2014-15 SAS Annual Assessment Report

provide valid practical information for decision-making about how to improve student learning outcomes and promoting a culture of continuous improvement based on evidence.

Submitted on Behalf of the SAS Assessment Committee, July 2015

Carolyn Moehling, Associate Dean for Undergraduate Education

Susan E. Lawrence, Convener

Assistant Dean for Assessment: Karen Dennis

Committee Members:

Dennis Bathory

Michael Beals

Karen Dennis

William Field

Paola Gambarota

Susan Lawrence

Carolyn Moehling

Larry Scanlon

Kathleen Scott

Kurt Spellmeyer

Michael Weingart

2014-15 SAS Annual Assessment Report

Appendix A: SAS Assessment Checklist Scoring

Assessment, AY 2014-15

SAS AVERAGE	Best Practices department Very good progress Making good progress Progress is slow or stalled - mid-year progress report (to be) requested 1.5- 1.0	Departments/Programs	AMESALL	Africana Studies	American Studies	Anthropology	Art History	Asian Languages & Cultures	Biological Sciences	Cell Biology & Neuroscience	Chemistry & Chemical Biology	Classics	Comparative Literature	Computer Science	Criminal Justice	Earth & Planetary Sciences	Economics	English	Exercise Science & Sports Studies	French	Genetics	Geography
			reports received	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		42																				
		Learning Goals																				
3		Clearly Defined	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
3		Publicly Posted	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
3		Aligned in Hierarchy of Learning Goals	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		Course Syllabi																				
2.8		Has learning goals	3	3	3	3	3	3	3	3	1.5	3	2.5	3	2.5	3	3	3	3	3	3	3
2.3		Identifies where goals are met	2.5	2	3	2	2.5	2	3	3	1.5	2	2.5	3	2.5	2	2	3	3	2	3	2.5
		Assessment plan structure and process																				
2.4		Efficient	2.5	3	2	2	3	2	3	3	1.5	2	3	2.5	3	2.5	2	2	2.5	2	3	2.5
2.5		Effective	2.5	3	2.5	2	3	3	3	3	1.5	2.5	3	2.5	3	2.5	2	2	2.5	2.5	3	2.5
2.6		Sustainable	3	3	2.5	3	3	2	3	3	2	2.5	3	2.5	3	2.5	2	3	3	2.5	3	3
3		Review Annually -- yes -- annual reports required	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		Assessment Tools and Measures																				
2.6		Some direct measures	2.5	3	3	2.5	3	1	3	3	1.5	3	3	2.5	3	3	2.5	3	3	3	3	2.5
2.5		Tools and Measures Appropriate to Goals	3	3	2	2	3	1	3	3	2	2.5	3	2.5	3	2.5	2	2	2	3	3	3
2.4		Produces reliable results for improvement	3	3	2	2	3	1	3	3	2	2	3	2	3	2.5	2	2	2	3	3	2.5
		Benchmark/Standards																				
2.4		Describes process and defines standards	2	2	3	2.5	3	3	3	3	1	2	1.5	2.5	3	2.5	2	2	2	2.5	3	3
2.4		Appropriately judges achievement of learning goals	2	3	2.5	2	3	2	3	3	1.5	2.5	3	2.5	3	2.5	2.5	2	2	2	3	3
		Assessment Implementation and Results																				
2.7		At least one direct measure of a primary learning goal	2.5	3	3	2.5	3	1	3	3	1.5	3	3	2.5	3	3	3	3	3	3	3	3
2.5		At least one indirect measure of a primary learning goal		3	3	3		1	3	3		2	3		3				2		3	
		Closing the loop activities																				
2.3		Describes process of review and implementation based on assessment information	2	2.5	3	2	2.5	3	3	3	1	2	1.5	2	3	1.5	2	2	3	2.5	3	2.5
2.4		Changes made based on review of results		2.5	3	2.5	3	3	3	3		2		1.5	3	2		2	2.5	2	3	3
2.5		Provides evidence of improved student learning based on implemented changes				2		3	3		2				2						3	
		Maintenance and Updating																				
2.0		Described process used to review and update learning goals			2																	
2.3		Learning goals updated in response to new information or requirements			2.5																	
			2.7	2.8	2.7	2.5	2.9	2.2	3.0	3.0	1.9	2.5	2.8	2.6	2.9	2.6	2.4	2.5	2.6	2.6	3.0	2.8
564		number of courses in Core Curriculum	32	2	10	13	8	17	14	0	10	9	26	6	2	11	2	55	1	17	14	17
204,032		Registrations, AY 2014-15	960	1,671	1,394	2,031	1,776	2,397	6,775	3,285	18,574	1,374	1,033	18,574	2,990	2,908	11,036	6,014	4,908	1,105	2,062	2,344
9,986		Number of majors in dept/program, AY 2014-15	5	56	33	160	70	80	1018	337	263	32	21	499	862	45	905	587	832	40	137	43

7/1/2015

majors not included:
5 European Studies
6 Medieval Studies

972 Biological Sciences
46 Biomathematics

note: Writing Program -
Core courses: 14
registrations: 15,308
majors: n/a

2014-15 SAS Annual Assessment Report



Appendix A: SAS Assessment Checklist Scoring

German	History	Italian	Jewish Studies	Latin American Studies	Latino & Hispanic Caribbean Studies	Linguistics	Marine & Coastal Sciences (SAS + SEBS)	Mathematics	Middle Eastern Studies	Molecular Biology & Biochemistry	Organizational Leadership	Philosophy	Physics & Astronomy	Political Science	Psychology	Religion	Russian & E. European Studies	Sociology	Spanish & Portuguese	Statistics	Women's & Gender Studies	Departments/Programs	
<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<div>Best Practices department3.0</div> <div>Very good progress2.5</div> <div>Making good progress2.0</div> <div>Progress is slow or stalled - mid-year progress report (to be) requested1.5-1.0</div>
																							42
																							Learning Goals
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	Clearly Defined
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	Publicly Posted
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	Aligned in Hierarchy of Learning Goals
																							Course Syllabi
3	1.5	3	3	3	3	3	3	3	2.5	3	3	2.5	2	1.5	2.5	1.5	3	3	3	2.5	3	3	Has learning goals
2	1.5	2.5	2	2	1.5	2.5	2	3	2	3	3	2	2	1.5	2	1.5	2	2.5	3	1.5	1.5	1.5	Identifies where goals are met
																							Assessment plan structure and process
2.5	2	3	1	2	1.5	2.5	2	3	1.5	3	3	2	3	2	3	2	2	2	3	2	2	2	Efficient
3	2.5	3	1	2.5	1.5	2.5	2.5	3	1.5	3	3	2	3	2.5	3	2	2	2	3	2	2.5	2.5	Effective
2.5	3	3	2	2	2	3	2	3	1.5	3	3	2	3	3	3	2.5	2	2	3	3	2.5	2.5	Sustainable
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	Review Annually -- yes -- annual reports required
																							Assessment Tools and Measures
2.5	3	3	1	3	1.5	3	2.5	3	1.5	3	3	2	3	3	3	2	2	2	3	2.5	2	2	Some direct measures
3	2	3	1	3	2	3	2.5	3	1.5	3	3	2	3	3	3	2	2.5	2	3	2	2.5	2.5	Tools and Measures Appropriate to Goals
3	2	3	1	3	2	3	2.5	3	1.5	3	3	2	3	2.5	3	1.5	2	2	3	2	2.5	2.5	Produces reliable results for improvement
																							Benchmark/Standards
3	3	2.5	1	2.5	1	3	3	3	1.5	3	2	2.5	2.5	2	2.5	1.5	2	2	3	2	2	2	Descriptive process and defines standards
3	2	3	1	3	1.5	2.5	3	3	1.5	3	3	2	3	2.5	3	2	2	1.5	3	2	2	2	Appropriately judges achievement of learning goals
																							Assessment Implementation and Results
3	3	3	1	3	2	3	3	3	1	3	3	2	3	3	3	2	2	2	3	3	3	3	At least one direct measure of a primary learning goal
	2			2.5	1.5				3		3		3		3		2	2	3	1.5	1.5	1.5	At least one indirect measure of a primary learning goal
																							Closing the loop activities
2.5	2	2.5	1.5	2.5	1.5	2.5	2	3		3	2	1.5	2.5	2.5	3	2	1.5	1.5	3	1.5	2	2	Describes process of review and Implementation based on assessment information
2.5	2	3	1	2.5		2.5	2	3		3	2	2	2.5	2.5	2.5	2	2.5	1.5	3	2	1.5	1.5	Changes made based on review of results
2	2.5	1						3		3	3		2						3				Provides evidence of improved student learning based on implemented changes
																							Maintenance and Updating
																							Described process used to review and update learning goals
																							Learning goals updated in response to new information or requirements
2.6	2.4	2.9	1.7	2.7	2.0	2.6	2.6	3.0	2.0	3.0	2.8	2.3	2.6	2.5	2.9	2.1	2.3	2.2	3.0	2.3	2.4	2.4	
10	67	19	17	2	8	4	2	18	17	5	2	18	14	9	11	19	9	10	12	5	20	20	number of courses in Core Curriculum
514	4,744	765	374	208	754	1,067	575	21,968	378	1,226	155	4,611	12,388	6,621	20,362	1,595	365	20,362	2,338	4,637	3,744	3,744	Registrations, AY 2014-15
32	453	35	5	14	15	115	14	381	36	198	n/a	180	223	742	1040	30	32	213	126	148	81	81	Number of majors in dept/program, AY 2014-15
	390 History											22 Statistics											
	63 History/French											56 Statistics/Math											
	63 History/PolSci											combined major (German, Russian & E. European Languages & Literatures)*											
* combined major (German, Russian & E. European Languages & Literatures)																							

2014-15 SAS Annual Assessment Report

Appendix B: Alignment of Department Learning Goals


URL (for better legibility) - http://sas.rutgers.edu/component/docman/doc_download/549-core-sas-a-university-learning-goals-aligned

<div>  <div> <div>CORE CURRICULUM</div> <div> <div>  </div> <div> RUTGERS UNIVERSITY LEARNING GOALS </div> </div> </div> </div>												
	Intellectual and Communication Skills					Understanding Human Behavior, Society, and the Natural Environment					Responsibilities of the Individual in Society	
	Critical Thinking	Communications	Mathematical Reasoning and Analysis	Scientific Inquiry	Information and Computer Literacy	Historical Understanding	Multi-cultural and International Understanding	Understanding Literary and Artistic Expression	Understanding the Bases of Individual and Social Behavior	Understanding the Physical and Biological World	Citizenship Education	Social and Ethical Awareness
21st CENTURY CHALLENGES	all majors										all majors	all majors
a. human differences	all majors						All Study Abroad programs African, Middle Eastern & South Asian Languages & Literature (AMNSALL) African Studies African Area Studies American Studies Anthropology Art History Asian Studies Chemistry Cognitive Science Crosscultural Literature Criminal Justice English European Studies French (Cultural Studies option) History Italian & Italian Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Linguistics Middle Eastern Studies Philosophy Political Science Psychology Religion Russian Language & Literature Sociology Spanish & Portuguese Women's & Gender Studies				All Study Abroad programs AMNSALL African Studies African Area Studies American Studies Anthropology Asian Studies Crosscultural Literature European Studies French (Cultural Studies option) Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Linguistics Middle Eastern Studies Philosophy Political Science Psychology Religion Russian & Portuguese Women's & Gender Studies	
b. multidisciplinary current global issue	all majors						AMNSALL African Studies African Area Studies American Studies Anthropology Asian Studies Crosscultural Literature European Studies French (Cultural Studies option) Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Linguistics Middle Eastern Studies Philosophy Political Science Psychology Religion Russian & Portuguese Women's & Gender Studies				AMNSALL African Studies African Area Studies American Studies Anthropology Asian Studies Crosscultural Literature European Studies French (Cultural Studies option) Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Linguistics Middle Eastern Studies Philosophy Political Science Psychology Religion Russian & Portuguese Women's & Gender Studies	
c. science and technology related to social issues	all majors			Anthropology Biological Sciences Cell Biology & Neuroscience Chemistry & Chemical Biology Cognitive Science Computer Science Earth & Planetary Sciences Genetics Geography Marine Sciences Molecular Biology & Biochemistry Physics & Astronomy Psychology Sociology Statistics & Mathematics					Anthropology Biological Sciences Cell Biology & Neuroscience Chemistry & Chemical Biology Cognitive Science Computer Science Earth & Planetary Sciences Genetics Geography Marine Sciences Molecular Biology & Biochemistry Physics & Astronomy Psychology Sociology Statistics & Mathematics		Anthropology Biological Sciences Cell Biology & Neuroscience Chemistry & Chemical Biology Cognitive Science Computer Science Earth & Planetary Sciences Genetics Geography Marine Sciences Molecular Biology & Biochemistry Physics & Astronomy Psychology Sociology Statistics & Mathematics	
d. social justice local and global	all majors						African Studies American Studies Anthropology Crosscultural Literature Criminal Justice European Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Middle Eastern Studies Philosophy Political Science Religion Sociology Women's & Gender Studies				African Studies American Studies Anthropology Crosscultural Literature Criminal Justice European Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Middle Eastern Studies Philosophy Political Science Religion Sociology Women's & Gender Studies	African Studies American Studies Anthropology Crosscultural Literature Criminal Justice European Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Middle Eastern Studies Philosophy Political Science Religion Sociology Women's & Gender Studies

2014-15 SAS Annual Assessment Report

Appendix B: Alignment of Department Learning Goals


URL (for better legibility) - http://sas.rutgers.edu/component/docman/doc_download/549-core-sas-a-university-learning-goals-aligned

CORE CURRICULUM	RUTGERS UNIVERSITY LEARNING GOALS												
	Intellectual and Communication Skills					Understanding Human Behavior, Society, and the Natural Environment					Responsibilities of the Individual in Society		
	Critical Thinking	Communications	Mathematical Reasoning and Analysis	Scientific Inquiry	Information and Computer Literacy	Historical Understanding	Cultural and International Understanding	Understanding Literary and Artistic Expression	Understanding the Basis of Individual and Social Behavior	Understanding the Physical and Biological World	Citizenship Education	Social and Ethical Awareness	
NATURAL SCIENCES	all majors			Anthropology Biological Sciences Biomathematics Cell Biology & Neuroscience Chemistry & Chemical Biology Cognitive Science Computer Science Earth & Planetary Sciences Exercise Science & Sport Studies Genetics Marine Sciences Molecular Biology & Biochemistry Physics & Astronomy Psychology Statistics & Biostatistics						Anthropology Biological Sciences Biomathematics Cell Biology & Neuroscience Chemistry & Chemical Biology Cognitive Science Computer Science Earth & Planetary Sciences Exercise Science & Sport Studies Genetics Marine Sciences Molecular Biology & Biochemistry Physics & Astronomy Psychology Statistics & Biostatistics			
e. basic principles & concepts	all majors												
f. assess evidence, methods, theory	all majors												
g. assess ethical & societal issues	all majors												Anthropology Biological Sciences Biomathematics Cell Biology & Neuroscience Chemistry & Chemical Biology Cognitive Science Computer Science Earth & Planetary Sciences Exercise Science & Sport Studies Genetics Marine Sciences Molecular Biology & Biochemistry Physics & Astronomy Psychology Statistics & Biostatistics
SOCIAL AND HISTORICAL ANALYSIS: shared goals	all majors												
h. human and societal across time & place	all majors												
i. assess evidence, methods, theory													
j. assess ethical issues	all majors												
HISTORICAL ANALYSIS	all majors				Africana Studies African Area Studies American Studies Anthropology Art History Asian Studies East Asian Languages & Area Studies English European Studies French (Cultural Studies option) Geography History Italian & Italian Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Medieval Studies Middle Eastern Studies Political Science Religion South Asian Studies Women's & Gender Studies					Africana Studies African Area Studies American Studies Anthropology Art History Asian Studies East Asian Languages & Area Studies English European Studies French (Cultural Studies option) Geography History Italian & Italian Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Medieval Studies Middle Eastern Studies Political Science Religion South Asian Studies Women's & Gender Studies			
k. analyze historical developments	all majors												
i. employ historical reasoning	all majors												
SOCIAL ANALYSIS	all majors						AMESALL		AMESALL		AMESALL		
m. theories of social organization	all majors						Africana Studies African Area Studies American Studies Anthropology Asian Studies Comparative Literature Criminal Justice Economics European Studies Geography History Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Middle Eastern Studies Political Science Psychology Religion Sociology South Asian Studies Women's & Gender Studies		Africana Studies African Area Studies American Studies Anthropology Asian Studies Comparative Literature Criminal Justice Economics European Studies Geography History Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Middle Eastern Studies Political Science Psychology Religion Sociology South Asian Studies Women's & Gender Studies		Africana Studies African Area Studies American Studies Anthropology Asian Studies Comparative Literature Criminal Justice Economics European Studies Geography History Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Middle Eastern Studies Political Science Psychology Religion Sociology South Asian Studies Women's & Gender Studies		
n. application of social analysis													

2014-15 SAS Annual Assessment Report

Appendix B: Alignment of Department Learning Goals


URL (for better legibility) - http://sas.rutgers.edu/component/docman/doc_download/549-core-sas-a-university-learning-goals-aligned

CORE CURRICULUM		RUTGERS UNIVERSITY LEARNING GOALS										
	Intellectual and Communication Skills					Understanding Human Behavior, Society, and the Natural Environment					Responsibilities of the Individual in Society	
	Critical Thinking	Communications	Mathematical Reasoning and Analysis	Scientific Inquiry	Information and Computer Literacy	Historical Understanding	Cultural and International Understanding	Understanding Literature and Artistic Expression	Understanding the Basis of Individual and Social Behavior	Understanding the Physical and Biological World	Citizenship Education	Social and Ethical Awareness
ARTS AND HUMANITIES	all majors											
o. philosophical and theoretical issues	all majors						AMESALL American Studies Art History Cinema Studies Cognitive Science Comparative Literature English Jewish Studies Linguistics Medieval Studies Middle Eastern Studies Philosophy Psychology Religion Russian & E Euro Lang & Lit Women's & Gender Studies	AMESALL American Studies Art History Cinema Studies Cognitive Science Comparative Literature English Jewish Studies Linguistics Medieval Studies Middle Eastern Studies Philosophy Psychology Religion Russian & E Euro Lang & Lit Women's & Gender Studies			AMESALL American Studies Art History Cinema Studies Cognitive Science Comparative Literature English Jewish Studies Linguistics Medieval Studies Middle Eastern Studies Philosophy Psychology Religion Russian & E Euro Lang & Lit Women's & Gender Studies	
p. arts and literatures	all majors						All language and literature majors, see next entry Africana Studies American Studies Art History Asian Studies Cinema Studies Classics Comparative Literature English Jewish Studies Latino & Hispanic Caribbean Studies Medieval Studies Middle Eastern Studies Religion Women's & Gender Studies	All language and literature majors, see next entry Africana Studies American Studies Art History Asian Studies Cinema Studies Classics Comparative Literature English Jewish Studies Latino & Hispanic Caribbean Studies Medieval Studies Middle Eastern Studies Religion Women's & Gender Studies			All language and literature majors, see next entry Africana Studies American Studies Art History Asian Studies Cinema Studies Classics Comparative Literature English Jewish Studies Latino & Hispanic Caribbean Studies Medieval Studies Middle Eastern Studies Religion Women's & Gender Studies	
q. nature of languages	all majors						AMESALL African Area Studies Anthropology Asian Studies East Asian Lang & Area Studies Classics English French German Italian & Italian Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Linguistics Medieval Studies Middle Eastern Studies Russian & East Euro Lang & Lit Spanish & Portuguese	AMESALL African Area Studies Anthropology Asian Studies East Asian Lang & Area Studies Classics English French German Italian & Italian Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Linguistics Medieval Studies Middle Eastern Studies Russian & East Euro Lang & Lit Spanish & Portuguese			AMESALL African Area Studies Anthropology Asian Studies East Asian Lang & Area Studies Classics English French German Italian & Italian Studies Jewish Studies Latin American Studies Latino & Hispanic Caribbean Studies Linguistics Medieval Studies Middle Eastern Studies Russian & East Euro Lang & Lit Spanish & Portuguese	
r. critical creative expression	all majors							Cinema Studies English				

2014-15 SAS Annual Assessment Report

Appendix B: Alignment of Department Learning Goals

URL (for better legibility) - http://sas.rutgers.edu/component/docman/doc_download/549-core-sas-a-university-learning-goals-aligned

CORE CURRICULUM	 UNIVERSITY LEARNING GOALS											
	Intellectual and Communication Skills					Understanding Human Behavior, Society, and the Natural Environment					Responsibilities of the Individual in Society	
	Critical Thinking	Communications	Mathematical Reasoning and Analysis	Scientific Inquiry	Information and Computer Literacy	Historical Understanding	Cultural and International Understanding	Understanding Literary and Artistic Expression	Understanding the Basics of Individual and Social Behavior	Understanding the Physical and Biological World	Citizenship Education	Social and Ethical Awareness
WRITING AND COMMUNICATION												
s-1. standard written English	all majors	all majors -- writing and discipline specific communication skills are in required in all majors										
s-2. editorial feedback and revision	all majors											
t. effective in an area of inquiry or discipline	all majors											
u. critically evaluate & correctly cite sources	all majors											
v. synthesize multiple sources - new insights	all majors											
QUANTITATIVE AND FORMAL REASONING												
w. use quantitative information	all majors		Anthropology Biological Sciences Biomathematics Cell Biology & Neuroscience Chemistry & Chemical Biology Cognitive Science Computer Science Earth & Planetary Sciences Economics Exercise Science & Sport Studies Genetics Geography Linguistics Marine Sciences Mathematics Molecular Biology & Biochemistry Philosophy Physics & Astronomy Political Science Psychology Sociology Statistics & Biostatistics									
x. mathematical or formal reasoning	all majors											
INFORMATION TECHNOLOGY AND RESEARCH	all majors											
y. employ for research and communication	all majors				all majors -- research and critical assessment of sources across platforms is required in all majors							
z. assess information from technology use	all majors											
aa. principles of information systems	all majors											

2014-15 SAS Annual Assessment Report

Appendix C: Summary – SAS Departments, Program Assessment Reports

SAS: Summary of Department Assessment Reporting	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
number of SAS departments	38	42*	42*	42*	42*	42*
learning goals articulated - see SAS Undergraduate Program Learning Goals ⁶	92% (35)	100% (42)	100% (42)	100% (42)	100% (42)	100% (42)
annual assessment report submitted	18% (7)	98% (41)	93% (39)	95% (40)	98% (41)	100% (42)
how departmental student learning outcomes (SLO) are assessed specified ⁷	18% (7)	60% (25)	93% (39)	95% (40)	95% (39)	95% (39)
assessment results provided ⁸	16% (6)	33% (14)	62% (26)	64% (25)	93% (38)	93% (38)
response to/use of assessment results (e.g., curriculum modifications, pedagogic adjustments, recalibration of prerequisites) outlined	8% (3)	33% (14)	71% (30)	90% (35)	90% (37)	86% (36)
plans/schedule for going forward included ⁹	16% (6)	98% (39)	93% (39)	95% (37)	90% (37)	76% (32)

**Includes the joint SAS/SEBS major in Marine Science*

⁶ On SAS Undergraduate Education website, at http://sas.rutgers.edu/component/docman/doc_download/532-sas-learning-goals

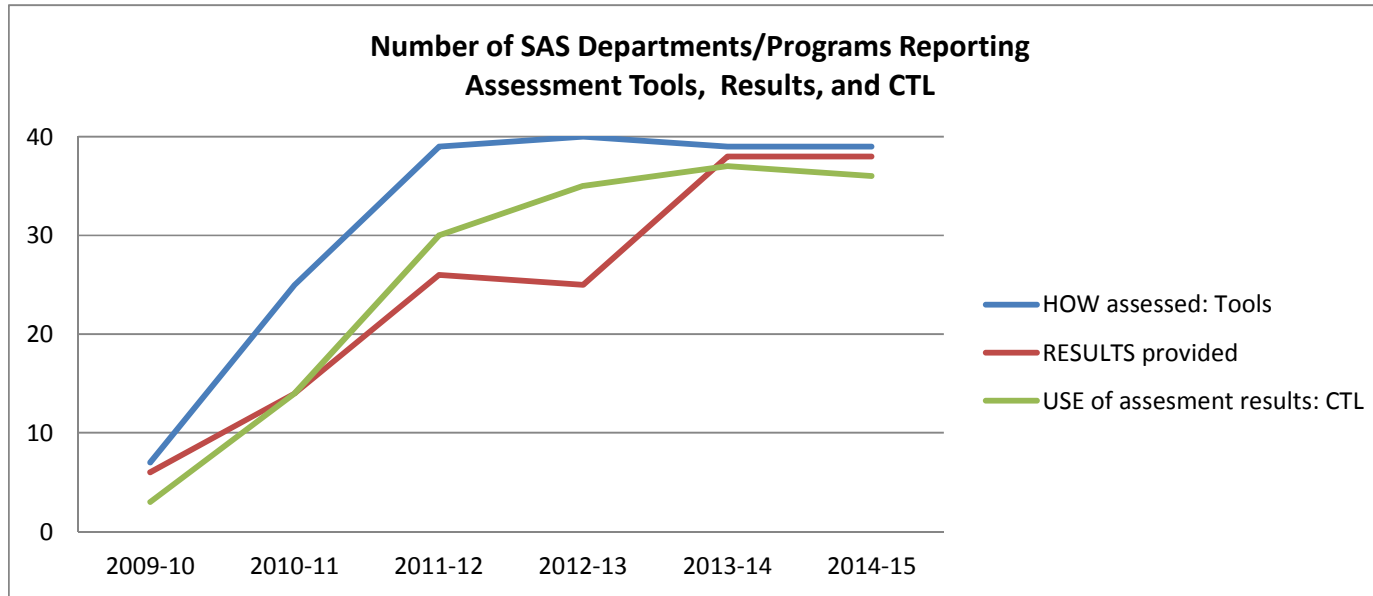
⁷ See “Assessment tools and measures...appropriate to goals”: scoring ≥ 2.0

⁸ See “Assessment Implementation and Results”: scoring ≥ 2.0 on direct measure of a goal

⁹ See “Closing the Loop activities”: scoring ≥ 2.0

2014-15 SAS Annual Assessment Report

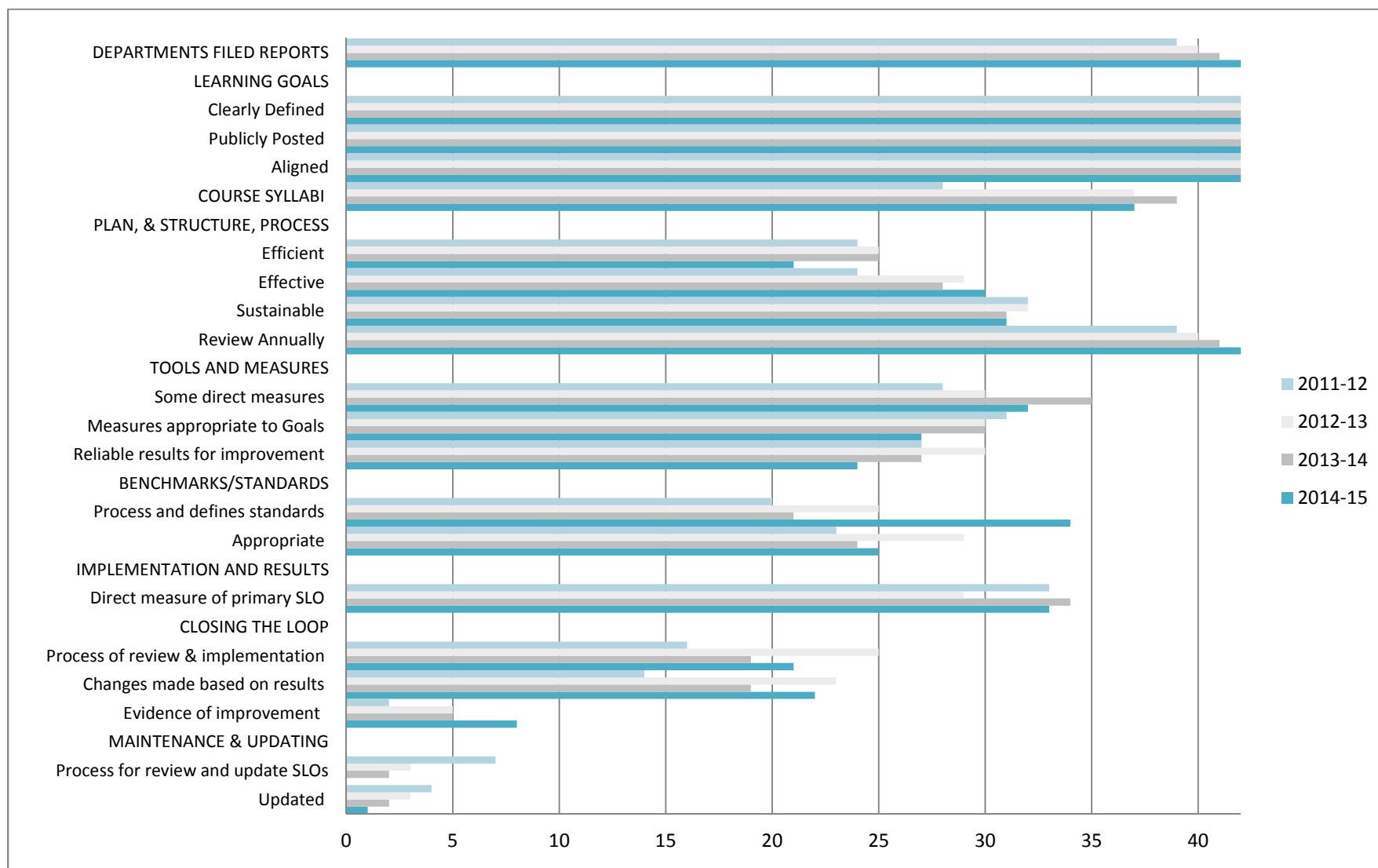
Appendix C: Summary – SAS Departments, Program Assessment Reports



2014-15 SAS Annual Assessment Report

Appendix D: Academic Years 2011-12, 2012-13, 2013-14 and 2014-15

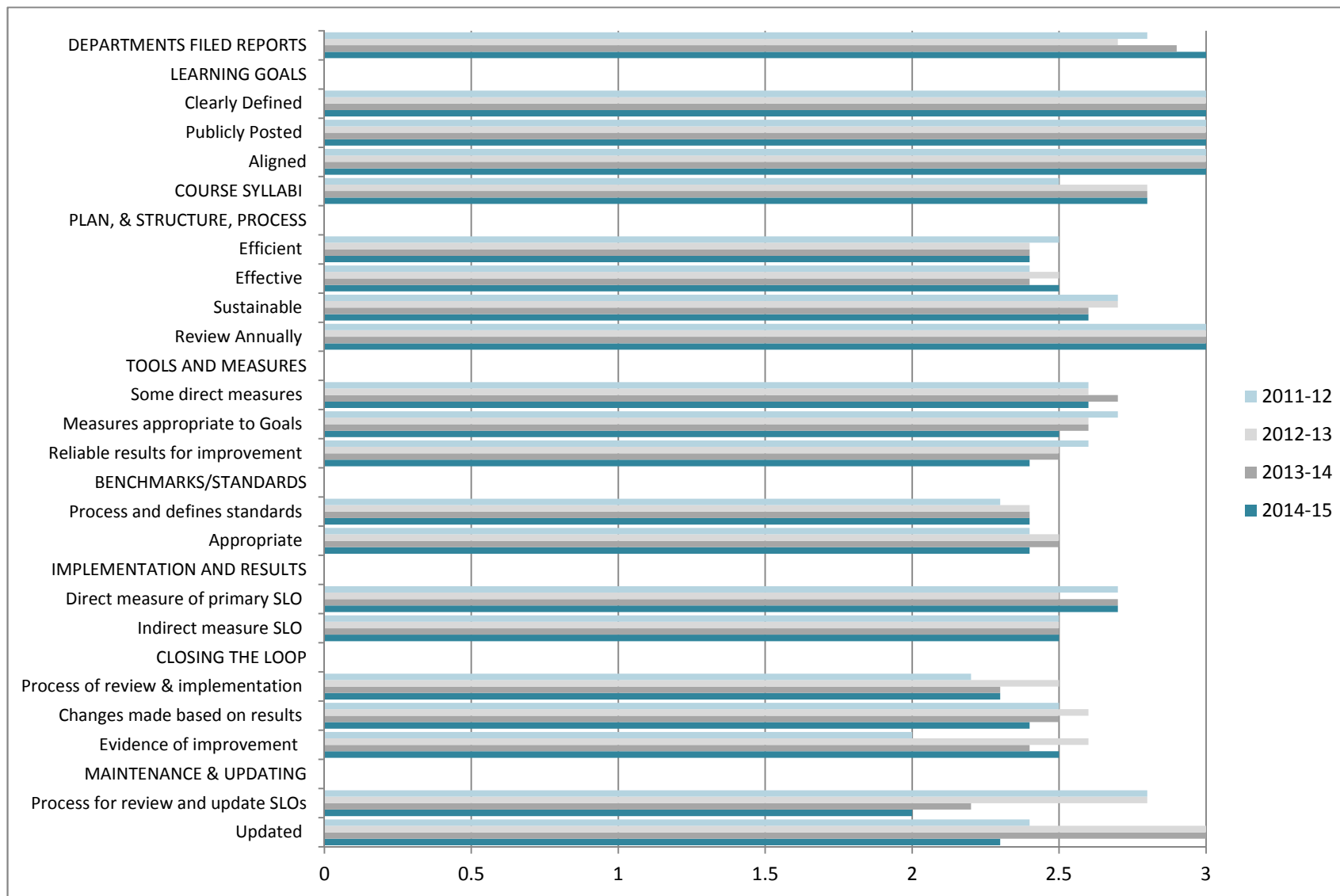
Number of SAS Departments Scoring ≥ 2.5 ('making very good' to 'exemplary' progress)



2014-15 SAS Annual Assessment Report

Appendix D: Academic Years 2011-12, 2012-13, 2013-14 and 2014-15

Average of SAS Department Scores



Appendix E: Closing The Loop Changes Made or Planned by Departments

39 SAS department have reported that they have made, or are planning to make, changes designed to improve student learning by addressing concerns revealed by their assessment data. Please note that a number of these were not scored in the ECA chart as a “Modification/refinement of pedagogy, curriculum, assessment tool, or learning goal based on assessment results,” because they have not yet been implemented.

African, Middle Eastern & South Asian Languages & Literatures (AMESALL)

- CTL action – modified curriculum requirements, and developed new capstone course with content & assessment plan based on SLOs for program learning goals; plan direct assessment, using program rubric, in this capstone when enrollment permits.

Africana Studies

- CTL action – piloting curriculum and/or course changes: new mentoring course option developed in conjunction with Future Scholars Program to link program majors with high school students for academic skills development; will analyze outcomes of this pilot and recommend possible permanent revision to program curriculum.

Terms

Benchmark –the baseline level of performance that would qualify as “satisfactory.”

Capstone – used inclusively to refer to either a capstone course or another culminating experience/sequence.

CTL –“closing the loop,” e.g., taking specified action(s) in response to assessment results.

American Studies

- CTL action – implemented curriculum and/or course changes: added new 300-level course to major/minor requirements, designed in consultation with writing tutor to improve SLOs for foundational knowledge and writing, communication goals; plan follow-up re-assessment of SLOs for program learning goals.
- CTL action – plan additional curriculum and/or course changes: revisions to course content and delivery of all required courses to improve SLOs for global competency learning goal, currently primarily delivered in elective courses.

Anthropology

- CTL action – implemented curriculum and/or course changes: revisions to course planning process, scheduling frequency, course content and delivery to improve alignment with SLOs for research experience goal, and facilitate timely progress to graduation, in all program tracks.
- CTL action – implemented changes to instructional support and allocation policies, to increase faculty mentoring of research experience options in all program tracks.
- CTL action – implemented changes to advising process and materials to improve SLOs, timely progress through required curriculum: course plans published on department website, in conjunction with course registration process.
- CTL action – collaborated with other departments and Schools to develop new interdisciplinary certificate and minor programs, aligned with program goals for methodology and knowledge

Appendix E: Closing The Loop Changes Made or Planned by Departments

development: certificate in Evolutionary Medicine (with SEBS), minor in Visual Anthropology (with MGSA), minor in Environmental Studies (with Geography).

- CTL action – implemented new social media outreach for majors, alumni; in response to student feedback, plan series of workshops as of next academic year to communicate about program options, research opportunities, readiness for graduate study, other post-graduate career goals.

Art History

- CTL action – plan curriculum and/or course changes: to address identified weaknesses in SLOs for research and writing skills directly assessed at 300-level of required curriculum, will focus on these program learning goals in planned revisions to entry-level (100-) courses of program.

Asian Languages & Cultures

- CTL action – have considered design and/or content coverage of similar undergraduate degree programs in comparable departments (CIC member institutions) to inform analysis, decision-making, and CTL actions for curriculum and course development in current academic year.
- CTL action – developed strategic plan for curriculum and/or course changes: revisions to course content, sequencing, requirements for all major and minor options; revisions to course scheduling frequency to improve timely progress through program requirements. Plan follow-up re-assessment of SLOs for program learning goals.
- CTL action – plan to research use of either an objective external metric (internationally-normed tests, not specified) as part of the assessment of SLOs for program language acquisition goal, or to develop customized in-house assessment tool(s) based upon those standards.

Biological Sciences

- CTL action – implemented curriculum and/or course changes: revised course content, design and delivery in entry-level courses to better align with and assess program goal SLOs; revisions to instructional preparation associated with revised content implementation; plan additional content and delivery revisions to improve SLOs in next academic year.
- CTL action – plan additional curriculum and/or course changes: revisions to course content and delivery in entry-level courses to better align with program research goal SLOs in successive advanced courses of required curriculum, with formative assessment intent.
- CTL action – implemented changes to assessment process and/or tool(s): revisions to direct measures, standardization of exam items and assessment processes to improve rigor, inter-rater reliability. Plan additional changes in next academic year to align assessment rubrics across multiple levels of curriculum for common research goal SLOs, in formative direct assessment process.
- CTL action– plan additional changes to assessment process and/or tool(s): revisions to instructor preparation and implementation training, resources and documentation to improve inter-rater reliability and coordination of course delivery and assessments.

Appendix E: Closing The Loop Changes Made or Planned by Departments

- CTL action – implemented system for integrating assessment results into program advising process, creating ‘early-warning’ system for SAS and SEBS first-year advisors to improve student academic achievement, progress through program requirements.

Cell Biology & Neuroscience

- CTL action – implemented curriculum and/or course changes: content and delivery revisions in capstone-level courses to improve SLOs for program learning goals; plan follow-up re-assessment in next academic year.
- CTL action – plan modifications to direct assessment process and tools: follow-up on previously-proposed integration of CBN program rubrics as tool in Sakai, with additional analysis features, to encourage implementation of program goals assessments in even more CBN courses.
- CTL action – plan implemented revisions to indirect assessments (exit survey) to improve specificity of student feedback; plan further refinements in next academic year.

Classics

- CTL action – implemented changes to assessment process and/or tool(s): for all graduating seniors, including in new non-thesis Honors track, replaced exam –based assessments with review of portfolio of papers, scored on uniform criteria for program SLO goals.
- CTL action – to increase student participation rates in study abroad co-curricular options, aligned to SLOs of program learning goals, implemented new working group/committee to improve allocation of funding and increase student access to such programs.
- CTL action – implemented curriculum and/or course changes: developed guidelines for course content, design and delivery format to align standards for online and face-to-face sections.
- CTL action – implemented changes to instructional development and coordination to improve delivery of online content, with follow-up re-assessment of SLOs for program learning goals.
- CTL action– plan changes to advising processes and instructional outreach to students in next academic year to improve SLOs for program writing and communication goals by more effectively communicating criteria for satisfactory achievement in their work.

Computer Science

- CTL action – plan curriculum and/or course changes: to improve SLOs for program goals, student progress through and preparation for successive courses in required curriculum, plan revisions to course content, course sequencing (pre-requisite chains); major/minor requirements.

Criminal Justice

- CTL action – developed curriculum and/or course changes: in consultation with Chemistry department, developed new forensics track within major, with new course design and content, new curriculum sequence and requirements, to expand and improve SLOs, professional preparation for additional post-graduate career options.

Appendix E: Closing The Loop Changes Made or Planned by Departments

- CTL action – plan changes to assessment process and/or tool(s): to improve inter-rater reliability in assessment results across multiple sections at entry (200- level) to required curriculum, plan changes to instructional training and coordination; revisions to assessment prompts
- CTL action - plan follow-up re-assessment of SLOs with modified processes and instruments at entry- and capstone-levels of program, results to be analyzed and reported on by assessment working group/committee.
- CTL action –to increase student participation in honors track of program, and augment SLOs for post-graduate professional development goal, added new networking and development option for majors, alumni: formed chapter of national honors society for discipline/profession.

Earth & Planetary Sciences

- CTL action –implemented curriculum and/or course changes: to improve SLOs for program learning goals, revised requirements for student progression through major course sequence (minimum GPA); revised major/minor requirements: developed new capstone course.

Economics

- CTL action –plan changes to curriculum and/or courses: to improve SLOs in culminating courses (300-level) of program, and comparability of results from direct assessments, plan to develop recommendations, guidelines for exam questions aligned to each program learning goal to serve as assessment prompts in next academic year.
- CTL action – plan changes to assessment process and/or tool(s) in next academic year: follow-up re-assessment in 300-level courses with revised assessment prompts, results to be analyzed and reported in next academic year.

English

- CTL action – plan changes to assessment process and/or tools: due to observed mismatch of Core rubrics with program goal SLOs, will consult with Writing Program on rubrics used in courses at comparable levels of curriculum to develop more effective tools.
- CTL action – plan faculty meeting(s) on SLOs for program learning goals, to focus on contributions of course content and delivery to student achievement of these, involve faculty more effectively in assessment processes across the revised required curriculum.

Exercise Science & Sport Studies

- CTL action – plan curriculum and/or course changes: revisions to Sciences track options in major, eliminating content duplication and simplifying student paths to timely graduation, to become effective as of AY 215-16.
- CTL action – plan curriculum and/or course changes: will recommend adoption of minimum GPA requirements for progress to successive courses of the required curriculum, to address weaknesses in assessment results for content knowledge goals.

Appendix E: Closing The Loop Changes Made or Planned by Departments

- CTL action – implemented changes to assessment process and/or tool(s) to improve response rates and assess a more comprehensive sample of graduating majors, including expansion to summer session internships.
- CTL action –plan changes to assessment process and/or tool(s): will add **indirect** assessment(s) aligned with existing **direct** assessment instrument (supervisor surveys) at capstone level – exit survey of student interns on contributions of program curriculum to academic achievement of program learning goals, readiness for post-graduate outcomes.

French

- CTL action – plan changes to course content and associated assessment process in next academic year: implement final paper rather than exam, to better prompt students to demonstrate SLOs for program critical analysis and language proficiency goals.
- CTL action – plan repeat of pilot direct assessment at capstone level in next academic year, follow-up re-assessment of SLOs with modified process – results to be analyzed and reported on by assessment working group in next academic year.

Genetics

- CTL action – implemented revisions to program advising structure, processes and tools: student advising materials and website revisions; increasing number of faculty advisors to clarify major requirements, better monitor student progress through the required curriculum and courses; plan follow-up re-assessment of SLOs for program learning goals.
- CTL action – plan curriculum and/or course changes: are consulting with English on course development to improve SLOs for writing and communication program learning goals.

German

- CTL action – plan changes to assessment process and/or tool(s): will analyze and revise language placement exam on ongoing basis, to maintain reliability, validity over time, improve match to language proficiency goal SLOs in successive courses of required curriculum
- CTL action – plan changes to assessment process and/or tool(s): plan **direct** assessments in additional 300- and 400-level courses, using pilot content knowledge and analysis rubrics, to develop additional customizations/revisions linked to program goal SLOs.

Geography

- CTL action – implemented changes to assessment process and/or tool(s): to improve direct assessment for SLOs of program learning goals, added clarifying instructions/ scoring guides for implementation of program rubrics, piloted in this academic year.
- CTL action – as part of scheduled assessment of Global Cultures track in next academic year, plan to identify specific program goals achieved in each course of required curriculum, to outline a curriculum map for the track, and improve assessment of goal SLOs.

Appendix E: Closing The Loop Changes Made or Planned by Departments

- CTL action - plan to implement this analysis and curriculum map development in each of the program tracks in successive years of ongoing 3-year program assessment cycle, to be analyzed and reported on by assessment working group/committee.

History

- CTL action – implemented curriculum and/or course changes: developed new required 200-level course (History Workshop) as part of revised major, to improve SLOs for critical analysis learning goals in upper-level courses.

Italian

- CTL action – implemented curriculum and/or course changes: course content and format of capstone revised to improve SLOs for professional preparation, research and application goals: research symposium added, with student presentations of research.
- CTL action – implemented curriculum and/or course changes: revised content requirements for all 300- and 400- literature and culture courses of required curriculum, to address weaknesses in SLOs for professional preparation, research and application goals. Plan expansion to new course offerings.
- CTL action – developing curriculum and/or course changes: plan design of new course sequence for literature and culture courses within major/minor; will make recommendations to faculty and follow up in next academic year.

Latin American Studies

- CTL action – plan curriculum and course revisions, improved faculty coordination, to augment SLOs of program learning goals across all 400-level courses.
- CTL action – plan changes to assessment process and/or tool(s) in next academic year: in response to enrollment trends that allow offering the capstone course only in alternate years, will implement direct assessment(s) across 400- level of curriculum in next academic year, to be scored on uniform criteria in multiple courses (program rubric).

Latino & Hispanic Caribbean Studies

- CTL action – implemented curriculum and/or course changes: new minor program, reflecting revisions to major implemented in AY 2013-14; revisions to course content, sequencing (pre-requisites).

Linguistics

- CTL action – implemented curriculum and/or course changes: revised major requirements, course sequencing; developed new capstone course (400-level) to improve SLOs for research, analysis and application learning goals for all majors, modeled on existing Honors seminars.
- CTL action – plan changes to assessment process and/or tool(s) in next academic year: plan to revise faculty instructional workshop to incorporate program learning goals assessment, encourage implementation across the curriculum.

Appendix E: Closing The Loop Changes Made or Planned by Departments

Marine & Coastal Sciences (SAS & SEBS)

- CTL action –plan curriculum and/or course changes: revisions to scheduling frequency of required course at 300-level of program curriculum to alleviate demand issues, improve timely progress and SLOs for research analysis goal; plan additional revisions to align course content and instructional delivery more effectively across program curriculum.
- CTL action– plan changes to assessment process and/or tool(s): consultation with all department faculty on revisions to pilot rubric and assessment implementation, with follow-up re-assessments in next academic year.

Mathematics

- CTL action – implemented changes to assessment process and/or tool(s): workshop problems rather than common exam items used as assessment prompts for capstone-level **direct** assessments. Based on analysis of results from current academic year, plan to return to using common test items for next academic year.
- CTL action – implemented changes to assessment process and/or tool(s): analysis of final exam data in largest course offered as entry-level prerequisite for multiple majors/minors, multiple SAS departments, identified patterns of poor SLOs across all sections, and section-specific issues. Course-wide and instructor-specific feedback provided for SLO improvement.
- CTL action – implemented changes to assessment process and/or tool(s): in response to faculty feedback, analyzed course grades in successive courses of required curriculum (300-level courses of capstone sequence) to identify areas for corrective action; plan follow-up re-assessment.
- CTL action – implemented changes to TA instructional development process and tools, to improve coordination and consistency in delivery, improve SLOs on program learning goals in all undergraduate courses; follow-up re-assessment planned in next academic year.
- CTL action – added course sections, revised course content delivery formats to improve SLOs for program goals; alignment of course availability with student need, to improve timely progress to graduation.
- CTL action – implemented changes to assessment process and/or tool(s): involving most department faculty in modified classroom observation process for all department lecturers; implemented new online reporting of observations, also gathering teaching availability and course preference information to improve scheduling and hiring process, linked to improving student progress through required curriculum.
- CTL action and Post-CTL improvements - in response to revisions of special permission processes, improvements noted in access to required courses, timely progress through curriculum sequence and to completion. Implemented further extension of this program in current academic year.

Middle Eastern Studies

- CTL action – plan curriculum and/or course changes: revision to major requirements; new capstone-level methods course for majors, to improve SLOs for program research goal.

Appendix E: Closing The Loop Changes Made or Planned by Departments

- CTL action – implemented curriculum and/or course changes: revisions to major/minor requirements, new course development to add new program option (Islamic Art and Architecture), aligned to content knowledge learning goal, in collaboration with other departments and Zimmerli Art Museum.

Molecular Biology & Biochemistry

- CTL action– implemented changes to course content & delivery, sequencing (pre-requisites); major requirements; follow-up re-assessment found SLO improvements for program research, analysis and communication goals.
- CTL action – implemented revised program advising process to improve student participation in revised sequence of 200- and 300-level research courses, to improve preparation for and SLOs in successive research lab experiences.
- CTL action – plan additional curriculum and/or course changes: scheduling, content and format revisions, and new course development at 200- through 400-levels of curriculum, to facilitate timely progress to graduation, improve alignment with program goals SLOs and evolving standards of the discipline.
- CTL action and Post-CTL improvements - implemented curriculum and/or course changes: piloted revised course content & delivery at capstone level in Honors track, with addition of weekly writing seminars to improve SLOs for program goals for written and oral presentation of research. Based on follow-up re-assessment, plan to expand similar enhanced content to other courses of required culminating sequence for all majors in next academic year.

Organizational Leadership

- CTL action –implemented curriculum and/or course changes: revised course content and delivery in courses at 200-, 300- and 400-level of required sequence to improve SLOs for program theory goal. Improvements found in SLOs for theory goal in follow-up direct assessment at capstone level.

Philosophy

- CTL action –implemented curriculum and/or course changes: revision to course content, delivery, and format (hybrid and online sections) at entry (100-) level of required curriculum, to improve access, academic progress for majors and non-majors in SLOs for foundational knowledge program goals; plan additional content and delivery revisions in next academic year, in collaboration with Chemistry department.
- CTL action – plan changes to assessment process and/or tool(s): will research direct assessment processes, tools, and practices in own and related disciplines; make recommendations to department faculty concerning possible revisions to be implemented going forward.

Physics & Astronomy

- CTL action – implemented curriculum and/or course changes: revised course content and delivery at entry (100-) level of required curriculum with group-learning exercises, discovery-based labs with student design of experiments

Appendix E: Closing The Loop Changes Made or Planned by Departments

- CTL action – plan additional curriculum and/or course changes: based on follow-up re-assessments of program goal SLOs in revised entry-level courses, plan course content revisions to additional course(s) as of next academic year, with possible additional revisions to course delivery format.

Political Science

- CTL action – implemented changes to assessment process and/or tool(s): systematized sampling of research papers across multiple capstone-level courses, to better capture the range of SLOs on program goals in repeat direct assessment.
- CTL action – recommending curriculum and/or course changes: revisions to course content and/or delivery, major requirements, to improve consistency of requirements across seminars, better distinguish those in which SLOs for program goals are achieved and can be assessed.
- CTL action: implemented revisions to one or more program learning goals, to more closely align curriculum and goals, and improve implementation of direct assessments of SLOs.

Psychology

- CTL action – plan changes to assessment process and/or tool(s): development of additional test items in specified sub-disciplines to better match instrument to paths through program curriculum.
- CTL action – plan curriculum and/or course changes: considering research methods course as pre-requisite to major declaration, to improve SLOs for program goals in required curriculum.

Religion

- CTL action – plan curriculum and/or course changes: development of theory and methods course(s), revised major/minor requirements; follow-up re-assessment of SLOs for program learning goals.
- CTL action – plan revisions to instructional development process to improve focus on program learning goals in course design and delivery; follow-up re-assessment of SLOs to be implemented as part of outlined assessment plan.

Russian & East European Languages & Literatures (REELL)

- CTL action – implemented curriculum and/or course changes: to improve SLOs for program goals, and timely progress through required curriculum, revised major requirements, course sequencing and pre-requisites.
- CTL action – implemented curriculum and/or course changes: new capstone-level course designed with primary focus on language proficiency goal, aligned with other program goal SLOs, and aimed at integration of study abroad learning experiences into curriculum and assessment process.

Sociology

- CTL action – implemented curriculum and/or course changes: revised course content, sequencing, minor requirements (Criminology), to differentiate degree options, improve alignment with faculty expertise, student progress to graduation, and SLOs for program goals.

Appendix E: Closing The Loop Changes Made or Planned by Departments

- CTL action –implemented curriculum and/or course changes to increase participation in co-curricular elements linked to program learning goals- internships, Honors and other research courses/projects; direct assessment of co-curricular options to be reviewed in future academic year.
- CTL action – plan changes to assessment process and/or tool(s): to shift focus from **indirect** to **direct** assessments, have begun identifying embedded elements in required courses as assessment prompts for SLOs of program learning goals; to be continued in next academic year.

Spanish & Portuguese

- CTL action – implemented curriculum and/or course changes: course content revision at 300-level of required curriculum to improve SLOs for research and methods goals (library research workshops). Follow-up re-assessments suggest need for further revisions to curriculum sequencing and course content, to be considered in next academic year.
- CTL action – revised course content/delivery: online co-curricular support, piloted in prior academic year, implemented in all sections of entry-level (100-) language acquisition courses in this academic year.
- CTL action – revised content/delivery in entry-level (100-) language acquisition courses in this academic year: added language labs and other evaluative exercises to increase oral participation, with follow-up re-assessment of SLOs.
- CTL action – implemented curriculum and/or course changes: course design, delivery and format revisions (200-level); revision of major/minor pre-requisites sequencing for heritage speakers to improve SLOs, timely progress to completion.
- CTL action – plan additional curriculum and/or course changes: addition of capstone requirement to improve SLOs for critical thinking and application program goals; have formed faculty working group to develop course design with these program goals in mind, in AY 2015-16.
- CTL action – implemented revisions to program advising process: coordinators assigned to required courses certified in Core goals aligned to program goals; plan to analyze Core assessments more closely to identify items for future CTL actions to improve SLOs on these goals.

Statistics

- CTL action – implemented curriculum and/or course changes: revisions to sequencing (pre-requisites) and requirements for entry to major; plan follow-up re-assessment of SLOs for program learning goals.
- CTL action – consulted with partner department (Mathematics) on SLOs for program goals, revisions to course content/delivery to address identified issues: SLOs for theory and application goals; compression of scheduling demand due to late declaration of major; possible revisions to course content/delivery, sequencing (pre-requisites), shared courses of the required curriculum.

Women's & Gender Studies

- CTL action – implemented changes to assessment process to increase faculty involvement with implementation and analysis of assessment of SLOs for program learning goals.

Appendix E: Closing The Loop Changes Made or Planned by Departments

- CTL action – plan changes to advising and process and/or tool(s) to clarify program requirements and structure, improve student timely progress and academic achievement in subsequent courses; improve student participation on co-curricular elements of culminating experience (internships) linked to program learning goals.

Appendix F: Evidence of Improvement Based on Changes Made in Response To Earlier Assessment Results

Art History

CTL Action: based on prior assessment results, the following actions were planned:

- curriculum and/or course changes: content requirements revised in capstone-level courses (junior/senior seminars), to improve SLOs of program learning goals in alignment with Core goals: research skills, Writing and Communication in the Discipline (WCD).

From 2014-15 Report: results of follow-up re-assessment of SLOs for program learning goals show post-CTL improvements, and areas for further action:

“This year’s results are the second year of the second three-year cycle of assessment devised by the Curriculum Committee appointed from faculty members in the art history department. Whereas, the results reflect the improvements in the areas of Critical Thinking and Visual Analysis that we saw in last year’s assessments, both the Use of Appropriate Sources and the students’ ability to construct a historical/theoretical argument declined. The percentage of students demonstrating “no competence” in these areas was at just above 8% of the total number of students assessed. Whereas the results remain positive, we are concerned about the ability of students to write effectively and to construct an argument in 300-level courses. The students taking the Capstone seminar in art history, however, demonstrated a commendable command of these skills.”

“Our hope is that the assessments will show continuing improvement and/or remain high in the areas of critical thinking and visual analysis. Our hope is also that the decline this past fall in students’ ability to construct a historical/theoretical argument and to use appropriate sources was a result of the particular group of incoming students’ preparation in written expression and research skills. However, if this number remains lower than we would like, we will need to implement a greater emphasis on written expression, followed by instructors’ corrections, in our 100-level courses. Given the fact that we are in the process of significantly revising our art history survey, this will be a good opportunity to reflect on the writing component we will expect to include in Art History 105 and 106.”

Biological Sciences

CTL Action: based on prior assessment results, the following actions were planned:

- Changes to curriculum and/or courses: revisions implemented to course content, design and delivery in 100-level courses at entry point of multiple majors (DLS and others to better align with and assess program goal SLOs; implemented revisions to instructional preparation for implementation and assessment of revised content.

From 2014-15 Report: results of follow-up re-assessment of SLOs for program learning goals show post-CTL improvements, and areas for further action:

“119:115 & 116: We are very pleased to have seen improvements in our achievements of student learning outcomes I and IV, as compared to last year. Following our full implementation of the course transformation (2013/2014), which included changes in course rigor, we have had an opportunity to go through one cycle of assessment, which has been enormously beneficial to our courses. As we proceed through another cycle of assessment we hope to continue an overall upward trend.

Appendix F: Evidence of Improvement Based on Changes Made in Response To Earlier Assessment Results

Improvements that have occurred this year within the 119:115 and 119: 116 workshops include:

- Further aligned our curriculum between our lectures, measurement items and workshop activities
- Refinement of program outcomes and direct measures items
- Increase the proportion of upper level exam items
- Decreased the overall number of exam items
- Refined several Teaching Assistance Preparation activities
- Refined several workshop activities
- Piloted an early warning system with SAS and SEBS First Years Advisors

Areas of future development in the 119:115 and 119: 116 workshops include:

- Exam development, item development
- Reinstate a study group program, to extend study practices outside of class
- Document teaching assistance training,... preparation, policy and practices
- Document workshop training materials,... policy and practices

“119:117: Improvements that have occurred this year within 119:117 laboratory include:

- Alignment of student learning outcomes, assessments and instruction/student learning,
- Laboratory quality assurance
- Refinement of protocols for the use and training of DNA technology
- Documentation of teaching assistant training procedures and materials

Areas of future development within 119:117 laboratory include:

- Alignment of rubric for research with other Biology Program courses
- Exam item development
- Further development of student procedures of teamwork & project management”

Cell Biology & Neuroscience

CTL Action: based on prior assessment results, the following actions were planned:

- curriculum and course changes: content and delivery revisions across required curriculum to decrease course content overlap.
- revisions to assessment process: to improve specificity of student feedback, implemented revisions to indirect assessments (exit survey); plan further refinements in next academic year. Implemented related enhancements to advising and programmatic outreach to students and alumni (social networking, other media) to improve feedback on program content and structure, linked to program learning goals.

From 2014-15 Report: results of follow-up re-assessment of SLOs for program learning goals show post-CTL improvements, and areas for further action:

“Based on student feedback from town hall meetings and exit surveys, the department of CBN has initiated modifications in the CBN curriculum to better prepare our students for their postgraduate study and career. The cumulative student feedback since 2010 is collected and compiled to monitor student

Appendix F: Evidence of Improvement Based on Changes Made in Response To Earlier Assessment Results

response to curriculum modification. ... the CBN curriculum committee has put forward the following recommendations:

i. Decrease course content overlap in the curriculum:

The 2014 student survey showed that the CBN seniors now consider most CBN courses to have less than 5% content overlap with other required courses. This is an improvement over 2011-2012 evaluations in which students considered some CBN courses to have as much as 30% overlap with other courses. The curriculum committee will continue to review all new CBN courses to ensure no significant overlap with the existing curriculum.

ii Facilitate student enrollment in introductory CBN courses:

Based on the student survey, the two CBN courses which students consistently have problem enrolling due to limited classroom size are Fundamentals of Neurobiology and Fundamentals of Cell and Developmental Biology. Starting this year, these two courses have moved to larger classrooms. All registered students and students on the waiting list were accommodated.

iii. Increase the availability of advanced courses in cell biology and neuroscience

In addition to three advanced courses in cell biology, neurobiology and developmental biology, CBN now offers three additional advanced courses in specialized topics in cell biology and neuroscience, including the two new capstone courses initiated in 2014 (Virology and Neuron/glia signaling mechanisms in neuronal development and neurodegeneration) and one new capstone courses initiated in 2015 (Brain and inner ear cell development and function)."

Italian

CTL Action: based on prior assessment results, the following actions were planned:

- curriculum and/or course changes: course content and format of capstone revised to improve SLOs for professional preparation, research and application goals: research symposium added, with student presentations of research.
- modifications to advising outreach, to increase student awareness of and participation in Honors and other research options, and number successfully completing a thesis. Plan ongoing further effort to reach specific target completion rate ($\geq 15\%$ of seniors).

From 2014-15 Report: results of follow-up re-assessment of SLOs for program learning goals show post-CTL improvements, and areas for further action:

"The results of last year's report showed some weakness in our students' achievement of the 'Professional Preparation' goal, in regards to their ability to conduct research and use citations. In order to tackle these issues, we implemented new requirements for literature and culture courses at the 300- and 400-levels.... Furthermore, we have substantially reshaped the Senior Seminar, our capstone course for majors.... [and] organized a two-session symposium (spanning two double classes) in which students presented the findings of their research papers. Students designed a poster to advertise the event, which was well attended and very successful. It emboldened the students' in their ability to conduct research."

Appendix F: Evidence of Improvement Based on Changes Made in Response To Earlier Assessment Results

“We also made substantial progress in another one of our goals, increasing the number of students who worked on Honors Theses (we had planned to engage in them the 15% of our majors).”

Mathematics

CTL Action: based on prior assessment results, the following actions were planned:

- changes to assessment process and/or tool(s): analysis of final exam data in largest course offered as entry-level prerequisite for multiple majors/minors, multiple SAS departments, identified patterns of poor SLOs across all sections, and section-specific issues. Course-wide and instructor-specific feedback provided for SLO improvement.
- changes to assessment process and/or tool(s): in response to faculty feedback, analyzed course grades in successive courses of required curriculum (300-level courses of capstone sequence) to identify areas for corrective action; plan follow-up re-assessment.
- added course sections, revised course content delivery formats to improve SLOs for program goals; alignment of course availability with student need, to improve timely progress to graduation.
- changes to assessment process and/or tool(s): involving most department faculty in modified classroom observation process for all department lecturers; implemented new online reporting of observations, also gathering teaching availability and course preference information to improve scheduling and hiring process, linked to improving student progress through required curriculum.

From 2014-15 Report: results of follow-up re-assessment of SLOs for program learning goals show post-CTL improvements, and areas for further action:

“The department continues to run three rounds per semester of soliciting, evaluating, and replying to special permission requests. Adding a pre-semester round was itself a productive CTL action... which continued to bear fruit in 2014-15,... enabling students to get into the courses they needed without missing any class meetings, and providing information on which courses had enough unmet demand to justify opening new sections. The earlier they can be added, the better the outcome for students, both in arranging their schedules and in participating in courses from the very start. An innovation this year has been to adapt the same online special permission system to summer courses, which had previously been impossible due to some technical hurdles.”

“...The original plan for improving this assessment tool... was to track what percentage of requests come from students already registered... who just wish to switch sections (for whom it is typically less dire to have the request denied). This improvement will need to wait[;] ...there were other more urgently needed innovations, most significantly the rewriting of the priority algorithm used by the program to decide how to allocate special permission numbers to students with the most compelling need.”

“Enabling undergraduates to complete their programs in a timely way has been an ongoing concern, and the focus of several CTL actions in previous years, whether they are majors in mathematics or in other disciplines. In 2014-15, we continued our assessment of which essential courses are difficult to register for, and therefore slow student progress.... In response, we added sections of 106, 135, 151, 152, 244, 250, 252, 300, 311, 351, and 477. Moreover, to accommodate rapid increases in demand for 250, 252, 354, and 421, a

Appendix F: Evidence of Improvement Based on Changes Made in Response To Earlier Assessment Results

new large lecture format with TA support was pioneered in spring 2015, and will be adopted across the board in these courses beginning in fall 2015..."

"Following up on the successful practice from the past two years of offering 12-week summer versions of Math 135, 152, and 300, an innovation in 2015 has been to offer 311 and 351 in 12-week summer format as well. This is significant, since 311 and 351 serve as capstone courses,... essential not only for our majors, but also to students in other programs... (such as PhD-bound Economics majors in 311). In the same spirit, two sections of 300 are now offered in summer 2015, following up on assessments of summer demand in 2013 and 2014. The healthy enrollment in the summer... significantly relieves pressure on the fall sections of these courses, most of which filled quickly during the registration period."

"...Another new assessment practice in 2014-15 has been to analyze student progress from Math 300 (the first course in proof techniques) to the capstone courses 311 and 351, based on overall course grade data. This effort was motivated in part by anecdotal evidence from faculty teaching 311 and 351 that their students had had an uneven preparation in 300, i.e. that some were entering the capstone courses with significantly weaker preparation than others. The department had already taken the CTL-action (as promised in last year's assessment report) of staffing these courses more carefully, and with more experienced faculty, but the newly undertaken analysis tended to confirm these choices."

Molecular Biology & Biochemistry

CTL Action: based on prior assessment results, the following actions were planned:

- curriculum and/or course changes: course content& delivery, assignment sequencing (pre-requisites); major requirements revised to improve student achievement of research application, analysis and communication goals.
- curriculum and/or course changes: piloted revised course content& delivery at capstone level, with addition in Honors track of required weekly thesis writing seminar to improve SLOs for program goals for writing and oral presentation of research.

From 2014-15 Report: results of follow-up re-assessment of SLOs for program learning goals show post-CTL improvements, and areas for further action:

"Assessments of the MBB Honors students from previous years indicated that many did not start writing their theses well into the final semester. As a result, the writing was often rushed and the final outcome less than it could be. To help students initiate this process earlier, in the fall semester all Honors students were required to attend a weekly seminar on thesis writing in which they wrote several drafts of their Introduction and Methods with figures and references. They also had to give a short oral presentation of their thesis research."

"The Honors Thesis Seminar was given for the fourth time in Fall 2015 for 16 students. The assessment for draft 1 (D1) and the revised second draft (D2) for the introduction chapter of the students' theses ...for each student [were assessed using rubrics for] s1, s2, t, u, and v ...Cognitive Skills and Processes Written and Communication goals: ...Many of the students showed significant improvements in their ranking for several of the listed goals. Almost all showed significant improvement between the first and second draft of the thesis. ... assessment of the final version of each student's thesis ... indicated that the students showed further improvement in all of these goals."